Good practice in HCV Care

Winter 2015 – 2016

GBL/HCV/0216/0226(1)

This study was commissioned and solely funded by AbbVie

AbbVie had no role in the conduct of the study, collection, management, analysis and interpretation of data, or preparation of this report

Main contents page

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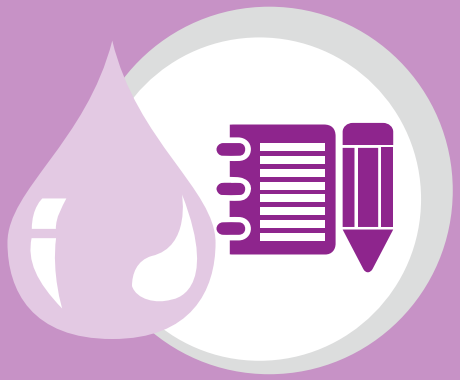

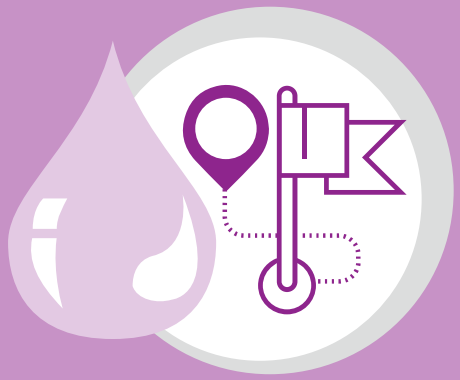

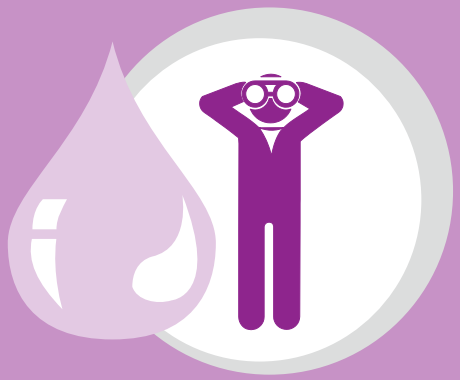

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FOREWORD

Foreword

Blood-borne viruses including Hepatitis C remain a significant global challenge. The people who contract these diseases are often the most vulnerable and hard to reach in society, the treatments can be costly, whilst monitoring and treating long-term co-morbidities is complex

However in Hepatitis C we are entering a new era of care. The arrival of several new therapies is changing our field of practice rapidly. We will need to adapt our pathways through diagnosis and treatment to maximise the benefits of these new therapies. As the more severely unwell patients are treated, our attention will need to focus more on prevention (including prevention of re-infection) and earlier diagnosis, so that the population of chronically infected patients can reduce over time. The advent of new therapies means that many of us will need to devolve treatment away from specialist centres, using networks or other models that allow community-based clinicians to diagnose and treat Hepatitis C, with or without remote specialist input

I doubt any clinician would say that they are always satisfied with the standards of care that they are able to provide: there are always improvements that we can make in the care for our patients. In this report, KPMG have captured many examples of excellence in care from twenty-two centres across the world where health and social care professionals are facing up to the challenge of Hepatitis C in diverse and innovative ways. I hope that readers can draw inspiration for their own services from some of these examples as we all strive to provide the best possible care for our patients, with the ultimate goal of removing the scourge of Hepatitis C

Professor John Dillon, Ninewells Hospital

OUR GOALS

OUR GOALS

Our project aims to highlight good practices in Hepatitis C care to address the challenges associated with this disease area and to improve patient care

1. Learn from well-regarded centres that deliver care for Hepatitis C, and agree on the principles of good practice
2. Share learnings and create HCV community
3. Help local centres identify strengths and weak spots
4. Guide these centres in improving care delivery

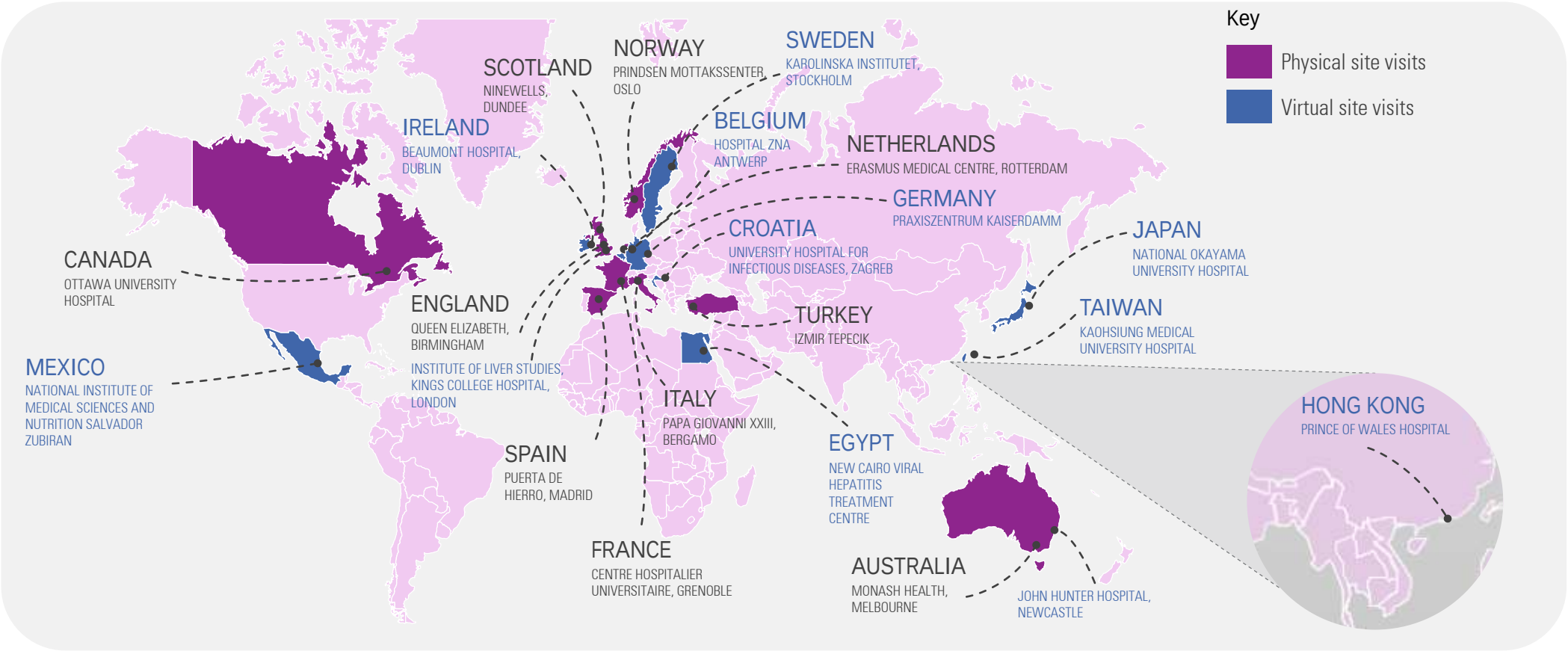
ACCELERATE CURE OF HEPATITIS C

OUR APPROACH

CENTRES WE INCLUDED

We interviewed members of 22 teams around the world that manage patients with Hepatitis C

- We visited **22 centres** in total; **10 physically** and **12 as 'virtual' visits**
- **10 centres from Western Europe, Canada and Australia** were chosen for their global expertise and reputation in Hepatitis C care. Each centre was visited by a team of former clinicians and research scientists from KPMG who interviewed a wide range of stakeholders
- To widen the global scope of the study, we included **12 additional centres** that demonstrated innovation in specific areas of treatment. These centres were visited 'virtually' and their team members interviewed over the phone



Sources: 1. WHO, Hepatitis C Factsheet 2. Hepatitis C Factsheet, NHS England 2. Awofeso, Niyi, 'Prisons as Social Determinants of Hepatitis C Virus and Tuberculosis Infections' (2010) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2882972/3. Global Alert and Response, Hepatitis C http://www.who.int/csr/disease/hepatitis/whocdscsrlyo2003/en/index4.html

WHY WE CHOSE THESE CENTRES

We chose centres in countries with varying levels of access to DAAs

These centres differed in their level of access to DAAs depending on government-level, country-wide approval decisions:

1. Centres in Australia, Turkey, Taiwan, Mexico, and Hong Kong, currently have **no access to all oral DAA regimens**
2. In England and Ireland*, only F4 patients were eligible for DAAs
3. Centres in Belgium, Italy, Croatia, and the Netherlands have **rationed access to DAAs** for F3+ patients only
4. Spain, Canada, Sweden, Norway, and France* have slightly **less restrictive** rationing of DAAs with F2+ patients eligible for treatment
5. Japan, Germany, and Scotland have the **least restrictive** government policy with all F0+ patients eligible for DAAs, whilst in Egypt all F1+ patients are eligible

The METAVIR scale is a scoring system used to assess the condition of a patient's liver. The higher the score, the more severe the liver damage:

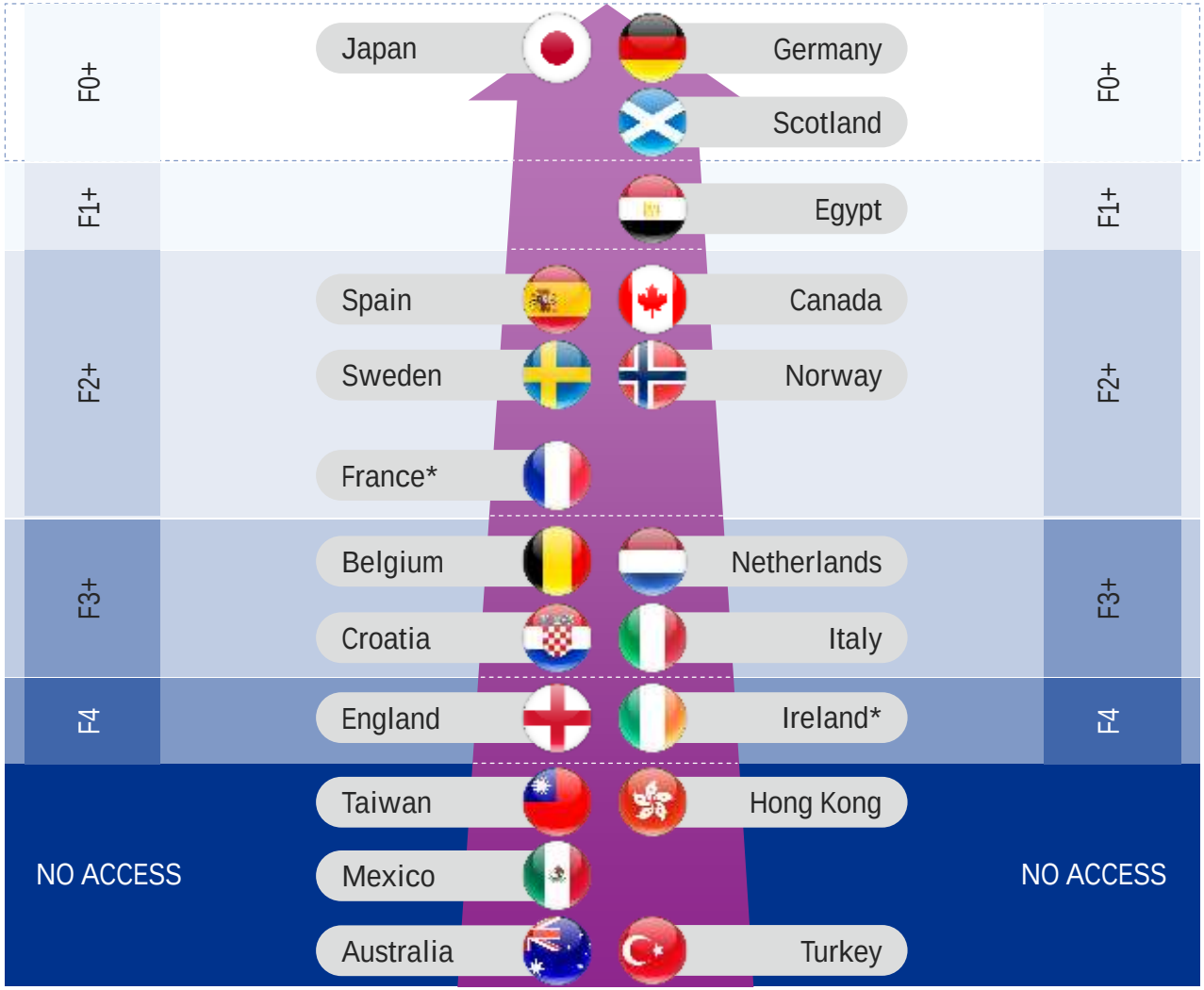
F0 = no fibrosis

F1 = portal fibrosis without septa

F2 = portal fibrosis with few septa

F3 = numerous septa without cirrhosis

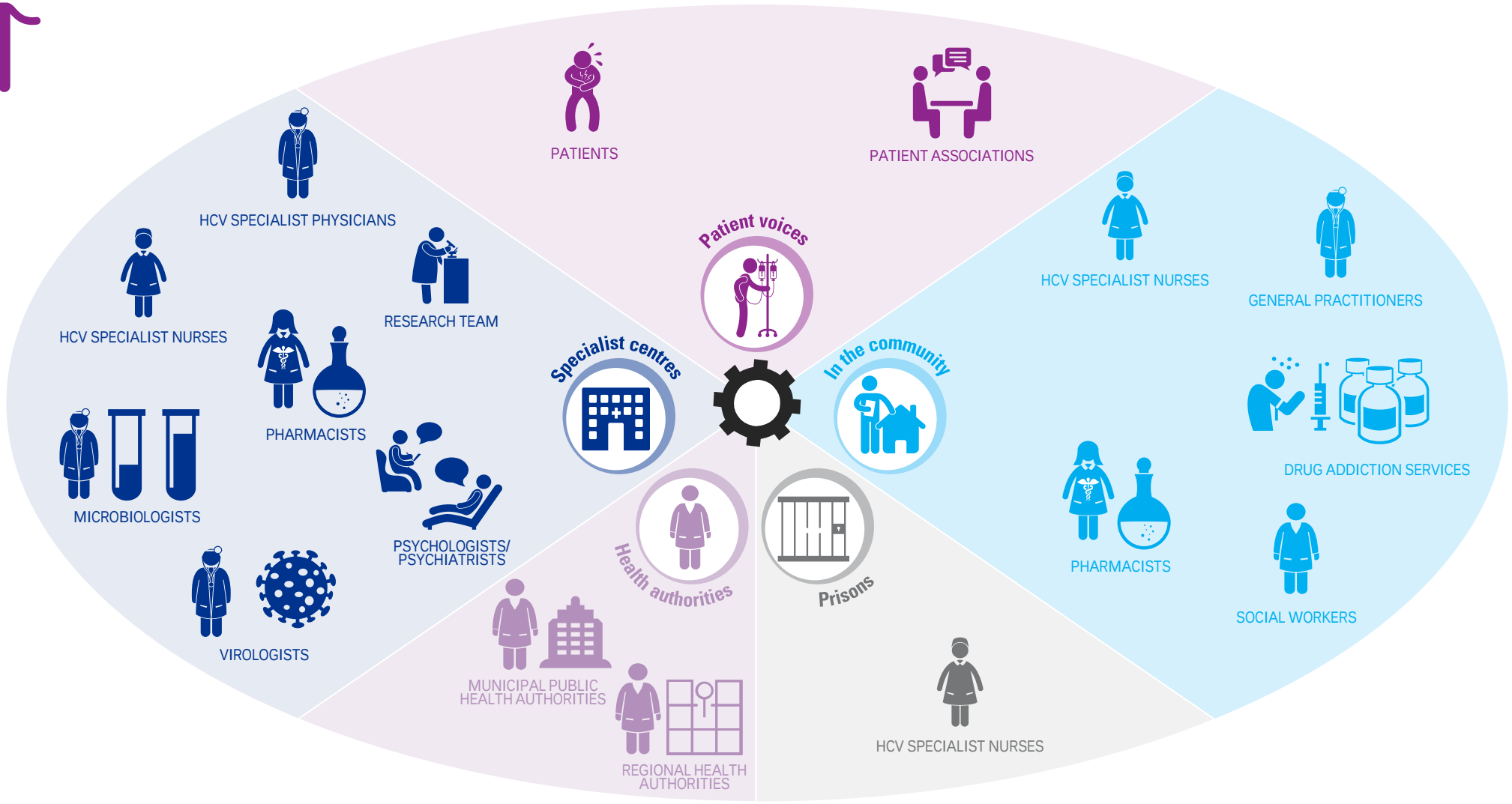
F4 = cirrhosis



Levels of access correct as at the first date of interviews per country
*In Ireland, special populations (post-transplant and state-infected persons) have DAA access for F0-F4, but all other patients must be F4 to receive DAAs
*France have split the F2 section into 'severe' and 'non-severe'. Only F2 severe + patients are eligible for treatment with DAAs

WIDE STAKEHOLDER INVOLVEMENT

We spoke to a wide range of stakeholders from specialist centres, patient groups, the community, prisons, and health authorities



WHAT WE ASKED

- We combined structured interview questions with open questions to get a complete picture of the specialist centre's approach to HCV care
- We were especially interested in how the centre has adapted or is planning to adapt to new therapies and how the patient pathway is evolving as a result

We asked questions about the specialist centre, patient pathway, work in the community, use of technology and the future of HCV care

EXAMPLE QUESTIONS

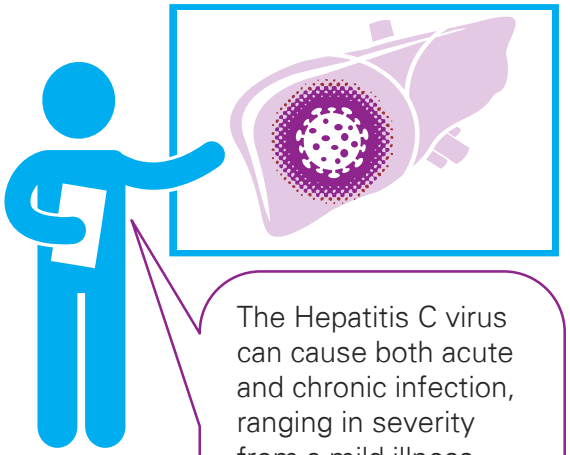
Centre background	What makes you a strong centre for HCV care?
Patient pathway	How do you deliver care at every stage of the pathway?
	How do patients get referred to your centre to be treated?
Use of technology	How do you use technology on a day-to-day basis?
Community care	How is your centre involved in the community?
Future of HCV care	What are your views on the future of HCV care?

Prevention → Diagnosis → Linkage to care → Clinical Management → Follow-up

CONTEXT AND CHALLENGES

WHAT IS HEPATITIS C?

Hepatitis C is a liver disease caused by the Hepatitis C Virus – HCV



The Hepatitis C virus can cause both acute and chronic infection, ranging in severity from a mild illness lasting a few weeks to a serious, lifelong, and life-threatening disease[1]

The first 6 months of a Hepatitis C infection are known as **acute Hepatitis C**

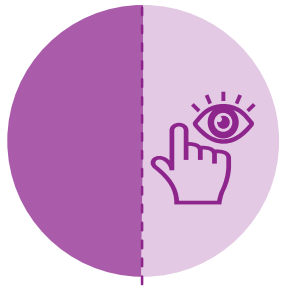
Roughly **1 in 4** people will fight off the infection and be free of the virus at this stage

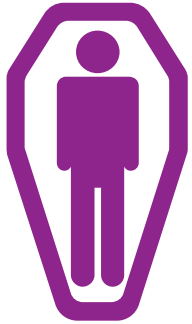
In the remaining patients, the virus will stay in the body for many years – this is known as **chronic Hepatitis C**[2]

A significant number of those who are chronically infected will develop **liver cirrhosis** or **liver cancer**[1]

Hepatitis C affects **130-170m** people globally[3]

However, **75%** of this large population remains undiagnosed due to lack of screening and poor awareness[3]





Approximately **500,000** people die each year from Hepatitis C-related liver diseases[1]

Sources: 1. WHO, Hepatitis C Factsheet 2. NHS, Hepatitis C http://www.nhs.uk/conditions/hepatitis-c/Pages/Introduction.aspx 3. Hepatitis C: The Big Picture – A global burning platform http://static.correofarmaceutico.com/docs/2015/04/22/hepatitisc_burning_platform.pdf

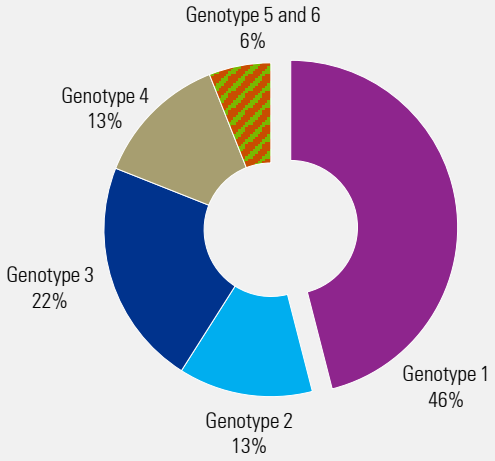
THE GLOBAL LANDSCAPE

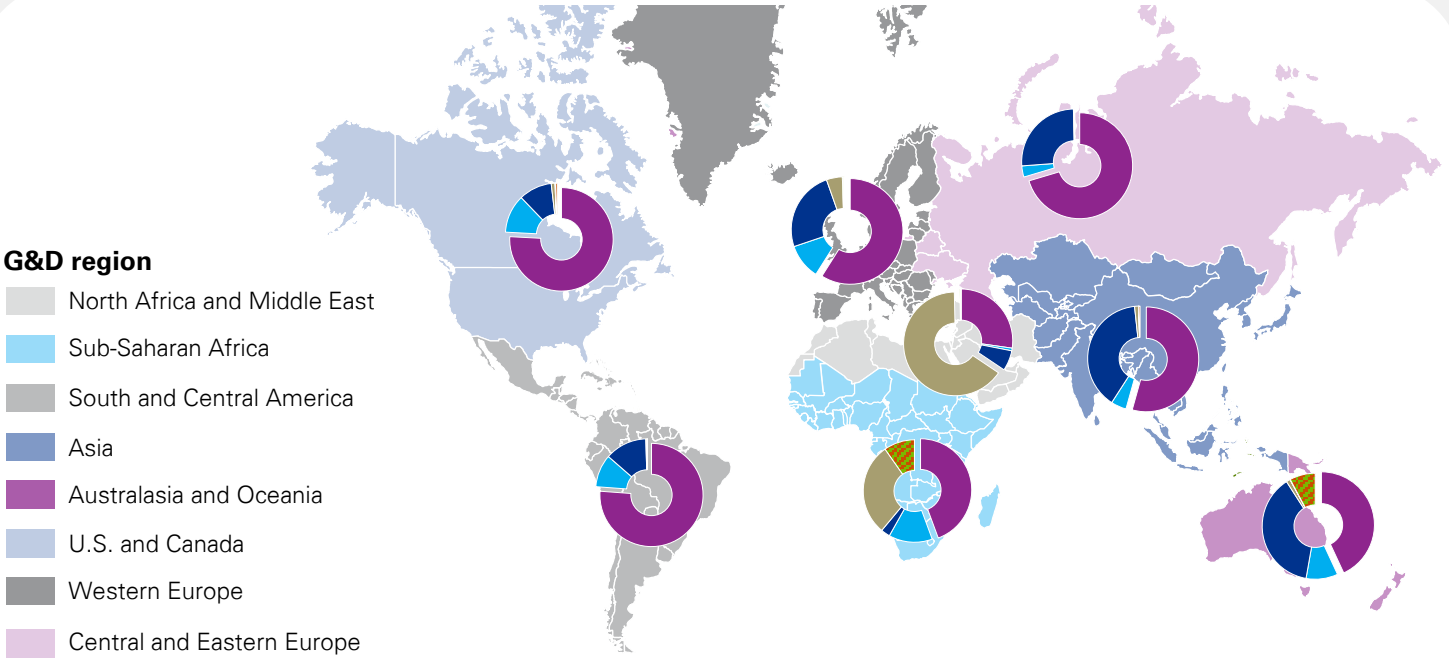
There are six major genotypes of HCV, with prevalence varying by region

There are **six major genotypes** and several subtypes of the Hepatitis C virus

Globally, **genotype 1 is the most common**, accounting for 46% of all infections, followed by genotypes 3 (22%) and genotypes 2 and 4 (13% each)[1]

Global genotype distribution





- **Genotype 1** accounts for 53-71% of cases in Australasia, Europe, Latin America and North America
- **Genotype 3** accounts for 40% of all infections in Asia
- **Genotype 4** is the most common in North Africa and the Middle East. However, when Egypt is excluded, it accounts for 34% of infections, with genotype 1 accounting for 46% of infections

Sources: 1. Global epidemiology and genotype distribution of the Hepatitis C virus infection, Homie Razavi, Journal of Hepatology, 2014, vol. 61, S45 2. Global Distribution and Prevalence of Hepatitis C Virus Genotypes, Journal of Hepatology. 2015 Jan; vol. 61(1): 77–87

THE SYMPTOMS

Following initial infection, only 20% of people exhibit any symptoms

80% of patients are asymptomatic

20% of patients are SYMPTOMATIC

Fever

Jaundice

Nausea and abdominal pain

Fatigue

Joint pain

Decreased appetite

Dark urine and grey-coloured faeces

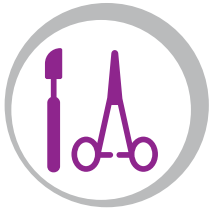
Sources: 1. WHO, Hepatitis C Factsheet http://www.who.int/mediacentre/factsheets/fs164/en/2. NHS, Hepatitis C http://www.nhs.uk/conditions/hepatitis-c/Pages/Introduction.aspx 3. NICE, Guidance on sofosbuvir and simeprevir for treating Hepatitis C https://www.nice.org.uk/news/press-and-media/nice-guidance-recommends-sofosbuvir-sovaldi-gilead-sciences-and-simeprevir-olysio-janssen-for-treating-hepatitis-c

HOW THE VIRUS IS CONTRACTED

The virus is blood-borne and the most common modes of infection are through[1]:

Recreational drug use

Contaminated medical needles



Inadequate sterilisation of medical equipment

Transfusion of unscreened blood

Sexual transmission

Transmission from infected mother to baby

HIGH-RISK GROUPS INCLUDE

The high risk groups cover populations from a wide range of backgrounds

Intravenous (IV) drug users

- The most frequent mode of transmission in developed countries, (such as Canada and the UK), is IV drug use
  - In England up to 49% of IV drug users are thought to have HCV[2]

Prisoners

- Prisoners have a high prevalence of HCV due to engagement in risky activities such as IV drug use and tattooing
  - Both are likely to involve sharing needles that may be infected
- There is also limited access to harm-reduction interventions, such as needle-exchange programmes and condoms in most prison systems[3]

Patients receiving blood transfusions prior to HCV screening

- Contracting HCV through blood transfusion is no longer common due to blood being screened for HCV
- Anti-HCV screening tests were first introduced in 1990-1991 in Europe and the US[1]
  - In southern European countries, there is a higher prevalence of patients that were infected through the historical use of glass syringes for medical equipment or unsterilised dental equipment[1]

Men who have sex with men (MSM)

- Hepatitis C may be transmitted during unprotected sex, although this risk is considered very low
- The risk of sexual transmission may be higher among MSM who engage in risky behaviours
- The risk is also increased if there are genital sores or ulcers from a sexually transmitted infection, or if either person is co-infected with HIV[2]

Sources: 1. WHO, Hepatitis C Factsheet http://www.who.int/mediacentre/factsheets/fs164/en/; 2. NHS, Hepatitis C http://www.nhs.uk/conditions/hepatitis-c/Pages/Introduction.aspx; 3. Global Alert and Response, Hepatitis C http://www.who.int/csr/disease/hepatitis/whocdscsrlyo2003/en/index4.html

EXISTING 'STANDARD' TREATMENTS

Traditionally, HCV treatment was based on combination therapy with interferon and ribavirin, which required **weekly injections for 48 weeks**. This cured approximately half of treated patients, but caused adverse reactions,[1] such as:

Depression | Insomnia | Nausea | Fatigue | Muscular and joint aches[2]

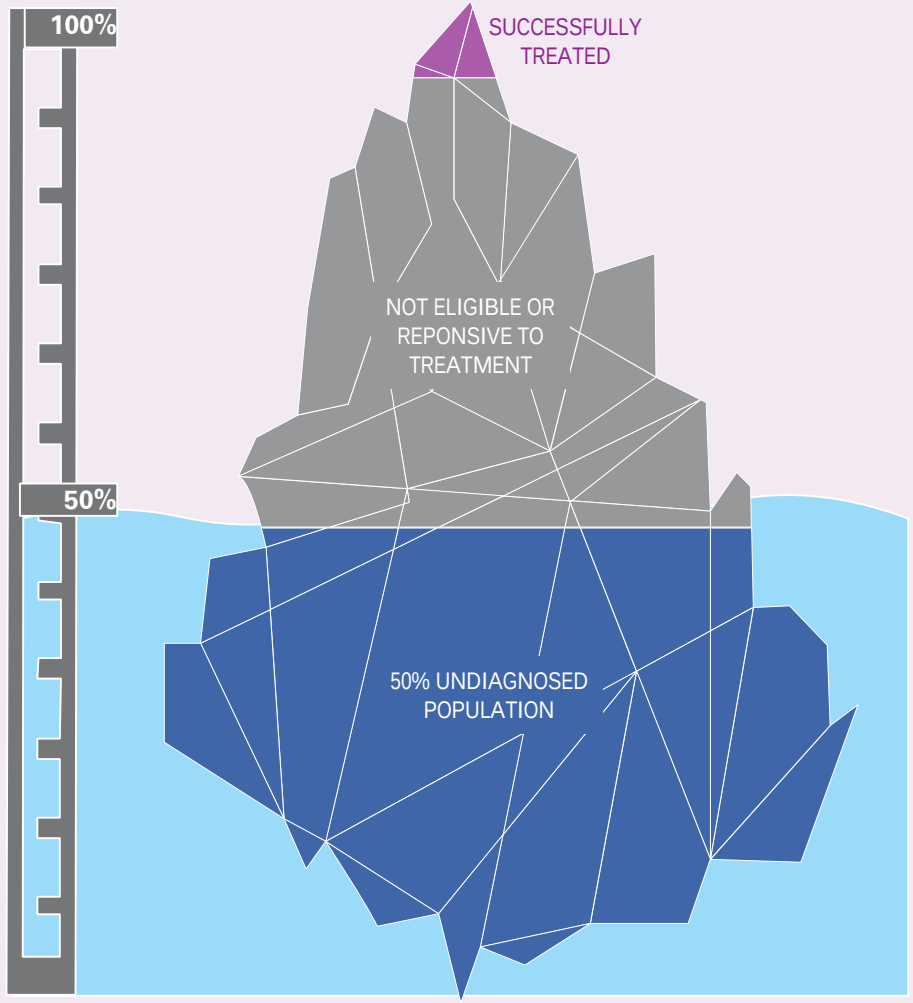
In the UK, **50% of the HCV-positive population is undiagnosed**. This is because patients will often be asymptomatic for many years and will not know that they are infected.[1] This number varies by country

Of the patients diagnosed with Hepatitis C not all are compliant with the interferon and ribavirin treatments. Approximately 17% of HCV-infected patients in the U.S. have at least one contraindication to the combination therapy[2]

Contraindications include substance abuse, underlying conditions (anaemia and advanced liver disease) and psychiatric/mental health problems[2]

Although new medications have recently been developed, traditional treatments are still used in many health care settings

PATIENT POPULATION ON INTERFERON AND RIBAVIRIN



Sources: 1. Hepatitis C Factsheet, WHO 2. Hepatitis C Trust, Treatment Side Effects; http://www.hepctrust.org.uk/side-effects 2. Talal A. H. et al. 'Absolute and Relative Contraindications to Pegylated-iterferon or Ribavirin in the US General Patient Population With Chronic Hepatitis C' (2013) 3. Hepatitis C in England – The Health Protection Agency Annual Report 2007 4. IMS Health – Hospital Pharmacy Audit. Unit data for 2007 for all pegylated interferons

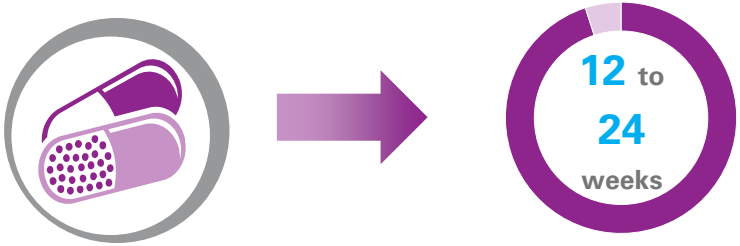
NEW TREATMENTS (DAAs)

Direct-acting antiviral agents (DAAs) are orally-administered

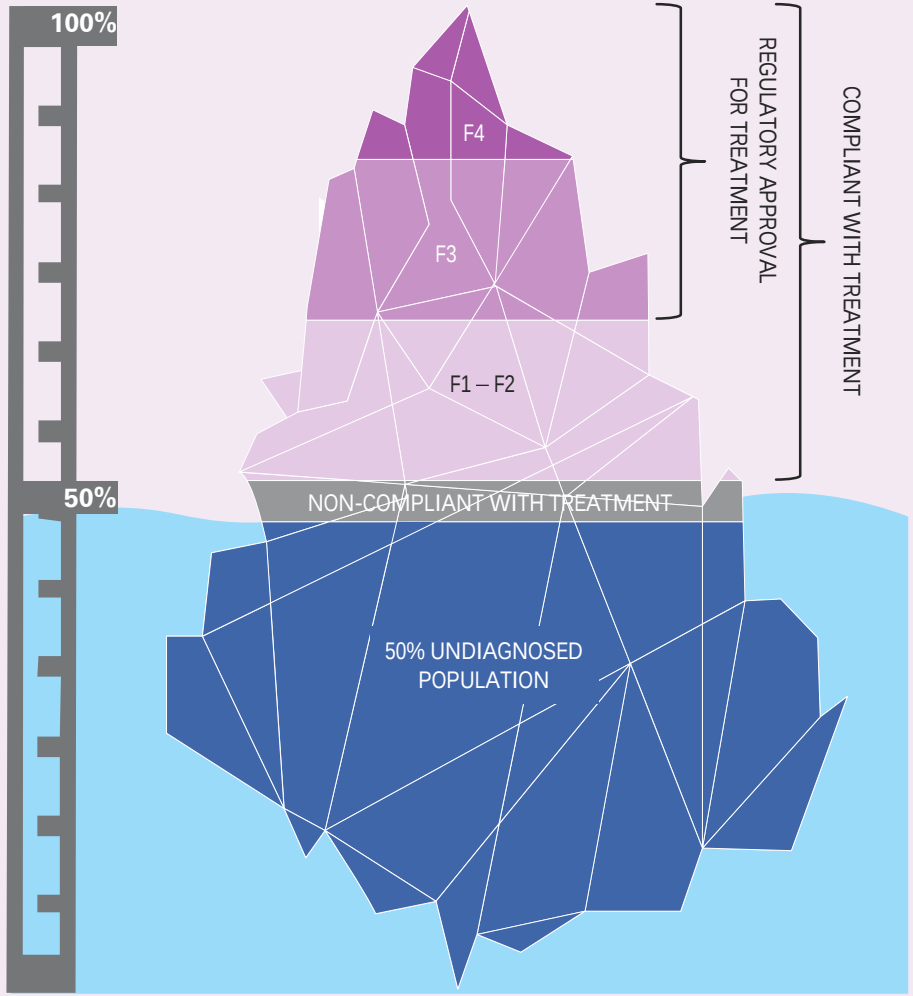
In the past five years, a new line of therapies called direct-acting antiviral agents (DAAs) have been developed to treat chronic Hepatitis C. Initially, the DAAs were used in conjunction with the standard combination therapy but now treatment is shifting towards interferon-free regimens

The course of treatment for DAAs is shorter, typically between 12 to 24 weeks (depending on the patient's genotype and disease severity)[1]

The price of DAAs is high, meaning that there are access challenges even in high-income countries[2]



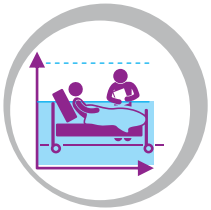
PATIENT POPULATION WITH RATIONED ACCESS TO DAAS



Source: 1. EASL Recommendations on the treatment of Hepatitis C, *Journal of Hepatology* (July 2015) http://www.easl.eu/medias/cpg/HEPC-2015/Summary.pdf 2. WHO, Hepatitis C factsheet

CONTINUING CHALLENGES IN HEPATITIS C CARE

There are numerous challenges in Hepatitis C care that persist despite the introduction of all oral therapies



Under-diagnosis

- One of the key problems in Hepatitis C care is the lack of screening and therefore the under-diagnosis of Hepatitis C
- Even with the new all oral treatments, the global impact on Hepatitis C treatment will be small without an increase in HCV testing[1]
- Testing is crucial because the majority of Hepatitis C patients are asymptomatic – 80% of the population that have chronic Hepatitis C exhibit no symptoms[2]

Knowledge gap between primary and secondary care

- Primary care physicians are key to improving screening and diagnosis of Hepatitis C. However, they are hampered by a lack of knowledge about Hepatitis C in the primary care setting
- GPs in the UK have expressed a lack of confidence in counselling patients about Hepatitis and interpreting liver function tests. Referrals from primary care are also falling[3]
- The Department of Health has referred to Hepatitis C as a 'Cinderella' disease, 'one that has a relatively low profile compared to other areas of health service development'[4]

Stigma

- Hepatitis C carries a stigma due to the negative associations with methods of transmission
- HCV is associated with intravenous drug use so there may be an assumption that all HCV-positive patients have a history of drug use
- Former and active IV drug users with Hepatitis C are doubly stigmatised due to negative associations about both the disease and drug use[5]

Lack of awareness and prevention initiatives

- Rates of new Hepatitis C infection remain high in many countries because of the reuse of injection equipment and lack of screening of blood for transfusions[6]
- A lack of public awareness and understanding of the disease plays a key role in the continued transmission and prevalence of HCV

Sources: 1. Thomas, D., 'New challenges in viral Hepatitis' 2. WHO, Hepatitis C http://www.who.int/csr/disease/hepatitis/whocdscsrlyo2003/en/index3.html 3. Hawkes, Nigel 'Confronting the silent epidemic: a critical review of Hepatitis C management in Hepatitis C' (April 2013) http://www.hepctrust.org.uk/sites/default/files/resources/HALO_Media_Report_FINAL.pdf 4. The Hepatitis C Trust, 'The Uncomfortable Truth' (Oct 2013) http://www.hcvaction.org.uk/sites/default/files/resources/The%20Uncomfortable%20Truth.pdf 5. HCV Advocate, 'A Guide to Stigma and Hepatitis C' http://hcvadvocate.org/hepatitis/factsheets_pdf/Stigma_Guide.pdf 6. WHO, 'Guidelines for the screening, care and treatment of persons with Hepatitis C infection' http://apps.who.int/iris/bitstream/10665/111747/1/9789241548755_eng.pdf?ua=1&ua=1

NEW CHALLENGES ACCOMPANYING DAAs

The introduction of all oral DAAs has led to challenges which are changing existing models of care

Significant increase in demand

- The introduction of all oral DAAs has strained healthcare systems, which are struggling to meet the needs of an increasing population that is now eligible for treatment
- This increase in demand is driven by the fact that more patients are eligible for treatment with all oral DAAs

Limited/phased access due to high up-front cost

- Despite high demand, there is currently limited access in many countries throughout the world
- Current prices of new therapies are putting short-term pressures on health systems despite providing long-term cost-effectiveness

New stakeholders

- DAAs have changed the paradigm of care because treatments are now orally administered
- This has increased the importance of stakeholders such as GPs, community pharmacists and social workers who can help to diagnose and treat Hepatitis C in the community setting

Changing models of care

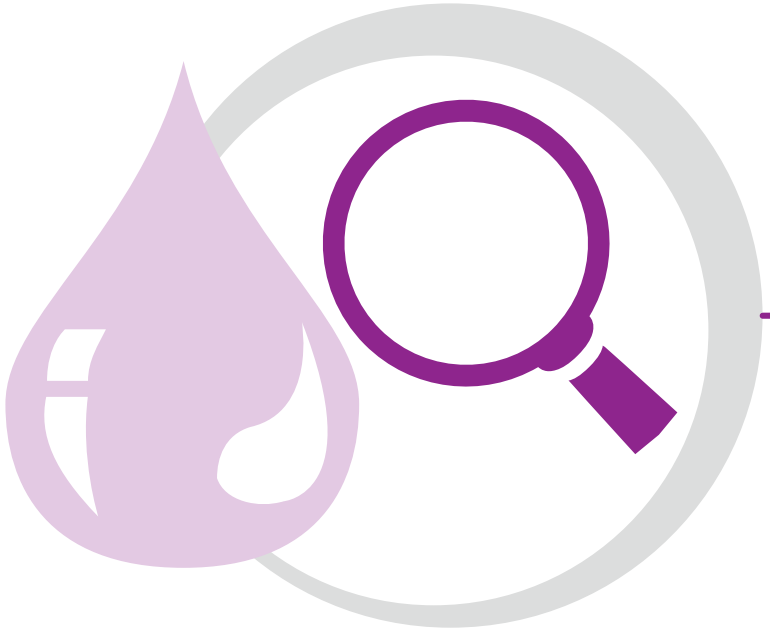
- To meet these challenges centres are changing existing models of care
- Later in our report (page 36 onwards), we outline example interventions developed by centres across the world to respond to their challenges

Sources: 1. KPMG Interviews

OUR FINDINGS

OUR FINDINGS:
Principles of good HCV care

Our findings cover the principles of good HCV care, now and in the future



Principles of good HCV care

- Based on our site visits, we have outlined the universal principles of good care along each stage of the patient pathway

The future of HCV care

- We also investigated the future of HCV care, taking into consideration the evolution of treatments, with the transition from interferon-based to all oral regimens having a significant impact on the way care is delivered

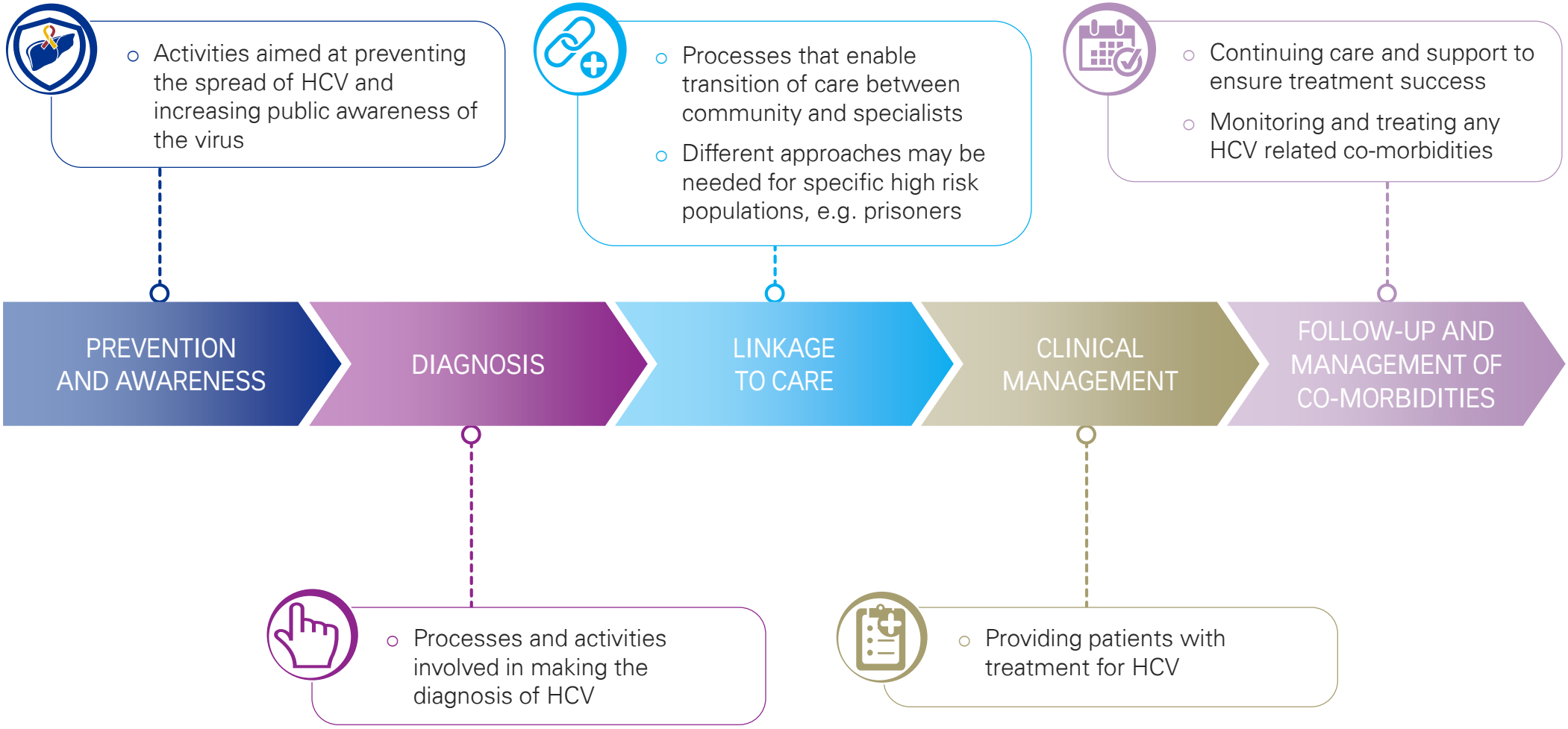
Detailed interventions

- We observed forward-thinking interventions which are already addressing the changing paradigm of care with the introduction of DAAs
- We have aligned these interventions to the different stages of the patient pathway to highlight where they might be most effective

Site detailed specifications

- In addition to the above findings, we have also produced specifications for each centre interviewed during this project

The HCV patient pathway is made up of five stages



We have identified universal features of good care along the patient pathway

PREVENTION AND AWARENESS

- Proactively seek out ways to reach high risk communities
- Engage in regional and/or national awareness campaigns
- Work with community based stakeholders to ensure connected approach to prevention and awareness activities

DIAGNOSIS

- Conduct targeted screening programmes tailored to the local demographics
- Take a 'one stop approach' to testing wherever possible to enable rapid and accurate diagnosis
- Educate primary practitioners to better diagnose for HCV
- Make diagnosis as accessible as possible for vulnerable patient groups

LINKAGE TO CARE

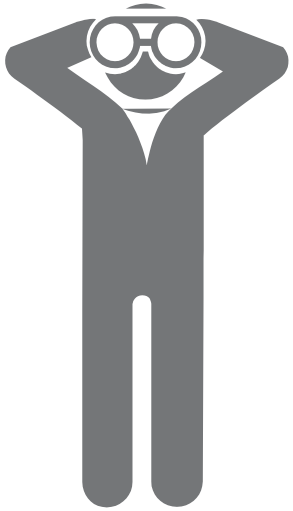
- Integrate the provision of care quickly and consistently through informal and formal networks, such as
  - Hub and spoke networks
  - Managed care networks
  - Outreach centres
- Strong links with drug and alcohol services

CLINICAL MANAGEMENT

- Manage patients with an MDT approach to care
- Increase involvement of non-physicians such as pharmacists and specialist nurses in the management of patients
- Utilise patient databases to track disease progression and treatment progress
- Use telemedicine to facilitate management of remote patients

FOLLOW-UP AND MANAGEMENT OF CO-MORBIDITIES

- Thorough follow up to manage disease co-morbidities (e.g. HCC)
- Psychosocial support to help patients adjust to new lifestyles
- Foster strong links with patient associations to provide additional support



OUR FINDINGS:
The future of HCV care

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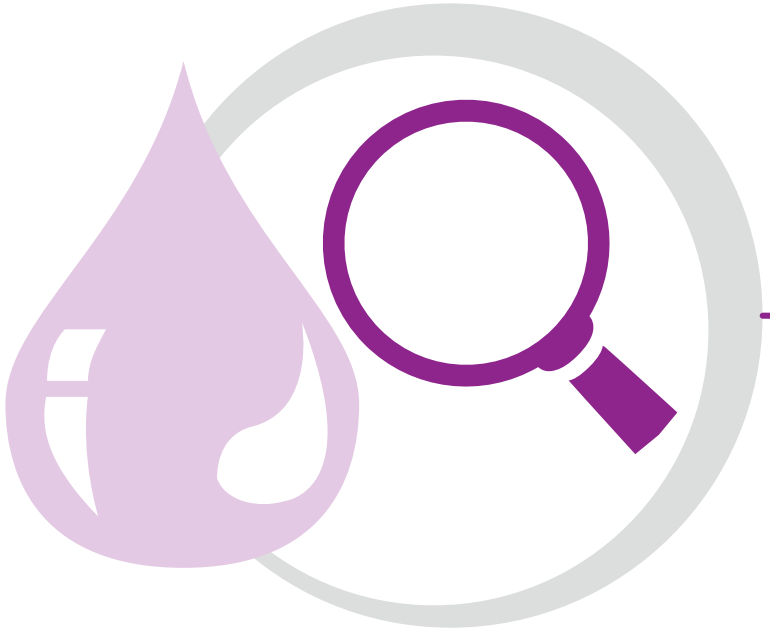
We asked centres to share their views on what HCV care will look like in the near future



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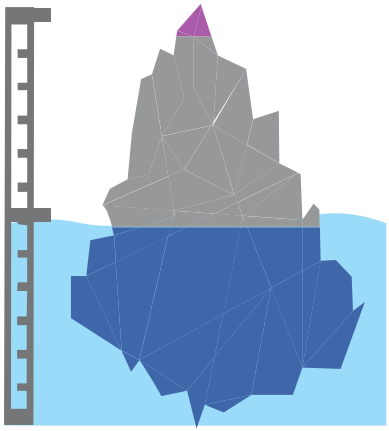
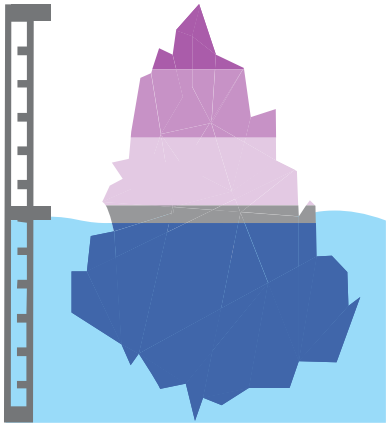
DAAs are creating a new care paradigm, shaping the future of the patient pathway

With the arrival of DAAs, more patients can be treated. This will have a significant impact on HCV care in both the immediate and long-term future



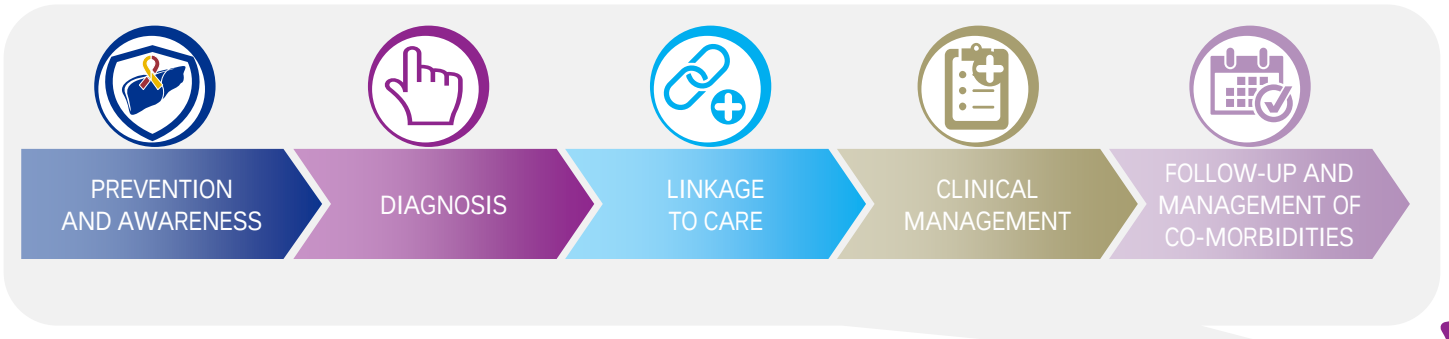
From interferon and ribavirin to increasing access to DAAs



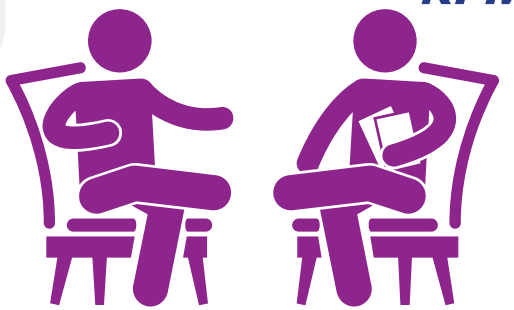
Reasons for increase in patient numbers

- **More patients are eligible for treatment with all oral DAAs**
- **Medication is administered orally**
- **Increased awareness**

We asked experts from the centres we visited for their views on how these treatments will affect HCV care in the future, framing our questions around the patient pathway. In the following pages, we outline these findings…



What will happen? Where? How?



The patient pathway is now evolving with all oral HCV treatments

- Increased focus on prevention and awareness activities as more patients become eligible for treatment

- Increasingly devolved treatment from specialist centres to local care providers, and development of networks to facilitate this

- Heightened focus on prevention of re-infection
- Continued emphasis on follow-up care for patients with liver damage

PREVENTION AND AWARENESS → DIAGNOSIS → LINKAGE TO CARE → CLINICAL MANAGEMENT → FOLLOW-UP AND MANAGEMENT OF CO-MORBIDITIES

- Greater emphasis on screening high-risk, high-prevalence groups, in order to treat infection reservoirs

- Increased involvement of non-physician staff such as specialist nurses and pharmacists
- Reduced need to closely manage patients during treatment

Strong engagement with primary care and patients will increase awareness and reduce reinfection rates

P D L C F

What do we think will happen?

- Now that all oral treatments are becoming more widely available, and more patients are eligible for treatment, is there real hope that HCV can be eradicated?
- To achieve this goal, countries will have to focus on:
  - increasing awareness of the virus/disease to prevent infection
  - fighting re-infection

Where do we think this will take place?

- Awareness has to be improved from within the community
- Involvement of community-based HCPs is key as they are the first point of contact for many patients

How do we think it will happen?

- Impactful educational initiatives should target at-risk populations (e.g. people who inject drugs, baby boomers in specific geographies etc.)
- The presence of public/national media will also play a major role in increasing awareness of the risks and the methods of spreading the virus

What do HCV experts think?

> If you wait for patients to come, it will not happen… you really need to reach out, you need to go to the NGOs, to the rehabilitation centres and convince them that Hepatitis C is very important.
>
> ***Hepatologist, Prince of Wales Hospital, Hong Kong***

> Prevention has to be undertaken nationally at different levels.
>
> Firstly with actions to reduce incidence of acute Hepatitis C via web-based information and medical educational programmes. Mechanisms of control should also be established for those getting piercings or tattoos and special information should be given to men who have sex with men.
>
> ***Hepatologist, Puerta de Hierro Hospital, Spain***

> Now that we have curative treatments, one of our main goals is to increase awareness. To be effective, we have to do that first.
>
> ***Hepatologist, Kaohsiung Medical University, Taiwan***

Screening high risk groups will strengthen virus eradication efforts

P D L C F

What do we think will happen?

- Screening will enable the HCV community to fight the nest of infection that exists in the general public but also within specific at-risk communities, such as prisoners, IV drug users and certain minority groups that have a higher prevalence of the disease
- Increased screening and awareness activities will enable HCPs to identify HCV-positive patients at an early stage in the disease lifecycle, before complications such as advanced fibrosis manifest.
- In addition to complications relating to the liver, research has shown that extrahepatic manifestations have been reported in up to 74% of patients, including HCV-related autoimmune and/or lymphoproliferative disorders, as well as HCV-associated disorders including cardiovascular, renal, metabolic, and central nervous system diseases.[1] Increased screening will allow patients to be diagnosed and cured before such complications can manifest

Where do we think this will take place?

- Screening has to take place in primary care settings, for example GP clinics
- However, screening also needs to occur in other community settings, such as outreach centres, to specifically target populations that have a high risk of infection

How do we think it will happen?

- The setting of care needs to shift from tertiary centres to primary and community centres
- Targeted screening programmes, for example at community events, will enable HCPs to reach a wider public and will also help to improve awareness of the disease
- Education of GPs allows more screening to be implemented in the primary care setting and for GPs to identify key risk factors of the disease
- Accurate, portable diagnostic tests have to be developed to screen more people within the community

What do HCV experts think?

Everyone should be screened for Hepatitis C at least once in their life. In 50 years everyone should have been screened for HCV.

Hepatologist, Grenoble University Hospital, France

We need to educate general practitioners on the disease. As for screening, there is no incentive in the Netherlands to test the entire population as the prevalence is too low. Targeted screening makes more sense.

Hepatologist, EMC Rotterdam, Netherlands

Screening gives you power. In Canada, 75% of the infected are not aware they bear the virus. We need to act before their liver becomes cirrhotic!

Infectious Disease Specialist, Ottawa General Hospital, Canada

Source: 1. Extrahepatic manifestations of chronic hepatitis C virus infection, Digestive and Liver Disease, Vol 46, S 5, 15 December 2014, S165–S173

Networks and outreach programmes will increase patient linkage

P D L C F

What do we think will happen?

- Once diagnosed, patients will need to be brought to appropriate settings of care where they can be well managed
- Patients have to be able to access care in tertiary settings but also be capable of self care
- This is particularly important for patients who do not have the economic means to travel or fear the formality of the hospital setting

Where do we think this will take place?

- Efforts have to be made by both specialist centres and primary care/community-based clinics to coordinate care and ensure that patients can be identified and treated either within the community or within the specialist centre

How do we think it will happen?

- Networks are key to coordinating specialist and community-based care
- These networks need to include a broad spectrum of healthcare professionals from specialist care and community organisations such as drug and alcohol services
- Networks will also enable knowledge-sharing on the new treatments so that those with less expertise can learn from specialists with more experience
- Involving patient groups is key to educating patients about the ways in which they can access care

What do HCV experts think?

If a patient is very sick, there is a step up in expertise by referring them to specialist centres within the network. The best centres will have significant referrals from outside of their locality because of the level of service they can provide to the most critical patients.

Hepatologist, Institute of Liver Studies, England

The problem in the pathway arises when the primary care doctor is referring – so we need to have more outreach into primary care. We try to work in a multidisciplinary way with primary care.

Hepatologist, Puerta de Hierro Hospital, Spain

We would need far more employees if we had to do everything single-handedly – having a network allows more patients to be reached by collaborating with other centres.

Hepatologist, Prindsen Mottakssenter, Norway

New models will emerge to make best use of specialist centre capabilities

P D L C F

What do we think will happen?

- Complex cases, for example where patients develop liver damage, will still need the input of specialists
- With less serious cases to manage in the future, specialists will focus more on other liver diseases such as non-alcoholic fatty liver disease (NAFLD) and hepatocellular carcinoma (HCC)

Where do we think this will take place?

- Specialist centres will take the lead in dealing with severe HCV patients, with a high level of liver fibrosis

How do we think it will happen?

- MDTs are key to allowing specialists to share their expertise in complex cases
- As specialists in central 'hub' hospitals share more of their expertise, affiliate centres within the network will be able to host their own MDTs
- Nurse-led clinics will also enable centres to increase their throughput of patients so that specialists concentrate on the patients that are most in need
- Specialists will increasingly direct their research towards other liver diseases

What do HCV experts think?

> In future, collaboration between centres will be key. Tertiary centres should manage complex cases and refer their less severe cases to general (secondary) hospitals.
>
> ***Hepatologist, EMC Rotterdam, Netherlands***

> With rising levels of obesity non-alcoholic fatty liver disease (NAFLD) might take over as the area of focus for liver specialists.
>
> ***Transplant coordinator, QE Hospital, England***

> I think eventually the situation will be that hospital-based viral Hepatitis work will be limited to the most severe end of the spectrum.
>
> ***Hepatologist, John Hunter Hospital, Australia***

> Nurses take the lead in care and know the patients very well. This means that doctors can spend more quality time with the patients who need their input the most.
>
> ***Hepatologist, Karolinska University Hospital, Sweden***

The role of primary care is still under debate

P D L C F

What do we think will happen?

- HCPs will shift to treating large cohorts of more recently diagnosed patients as more severe patients are treated and access to DAAs increases
- To keep up with such high demand, less severe cases may be dealt with in the community and by primary care physicians

Where do we think this will take place?

- Community-based clinics and primary care centres may take the lead in administering care to less severe patients in the future

How do we think it will happen?

- One potential model is that specialists will set up community-based clinics or rely on existing community care to deliver treatment to less severe, non-cirrhotic patients
- Community pharmacists could also have a role in delivering treatments to patients as they are close to certain patient populations i.e. IV drug users with prescriptions for methadone
- GPs could be responsible for diagnosing HCV but also delivering treatments to less severe patients without complications
- However, there is no consensus about the increased involvement of GPs, as some GPs are keen for the extra responsibility while others feel that all HCV care should remain in the specialist domain
- Specialists also have differing opinions as to whether GPs will have greater involvement in HCV patient care

What do HCV experts think?

I don't think that tertiary hospitals will remain as treatment providers, it will go down the line.

Hepatologist, National Institute of Medical Sciences and Nutrition, Mexico

The pharmacist has a role with asymptomatic patients. If the patients have no liver disease, they are easy to treat – genotype I – they can be treated with eight weeks of contact with the pharmacist.

Pharmacist, Ninewells Hospital, Scotland

Based on our experience with HIV, there is no appetite among GPs to treat HCV patients. They do not have the capacity and there is no political/economic incentive to prescribe in primary care.

Hepatologist, QE Hospital, England

On paper it is a great idea to have generalists following patients with Hepatitis C. However, it is difficult for generalists to be in charge of the long-term follow-up of severe cases.

Hepatologist, Grenoble University Hospital, France

Follow-up care will still be needed for the most acute patients

P D L C F

What do we think will happen?

- Follow-up care will still be needed for those with liver damage to monitor and prevent any further damage to the liver and the potential development of hepatocellular carcinoma (HCC)
- Follow-up also plays a key role in research, helping to identify any potential complications and to monitor the long-term effects of the new treatments
- Patients may also need psychological support after going through treatment as they adapt to a new way of life
- However, most patients without further complications or cirrhosis will be able to be fully discharged from care following cure, with no need for further follow-up

Where do we think this will take place?

- Specialist care settings will have to take the lead in the follow-up of patients with a high level of fibrosis who may later develop HCC
- Research departments will also have to support follow-up
- Certain patients, such as those with psychological needs or addictions, will be able to move from hepatology to other areas of specialist care for follow-up

How do we think it will happen?

- Patient databases are key to monitoring long-term outcomes
- Specialists will play a role in mitigating complications after treatment
- Patient groups can help to provide long-term psychosocial support to patients after treatment
- Psychological support may also be needed to help patients adapt to a new lifestyle after being cured of HCV

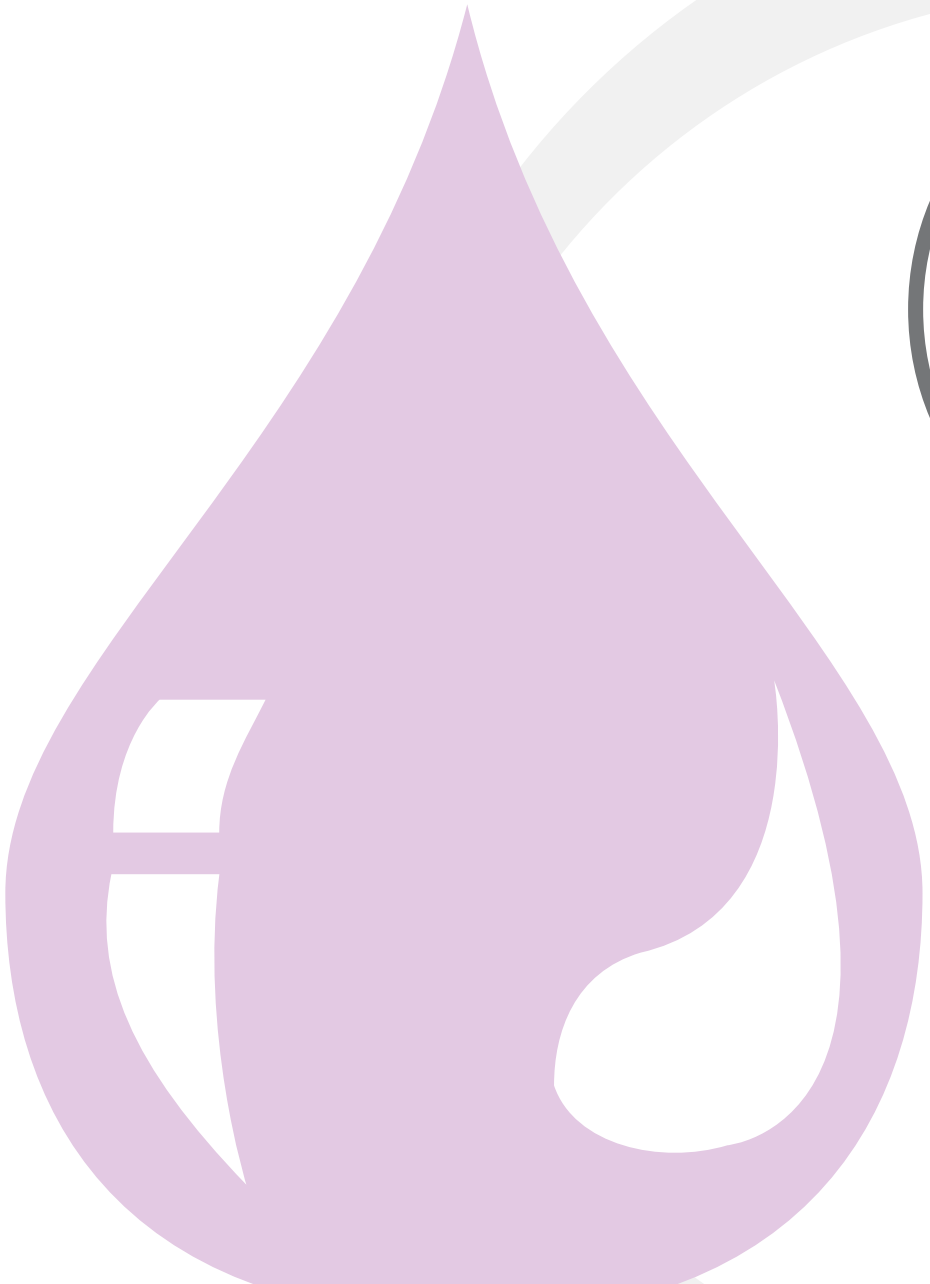
What do HCV experts think?

> The new treatments make it easier to manage patients – the rate of treatment failure is much lower.
>
> ***Hepatologist, New Cairo Viral Hepatitis Treatment Centre, Egypt***

> Once patients are cured of Hepatitis they become ready for new treatments – follow-up care can then focus on curing them of addiction.
>
> ***Hepatologist, ZNA Hospital, Belgium***

> We are trying to focus on a change from just curing to caring for the patient and helping with all the surrounding issues such as lifestyle changes, addiction, etc.
>
> ***Hepatologist, Karolinska University Hospital, Sweden***

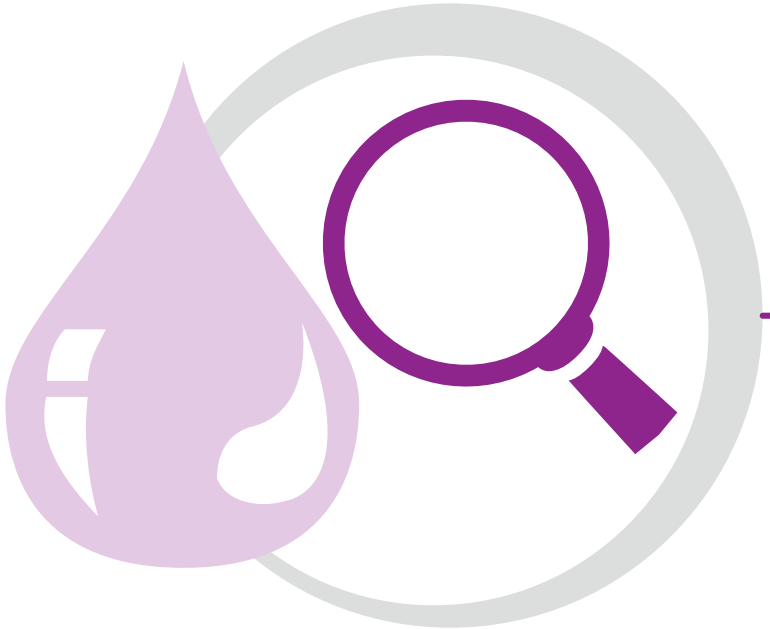
Main contents page



OUR FINDINGS:
Detailed interventions that display the principles of good care along the patient pathway

GBL/HCV/0216/0226(1)

During our visits we identified a series of interventions that align with our model of good care along the patient pathway



Principles of good HCV care

- Based on our site visits, we have outlined the universal principles of good care along each stage of the patient pathway

The future of HCV care

- We also investigated the future of HCV care, taking into consideration the evolution of treatments, with the transition from interferon-based to all oral regimens having a significant impact on the way care is delivered

Detailed interventions

- We observed forward-thinking interventions which are already addressing the changing paradigm of care with the introduction of DAAs
- We have aligned these interventions to the different stages of the patient pathway to highlight where they might be most effective

Site detailed specifications

- In addition to the above findings, we have also produced specifications for each centre interviewed during this project

Each intervention has been mapped to a pathway stage (1/2)

PREVENTION AND AWARENESS

- **Workplace awareness workshops** to help reduce infection rates
- **Educational community visits** to help raise awareness in high-risk populations
- **Work with barber shops** to ensure equipment is sterilised, hence reducing transmission rates

DIAGNOSIS

- **One-stop approach** to allow patients to have all the required HCV tests in one day, reducing hospital visits and accelerating diagnosis
- **Professional education** to raise awareness amongst health care providers and increase diagnosis and referral rates
- **Screening programmes** to target high-risk communities, helping diagnose people with HCV and treat them earlier

LINKAGE TO CARE

- **Managed care networks** to integrate care delivery across multiple providers
- **Hub-and-spoke networks** in which tertiary/quaternary centres collaborate with secondary and primary care to organise referral as well as clinical management of patients
- **National networks** are a country-wide approach to tackling Hepatitis C
- **Community-based clinics** to provide care closer to hard-to-reach patient segments
- **Drug and alcohol services** are able to access and refer the high drug-injecting population that is HCV positive
- **Prison care** to provide on-site diagnosis and treatment for this high risk population
- **Work with dialysis centres** to help reduce infection rates
- **Work with sex workers** to screen and identify potentially infected individuals, reducing the risk of transmission

Each intervention has been mapped to a pathway stage (2/2)

CLINICAL MANAGEMENT

- **Nurse-led clinics** to improve patient access to treatment and to support physicians
- **Use of telemedicine** to provide remote access to HCV care for populations that struggle to access tertiary centres
- **The use of MDTs** to treat patients holistically and improve coordination of care
- **Specialist HCV nurses** shift the burden of care away from doctors, increasing a centre's capacity to treat patients
- **Expanding the pharmacist's role** to take on more clinical and prescribing responsibilities
- **Community pharmacists** to play a more active role in the management of HCV patients
- **Patient database(s)** for research purposes and to track patient information and outcomes
- **Hospital information systems** to allow coordinated access to patient information
- **Mobile apps** to support both HCPs and patients

FOLLOW-UP AND MANAGEMENT OF COMORBIDITIES

- **Use of patient associations** to provide extra support to patients and HCPs
- **Psychosocial support** to help prevent reinfection and ensure treatment adherence
- **Research teams** to support the development of new treatments and to help monitor results

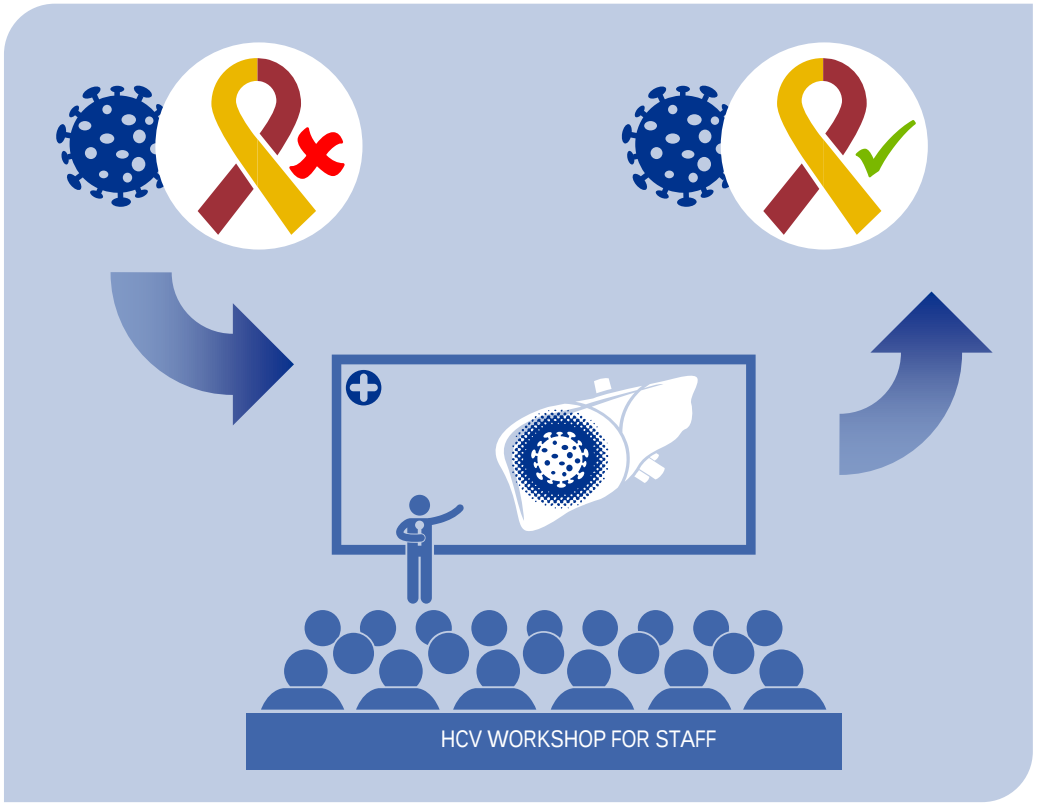
Workplace awareness sessions increase knowledge amongst the general population

WHY ARE WORKPLACE OUTREACH PROGRAMMES IMPORTANT?

- Much of the populace has a low awareness of HCV. Holding workplace awareness session is an effective way of reaching out to people who may be asymptomatic and would benefit from an increased awareness of HCV

WHERE HAVE WE OBSERVED SUCH AN INITIATIVE?

1 **National Okayama University Hospital, JAPAN**



The National Okayama University Hospital runs workplace awareness sessions

1

National Okayama University Hospital, JAPAN

Overview

Approximately 1.5 to 2 million Japanese are infected with HCV. It is the fourth leading cause of death amongst Japanese men, and the fifth amongst women, as well as being the leading cause of liver cancer[1]

The HCV team believes that it is important to reach people with a low awareness of HCV. Therefore, they visit not only high risk groups but also companies where ordinary citizens work

The HCV team delivers a presentation related to all liver diseases and conditions (e.g. alcoholism, obesity, etc.) which includes information on HCV

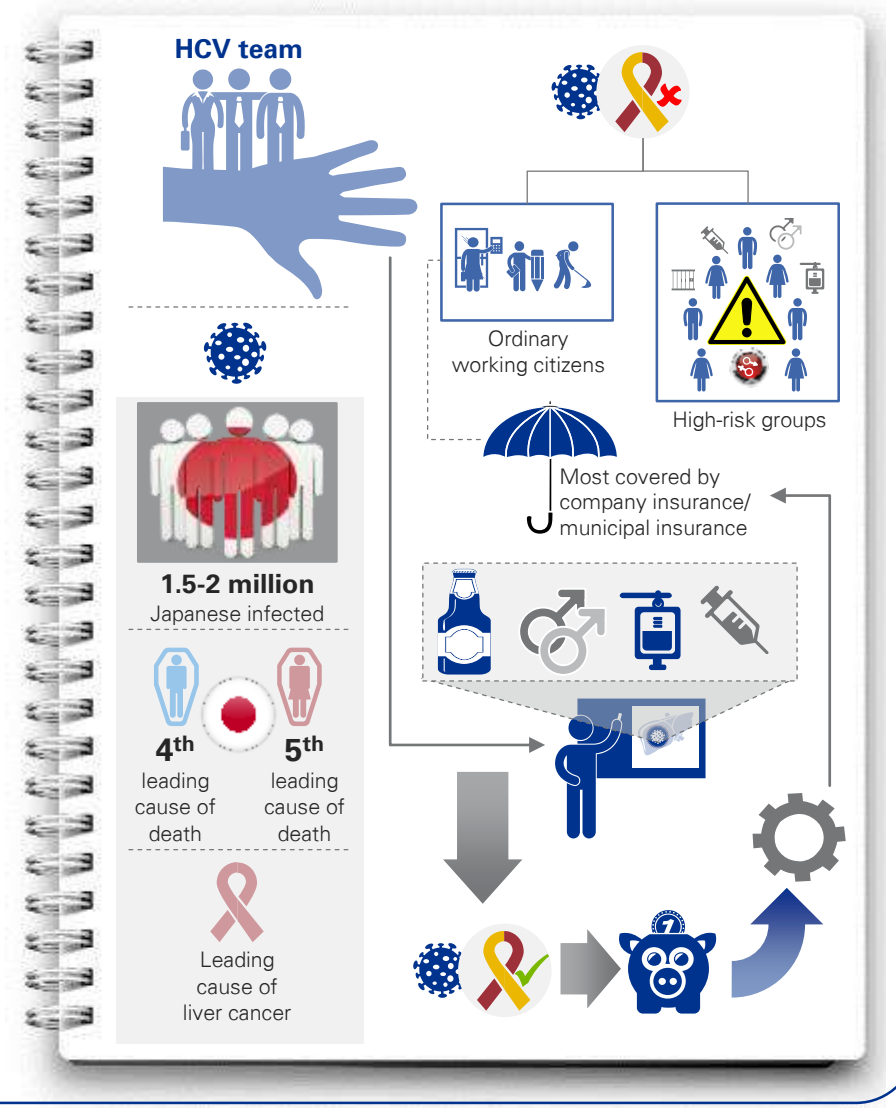
In Japan, most employees are covered by their company's health insurance scheme, and citizens aged 65 and over are covered by insurance that is managed by each municipality. The insurance covers 70% (90% for elderly people) of the national tariff

What did the intervention entail?

- The HCV team have been visiting companies and other work places to provide information on liver diseases and HCV examinations once or twice a year since autumn 2014
- The HCV team also held an event with 300 participants at a neighbouring large shopping mall with cooperation of the local government in August 2014

What is the impact?

- Increases awareness about HCV amongst the general population and encourages examination and diagnosis
- Reaches people who are not usually targeted by outreach programmes but may still be infected with HCV
- Potential cost savings as a result of early detection and treatment, preventing the need for lengthy and expensive management of disease complications



Sources: 1. http://hcvadvocate.org/hepatitis/factsheets_pdf/HCAW_Japan.pdf 2. KPMG interviews

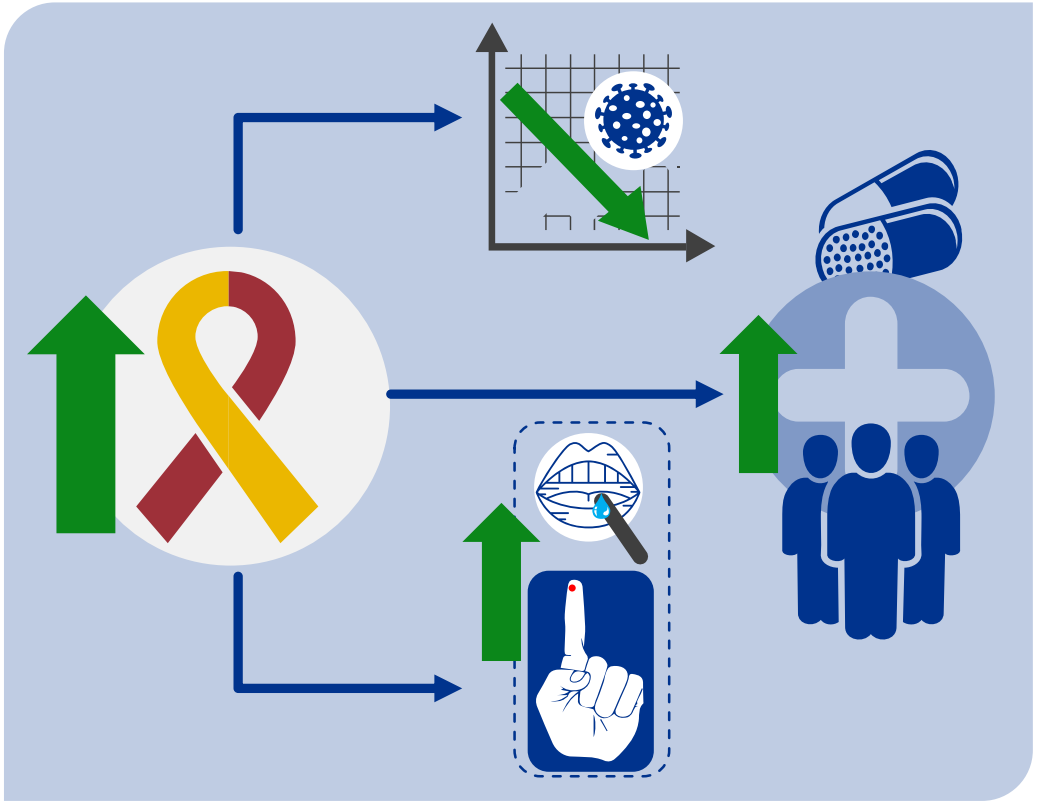
Community visits raise awareness and reduce infection rates

WHY VISIT COMMUNITIES?

- Particular demographics and communities can have a low awareness and high prevalence of HCV. Visiting these groups allows HCPs to better educate people about Hepatitis C and ways of reducing the chances of infection
- Running awareness activities in the community makes it easier to reach groups who might be unwilling or unable to proactively seek information and medical care themselves. The impact is twofold: increased awareness helps to limit the spread of the virus, whilst also encouraging people to get tested and treated, reducing the prevalence of infection

WHERE HAVE WE OBSERVED SUCH AN INITIATIVE?

1 **Izmir Tepecik Education and Research Hospital, TURKEY**



The Tepecik team fights infection by teaching good hygiene practice

1

IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

Overview

The Tepecik team runs educational sessions in local schools to help children understand how good hygiene practices can prevent the spread of disease, including Hepatitis C. They particularly focus on visiting schools in slums and gypsy communities, where HCV is more prevalent and good hygiene practices are a pressing issue. Although the centre doesn't treat paediatric patients, it recognises that educating children is an important part of preventing the spread of the disease

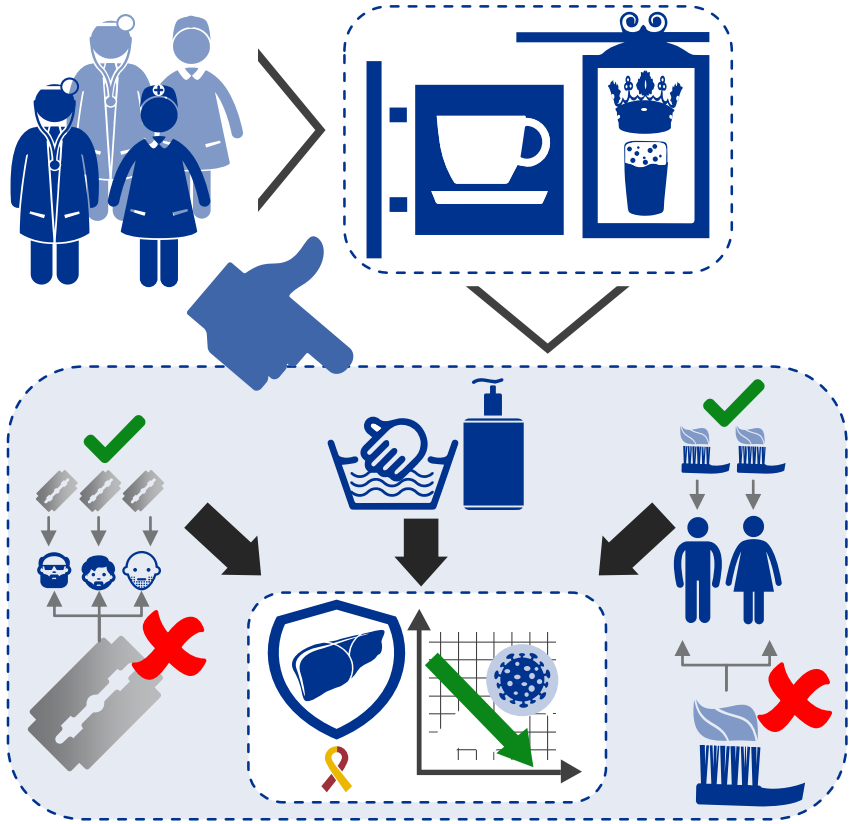
As well as working in schools, HCPs speak to people in the community, visiting cafés, bars, and speaking to people in the street to help raise awareness about HCV

What is the objective?

- The aim is to improve awareness of HCV and simple hygiene measures that can be taken to help limit transition of the disease. The ultimate objective is to reduce infection by encouraging better hygiene in the community

How does the outreach initiative work?

- Staff from Tepecik visit local primary and middle schools where they run short educational workshops
- The staff make use of theatre to help reinforce the messages. The actors are all HCPs apart from one professional actor who gives up their time voluntarily
- The school initiative has received funding for its work from a soap company and the local municipality
- HCPs often make first contact with senior figures in the community, such as elders, teachers and local doctors, and use these contacts to gain influence and trust amongst the people
- One-on-one conversations are held with mothers about good hygiene practices
- Staff also conduct public questionnaires in the street and in cafés, asking people questions to help identify those at risk of infection. Questions include asking if they visit a dentist or barber, or share toothbrushes and razors with others



Source: 1. KPMG Interviews

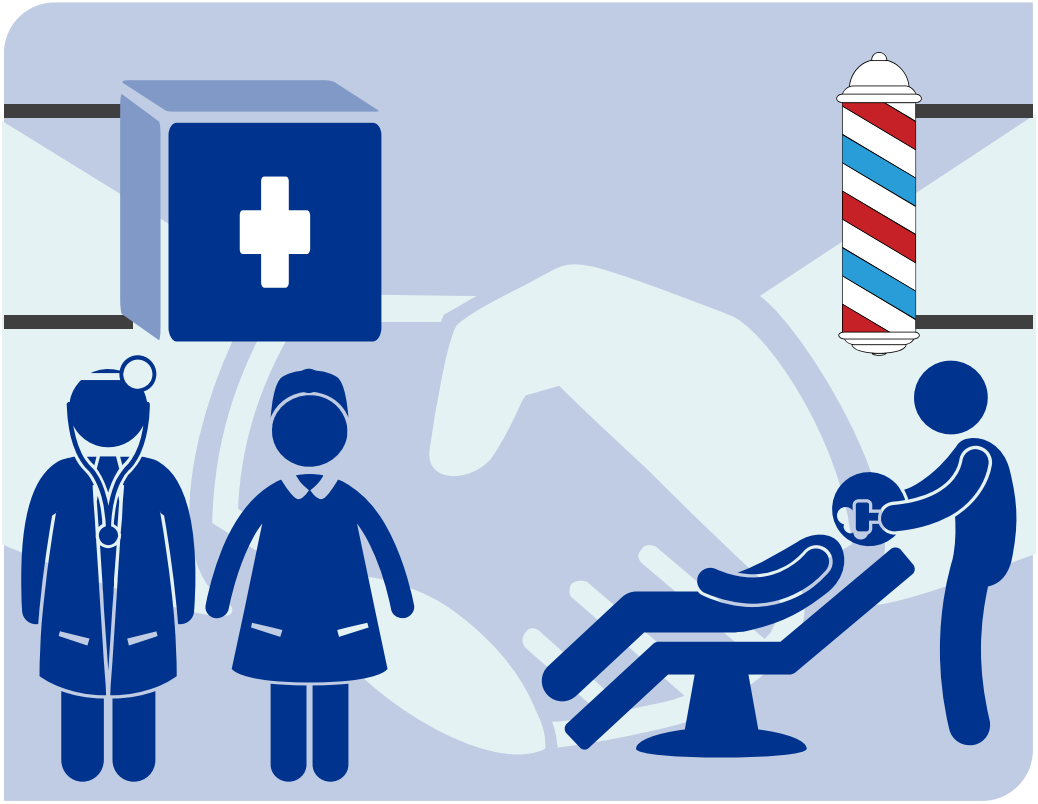
Educating barbers about sterilising equipment can reduce infection rates

WHY WORK WITH BARBER SHOPS?

- Studies have shown that both employees and customers of barber shops are at risk of HCV infection. Educating barbers on the cheapest and most convenient ways to sterilise their equipment is hoped to reduce the transmission rates in barber shops

WHERE HAVE WE OBSERVED SUCH AN INITIATIVE?

1. **Izmir Tepecik Education and Research Hospital, TURKEY**



Working with barber shops raises HCV awareness in the profession

1

IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

Overview

Studies have shown that customers and employees of barber shops are at risk of certain infectious diseases – such as Hepatitis C – if necessary care is not taken with personal hygiene and sterilisation of work equipment, such as razors.[2] Some may use the same razor for multiple customers in order to save money, which increases the risk of transmitting a blood borne virus such as Hepatitis C

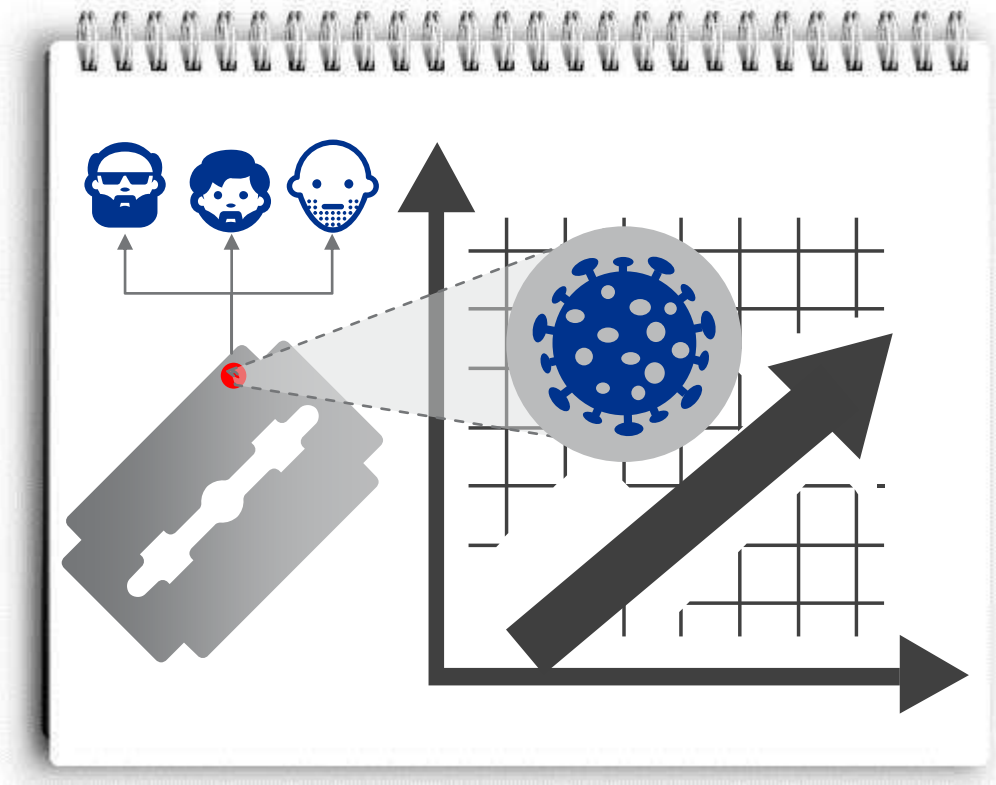
The Tepecik team contacted the chamber for barbers and hairdressers in Izmir and asked for volunteers who would be willing to receive training on Hepatitis B and C. The training involved teaching barbers the cheapest and fastest ways to sterilise their equipment

What is the objective?

- The aim of the education sessions is to improve awareness of Hepatitis B and C and ultimately reduce transmission of these viruses

How does the programme operate?

- This programme is run entirely on a voluntary basis and relies on barbershop workers contributing their time out of working hours – this sometimes means working late into the night
- The programme involves a 45-minute education session, and participants are also screened for Hepatitis B and C
- If any participants test positive they are referred to the clinic at Tepecik
- Certificates are given to barber shops to say that their establishment has been screened for HCV and that they have received hygiene training
- The programme was funded by the municipal council, donations, and a research fund



CONTINUED…

Sources: 1. KPMG Interviews 2. Kose, Sukran et, al., 'Seroprevalence of Hepatitis B and C Viruses: Awareness and Safe Practices of Hairdressers in Izmir – A Survey'

Training programmes are key to changing behaviours within the community

1

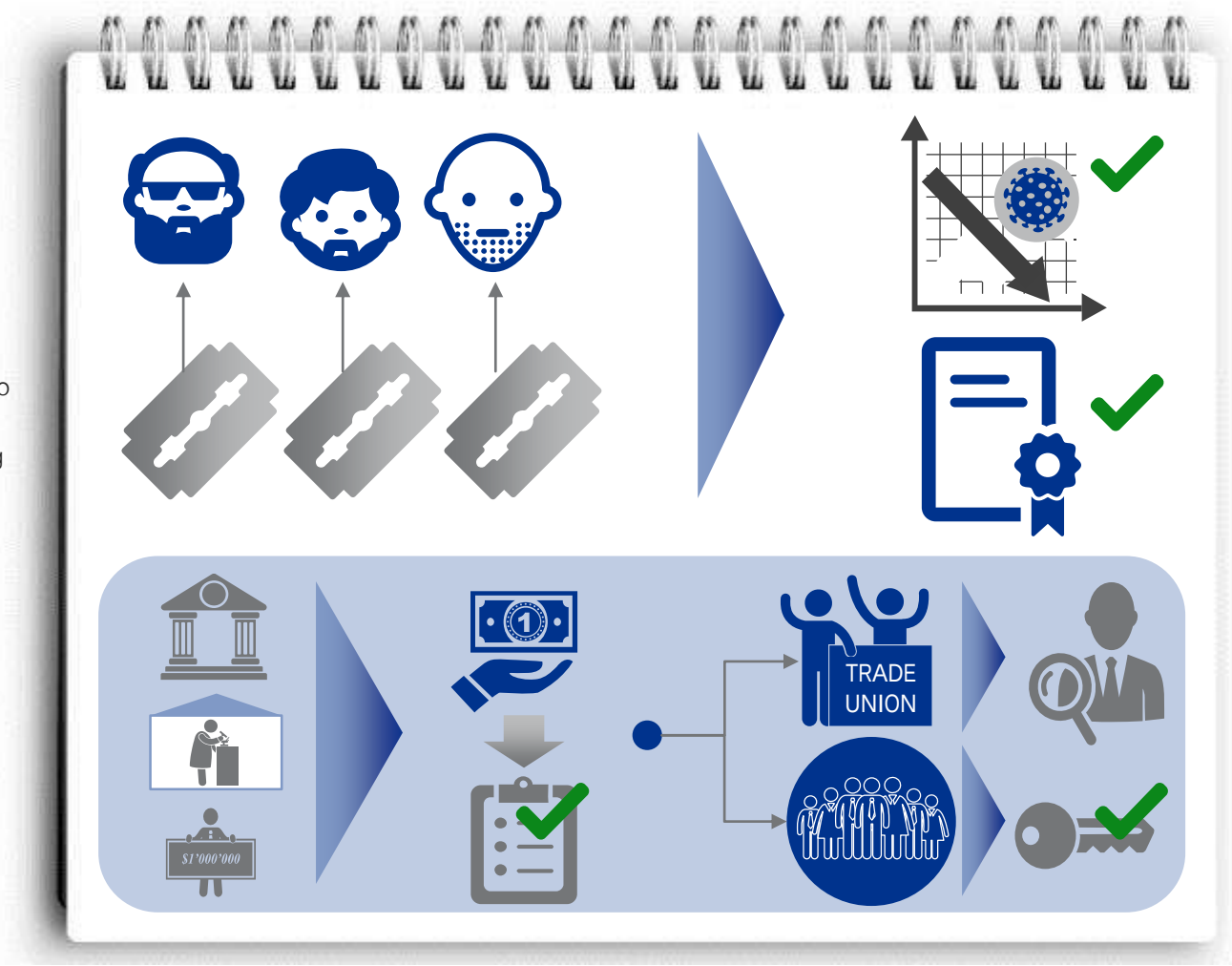
IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

What is the impact?

- The programme aims to encourage behavioural change with regards to unhealthy or unhygienic practices, thus reducing the spread of the HCV virus
- Accrediting barber shops with a high level of hygiene incentivises good practice, which minimises the transmission of HCV; the barber shops can use the certificates to advertise the high quality of their services to customers

What are the steps to replicate this initiative?

- Funding from the government, research bodies and/or donations is key ensuring adequate funds are available to undertake such a programme
- Reaching out to trade associations can help with training and monitoring of employees in the industry
- Engaging with the local community is crucial as voluntary participation is a key success factor



Sources: 1. KPMG Interviews 2. Kose, Sukran et, al., 'Seroprevalence of Hepatitis B and C Viruses: Awareness and Safe Practices of Hairdressers in Izmir – A Survey'

‘One-stop’ clinics combine tests and accelerate diagnosis

WHAT IS THE ‘ONE-STOP’ CLINIC APPROACH?

- To confirm diagnosis and schedule follow-up visits quickly, as many HCV tests as possible (e.g. blood tests, elastography tests and sonographies) occur at one site and on the same day. This model may include an on-site elastography device and a hepatology-led ultrasound service
- Our interviews suggest that this reduces delays in diagnosis and is more convenient for patients

1

ERASMUS MEDICAL CENTRE, ROTTERDAM, NETHERLANDS

Overview:

- The one-stop model offers hepatology-led ultrasound and elastography services, along with any other required tests, on the same day

What are the objectives?

- To improve the efficiency and decrease delays in the diagnostic process
- To avoid delays that arise from liaising with the radiology unit for ultrasound

What is the impact?

- Reduces the number of patient visits to the outpatient clinic
- Allows the centre to see 1/3 more patients than before

Intervention replication tips?

- On-site elastography device that belongs to the department
- Six months of training for a hepatologist to learn how to use ultrasound to a suitable standard

2

GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Overview:

- When a patient arrives at the centre he or she can have all of his/her medical tests, including elastographies on the same site and the same day
- The Grenoble model works through increasing the responsibilities of the nurses to conduct blood tests, followed by elastography tests performed by the hepatologists

What is the objective?

- To reduce delays in diagnosis

What is the impact?

- Increases patient throughput
- Increases convenience for patients

Intervention replication tips?

- Increase the responsibilities of nurses so they are able to carry out more tests such as blood tests and ultimately also elastography tests (as in other centres in France)

> We are trying to convince other people to follow the one-stop shop approach.
>
> ***Gastroenterologist/Hepatologist, Erasmus MC***

> When the patient arrives for a consultation, all the tests occur at the same time and in the same place.
>
> ***Gastroenterologist/Hepatologist, Grenoble University Hospital***

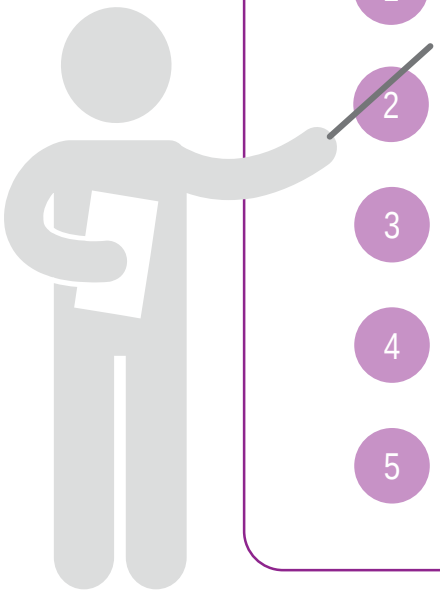
Source: 1. KPMG Interviews

Professional education is key to increasing referrals

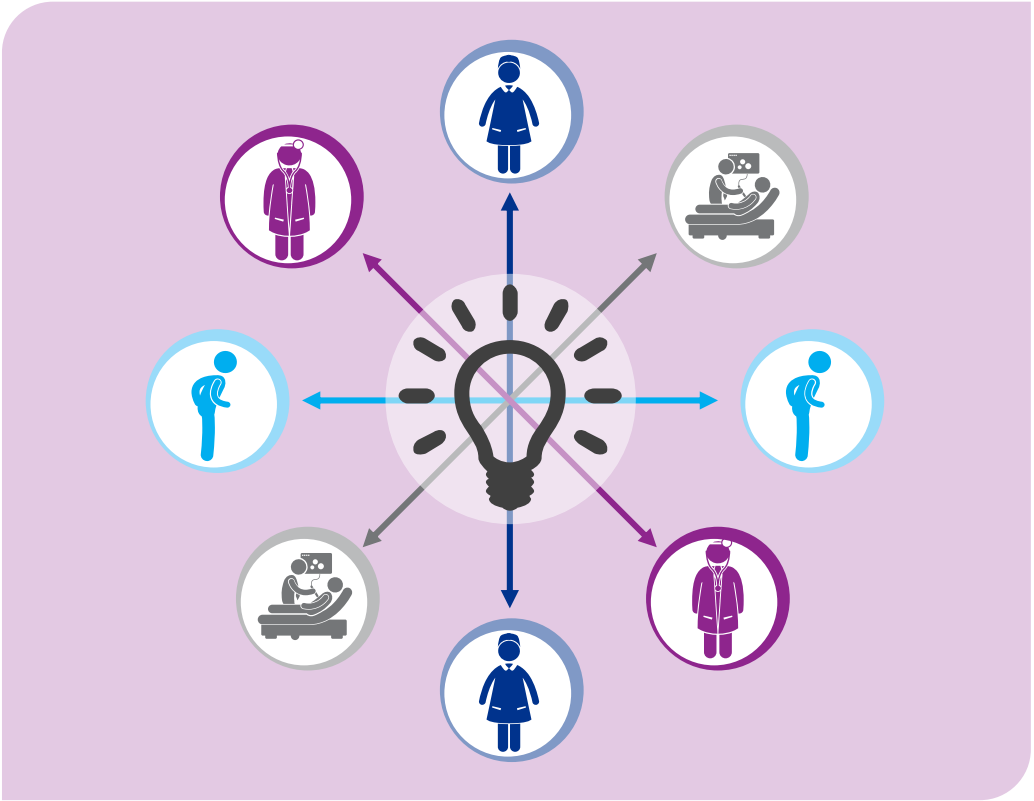
WHAT EXAMPLES ARE THERE OF PROFESSIONAL EDUCATION MODELS?

- Professional education from specialists to GPs helps to improve awareness of Hepatitis C
- Professional education can involve conferences to facilitate knowledge exchange or the development of protocols that serve as guides in the disease area
- The aim is to increase rates of diagnosis and referral from primary care

WHERE HAVE WE OBSERVED SUCH INITIATIVES?



1. **Erasmus Medical Centre, Rotterdam, NETHERLANDS**
2. **Puerta de Hierro Hospital, Madrid, SPAIN**
3. **Ninewells Hospital, Dundee, SCOTLAND**
4. **Papa Giovanni XXIII, Bergamo, ITALY**
5. **Karolinska University Hospital, Stockholm, SWEDEN**



Rotterdam and Madrid teams provide professional education sessions

1 ERASMUS MEDICAL CENTRE, ROTTERDAM, NETHERLANDS

Overview:

- The team are conducting research and professional education to show that they are 'at the frontline' of the field
- Through the Virology Education Programme[2], the team organises a series of meetings in various regions of the Netherlands at which speakers give their views on a range of HCV topics

What is the rationale for peer education?

- Less experienced physicians may lack confidence in delivering new treatments with which they are less familiar

How does a typical agenda for the meeting look?

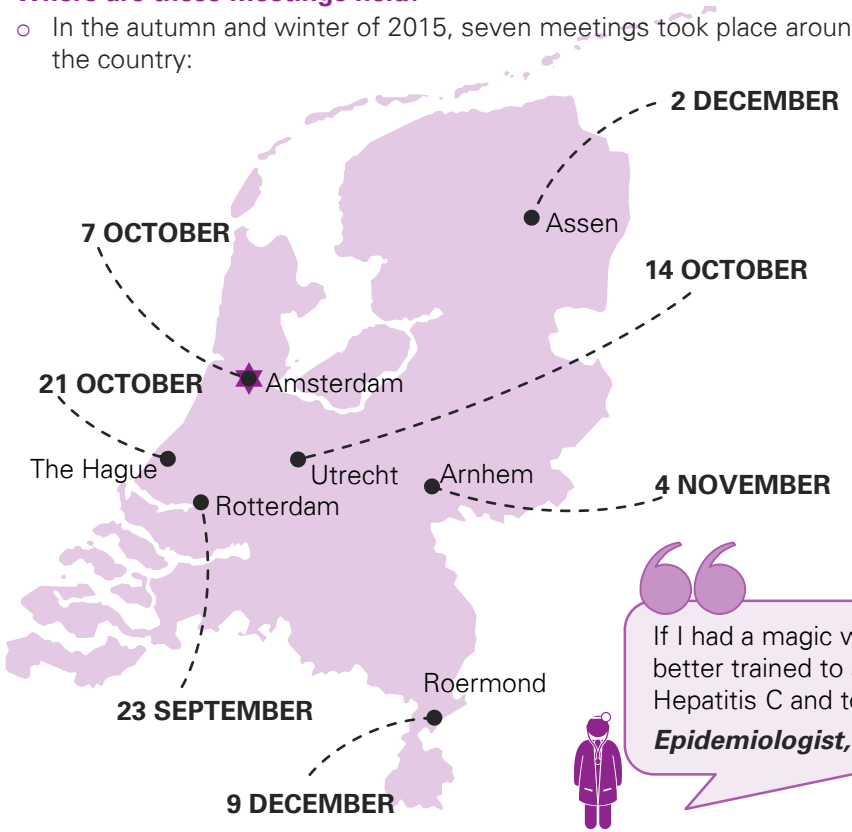
- Although the key note speakers may vary from one meeting to another, the agenda of the sessions remains the same throughout the whole season
- In the autumn and winter of 2015, the agenda was as follows:
  1) Overview of the Hepatitis C market: new therapies and supporting data sets
  2) Treatment with new Hepatitis C therapies: what can we learn from other countries?
  3) Patient case studies

What is the key success factor?

- The team collaborates with local centres when they hold the educational evenings which widens the initiative's focus beyond Rotterdam
- As a result, engagement at a national level is strong

Where are these meetings held?

- In the autumn and winter of 2015, seven meetings took place around the country:



> If I had a magic wand, GPs would all be better trained to spot early signs of Hepatitis C and to refer for tests.
>
> ***Epidemiologist, Public Health Service***

Sources: 1. KPMG Interviews 2. www.virology-education.nl/

Rotterdam and Madrid teams provide professional education sessions

2

PUERTA DE HIERRO, MADRID, SPAIN

Overview:

- A hepatologist from the liver unit holds a weekly clinic at a local primary care centre to consult with patients who are potentially at risk of Hepatitis C infection
- The local GP has the phone number of the hospital HCV nurses and is able to reach out rapidly for specialist advice

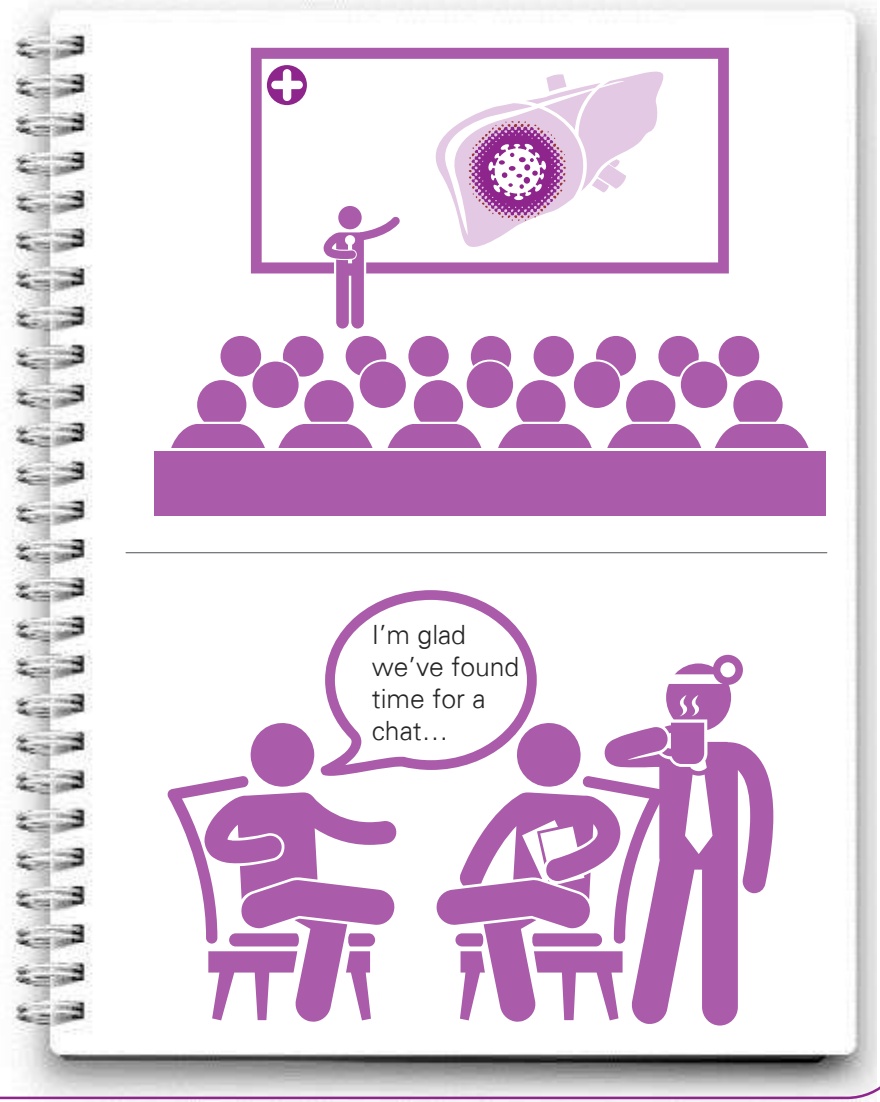
What role does professional education play in the GP/specialist relationship?

- There are annual symposia organised by the gastroenterology team to educate local GPs. 40-50 GPs come to the hospital for these group meetings
- Throughout the rest of the year there are more informal meetings between specialists and primary care physicians to discuss Hepatitis B and C and any new procedures

What is the impact?

- Speeds up patient referral to the specialist centre
- Increases the level of communication between the specialist centre and primary care physicians
- Gives specialists a regular opportunity to share information on Hepatitis C with GPs who may be unfamiliar with the disease
- Improves awareness of Hepatitis C to increase screening and diagnosis for a population that remains largely undiagnosed

> The annual symposia mean that we do not need to be refreshed on Hepatitis C.
>
> ***GP, Valle de Oliva***



Sources: 1. KPMG Interviews 2. www.virology-education.nl/

Ninewells collaborates with primary care physicians to identify patients

3

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Overview

In the catchment area for Ninewells Hospital, 2,837 people were diagnosed with HCV in 2013. However prevalence studies suggested that the actual number of individuals with HCV was approximately 4,500

Dundee Community Health Partnership (CHP) in collaboration with the Tayside Blood Bourne Virus Managed Clinical Network (MCN) introduced a project to identify patients in GP practices with a diagnosis of Hepatitis C. The project aimed to encourage appropriate investigation, management and referral of these patients

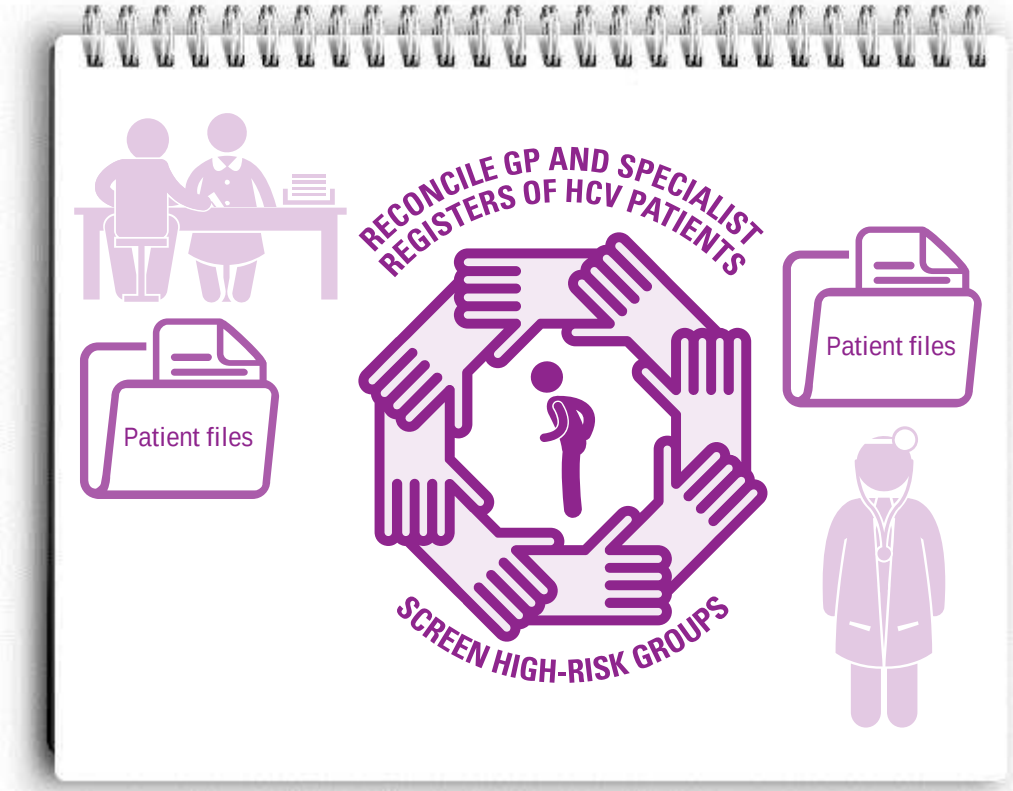
What did the project entail?

Phase I

- The first phase of the project ran from August 2013 to March 2014 and involved 24 of the 26 GP practices in Dundee
- GP practices were provided with BBV MCN register information on Hepatitis C patients and were asked to compare this with their own registers, updating the latter where necessary. The MCN data included information on patients who had never been referred to the specialist service, patients who had been referred but had never attended or had attended but were lost to follow-up, and those patients who had an unknown PCR (polymerase chain reaction) status

Phase II

- The next stage focussed on the screening of high-risk communities – men who have sex with men, IV drug users, and patients from endemic regions (sub-Saharan Africa, southeast Asia, China)
- A 'fast-track' card was distributed in various community settings to allow patients to come in, show the card and get an appointment with the practice nurse for testing



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Sources: 1. KPMG Interviews 2. Improving outcomes for patients with Blood Borne Virus in Dundee, Dr Rod Fleming, Dundee CHP Clinical Lead BBV

The collaboration has identified a large number of infected patients

3 NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

What is the impact?

Phase I

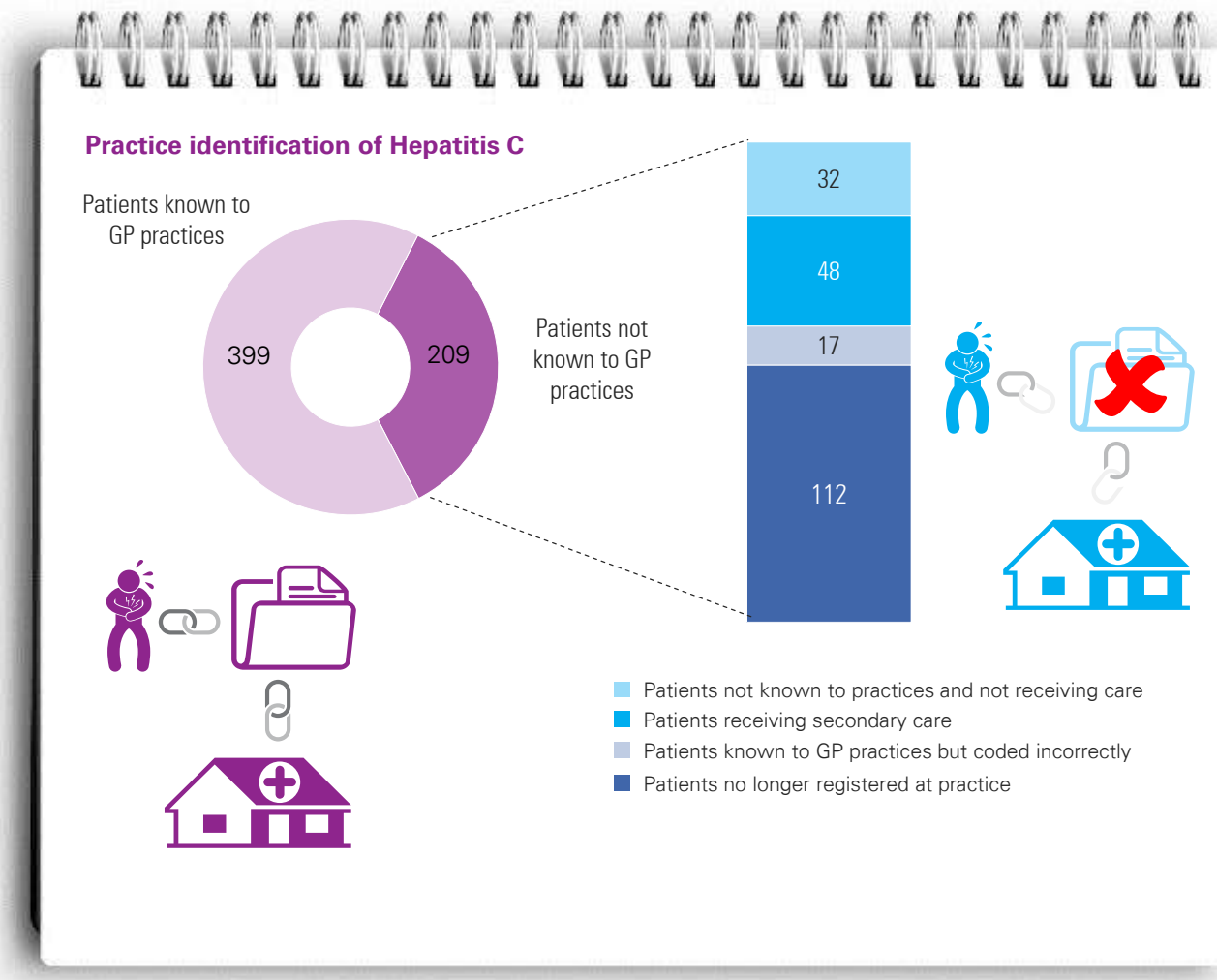
- Reporting practices were aware of a total of 390 patients with Hepatitis C, compared with the 599 known to be on the MCN register, a pick-up rate of 66%[2]
- Of the 209 patients not known to practices:
  - 32 were patients who were no longer registered at that practice
  - 48 were known to practices, but had been given a diagnosis code that was not on an 'approved list' of codes indicating the patient's eligibility to be placed on the register
  - 17 of the patients not recorded on practice registers were known to secondary care and were receiving active treatment
  - The remaining 112 patients on the MCN register were not known to practices nor receiving specialist care

Phase II

- There was very low usage of the fast-track cards by patients. One GP suggested this may have been due to the fear of being tested

What were the challenges?

- In order to reach a high rate of commitment, GPs had to be incentivised to participate in the programme



Sources: 1. KPMG Interviews 2. Improving outcomes for patients with Blood Borne Virus in Dundee, Dr Rod Fleming, Dundee CHP Clinical Lead BBV

Papa Giovanni XXIII Hospital's network links primary and specialist care

4

PAPA GIOVANNI XXIII, BERGAMO

Overview:

- In the Lombardy region, a network of primary care physicians was formed by Papa Giovanni XXIII hospital
- This network is convened annually to present the region's most complicated cases with the support of their corresponding specialist. The specialist can come from any hospital in the region

What did the training programme for GPs involve?

- A total of 120 GPs participated in a training programme to identify cirrhotic patients and to refer them to hepatology centres in the region. The referral process and the patient outcomes were compared to those of patients referred from doctors in the same region prior to training, and to those referred by doctors in other regions without training
- The programme included the following components:
  - **Protocol for GPs:** The protocol included an algorithm for the management of all hepatology conditions including Hepatitis C
  - **Data collection:** Primary care physicians were asked to collect data on Hepatitis C which they shared with the Bergamo team. Approximately 400 of the 700 GPs in the area had electronic systems which allowed them to record the data directly

What is the impact?

- Increased identification of cirrhotic patients and accelerated the referral process
- Increased five-year survival of hepatocellular carcinoma (HCC) patients from 20% to 40% (although the study focussed primarily on HCC, a significant number of patients had HCV)

> We know now to focus on the patients with risk factors such as drug use and blood transfusions.
>
> ***GP, Lombardy***

Source: 1. KPMG Interviews

In Sweden, an online training portal incentivises doctors to learn about HCV

5

KAROLINSKA University Hospital, STOCKHOLM, SWEDEN

Overview:

- A web-based educational portal has been developed and launched in early 2016 to help teach GPs about Hepatitis C
- The website that hosts the portal has ~90,000 visits per month, giving the material an established platform
- The programme has been independently developed, with input from specialists including Dr Soo Aleman from the Karolinska

How does this work?

- GPs complete steps of the training portal to learn about Hepatitis C, when and how to test patients, and the new treatment options
- The programme is certified and doctors can earn 'points' that contribute to their professional development. This system will incentivise doctors to take part

What will be the impact?

- By increasing the GPs' knowledge about Hepatitis C, they will be better able to discuss the disease with patients
- This will lead to more testing, increased referral to specialist care, and more patients receiving treatment

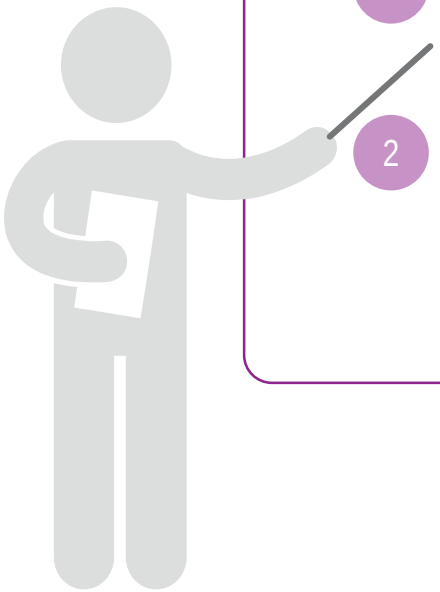
Sources: 1. KPMG Interviews 2. http://netdoktorpro.se/vad-vet-du-om-hepatit-c

HCV screening can occur in the community through outreach programmes

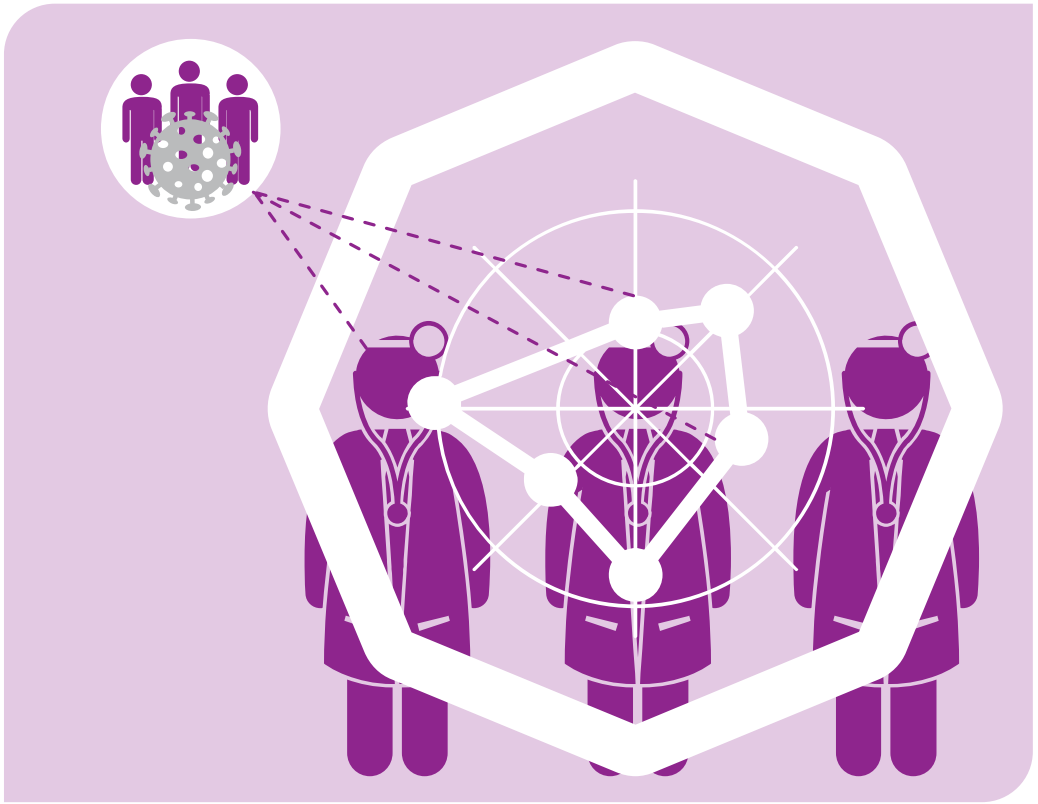
WHAT IS OUTREACH SCREENING?

- Outreach screening involves targeting high-risk groups with HCV services. Even in areas with very low HCV prevalence, certain groups – such as IV drug users and sex workers – can still have a substantial risk of infection. Outreach screening is a proactive approach to screening and educating high-risk individuals, and diagnosing people with the HCV virus so they can be treated earlier

WHERE HAVE WE OBSERVED SUCH MODELS?



1. **Prince of Wales Hospital, HONG KONG**
2. **Croatian Association for HIV and viral Hepatitis, CROATIA**



The Prince of Wales team targets former drug users via an outreach programme

1

PRINCE OF WALES HOSPITAL, HONG KONG

Overview

The team at Prince of Wales Hospital, together with the NGO Caritas Lok Heep Club, set up the 'New Life New Liver' programme in 2009 to provide outreach HCV screening services and education for high-risk individuals who might have contracted HCV through the sharing of needles

What was the rationale?

Although the prevalence of HCV in Hong Kong is low (~0.1%), for specific groups it can be much higher. Among IV drug users, prevalence is around 50%

As a result, the team at Prince of Wales felt they needed to target these high-risk groups, starting with a screening programme to identify HCV positive individuals

The team also hoped this programme would reinforce drug avoidance amongst the public

How does the programme work?

The team at Prince of Wales works with several NGOs, including Caritas:

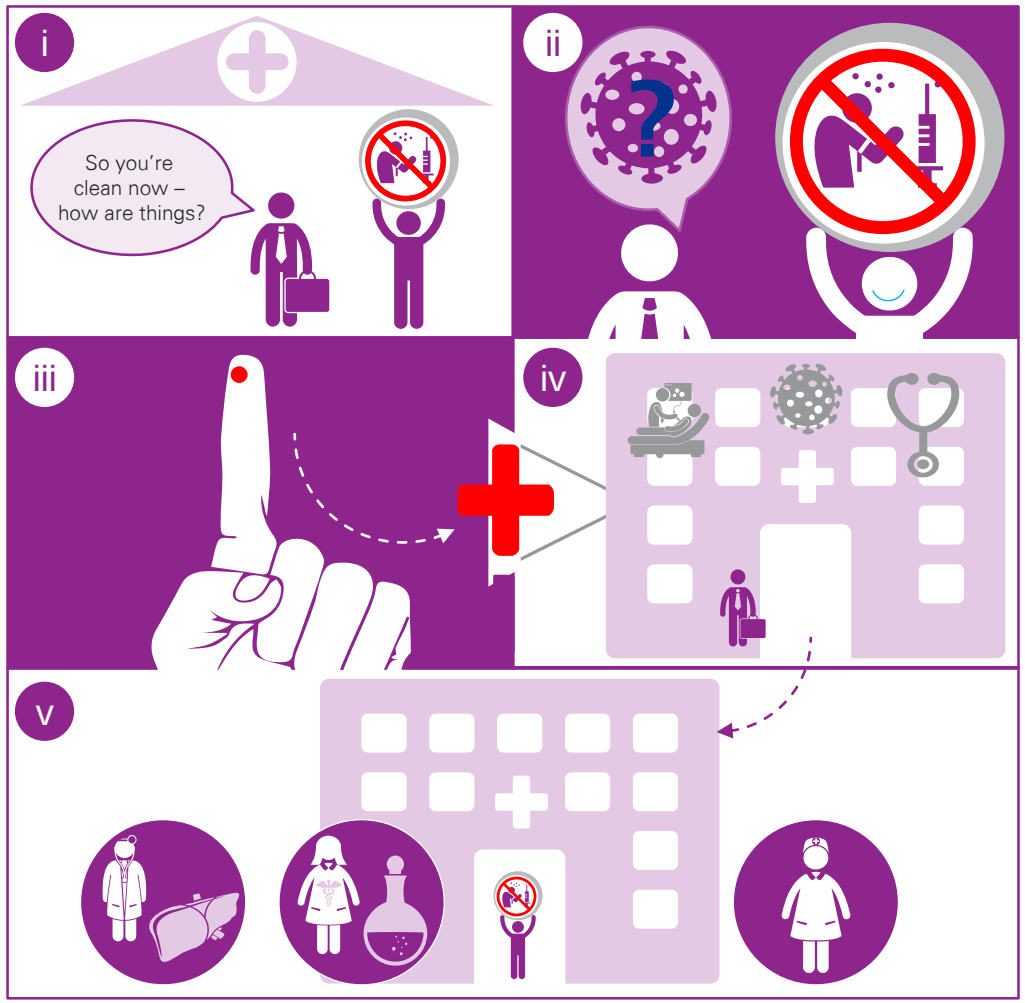
i) NGO social workers first check that their clients have not taken any drugs and/or have completed their methadone treatment for a minimum of one year

ii) If this is the case, they offer them testing for HCV

iii) HCV fingertip blood testing is then carried out during one of the health education sessions run by the Prince of Wales outreach team at one of the NGO's sites

iv) If the test comes back as positive, the NGO's social worker brings the client to the Prince of Wales Hospital for a full assessment. Several clients are brought at one time as the presence of familiar faces helps to put patients at ease

v) If the HCV infection is confirmed, the patients are referred to their local hospital for follow-up and/or treatment when possible



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Source: 1. KPMG Interviews

The programme has diagnosed 200 patients with Hepatitis C

1

PRINCE OF WALES HOSPITAL, HONG KONG

What is the impact?

Since the launch of the programme, around 50% of the IV drug users screened have been diagnosed with HCV – a total of approximately 200 patients. Among these, over 90% were unaware of the infection

Only 20% of them were willing/able to receive medical treatment. Many patients were not eligible for treatment either due to psychological issues, existing health conditions, reluctance to accept the side effects of interferon-based treatments, or a combination of the above factors

Where does the funding come from?

Most of the funding comes from the budgets of Caritas and the Prince of Wales Hospital, which is affiliated to the Chinese University of Hong Kong

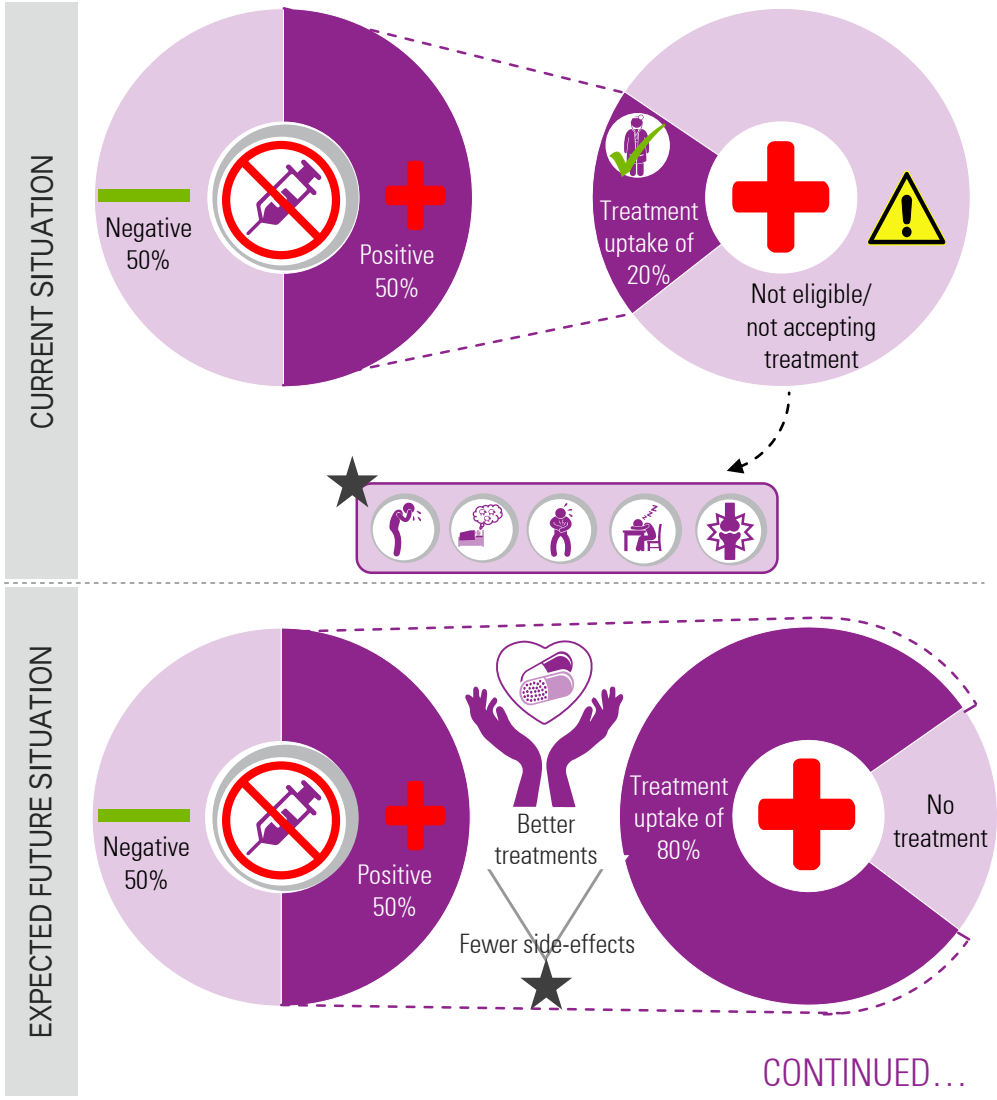
Regular blood tests in Hong Kong are usually reimbursed by the health system. However this is not the case for RNA and genotype tests. The programme receives additional funding from the pharmaceutical industry to provide fingertip blood testing and genotyping tests

What were the challenges?

The team at Prince of Wales feel they are more reactive than proactive in the recruitment of patients, due to the nature of the programme, since they rely on the social workers from the NGOs to initiate contact

To address this challenge, the HCV team are very proactive in the recruitment of NGOs so they can expand their catchment and recruit more patients. For instance, they now work with the Society of Rehabilitation and Crime Prevention

At the other end of the cycle, it proved to be difficult to get patients to come back to the hospital to discuss the results of their assessment and treatment options. Many of these patients were not willing to be seen regularly by doctors



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Source: 1. KPMG Interviews

When new DAAs become available, more patients will be treated

1

PRINCE OF WALES HOSPITAL, HONG KONG

What are the next steps?

The team at Prince of Wales estimates that the treatment uptake will increase from 20% to 80% due to the new all oral treatments

This increase is expected to occur once the treatments are reimbursed by the government as most patients come from disadvantaged backgrounds and cannot afford the interferon-free regimens

The team also wants to increase the awareness surrounding their programme by targeting other NGOs and patient associations in the hope they will be able to act as intermediaries and reach out to new Hepatitis C sufferers

Intervention replication tips?

A proactive approach is important in the recruitment of patients as they are unlikely to take the initiative regarding testing and treatment for HCV

To facilitate this, it is essential to convince first the organisations who are closely involved with patients such as NGOs and rehabilitation centres

All of us in the team are active and fight hard for the patients who are most in need

Programme coordinator, Prince of Wales Hospital

When we talk about outreach, we really need to reach out. You need to go to the NGOs, to the rehabilitation centres, and convince them that Hepatitis C needs to be treated

Hepatologist, Prince of Wales Hospital

When the doctors and nurses are very busy, I will run the elastography tests and spend time with the patients in the programme. They usually are very grateful for the care we give them and this is a very rewarding feeling

Programme coordinator, Prince of Wales Hospital

Source: 1. KPMG Interviews

‘Checkpoint Zagreb’ provides HCV and HIV tests to young Croatians

2

CAHIV, CROATIA

Overview

Checkpoint Zagreb is a health centre where young Croatians can get free, anonymous, and confidential advice and testing for HIV and HCV. Educational and support services are also available. The centre has been running since 2013 and is operated by the Croatian Association for HIV and viral Hepatitis (CAHVIV)

Although the centre operates independently of the Croatian health system, it has strong links with the Croatian Red Cross and the University Hospital for Infectious Diseases. This allows the centre to refer patients for further treatment and support when necessary

What was the rationale?

HCV (and HIV) is an issue that does not receive widespread attention in Croatia. There is a lot of stigma about the disease, and people are sometimes unwilling to discuss it or seek treatment with their regular healthcare provider. Checkpoint Zagreb was established to inform and test patients in a friendly, anonymous setting, with a particular focus on young people

WHO, CDC, and ECDC recommendations state that rapid screening in the community is the best approach to prevention and early diagnosis, and Checkpoint Zagreb was developed with this approach in mind

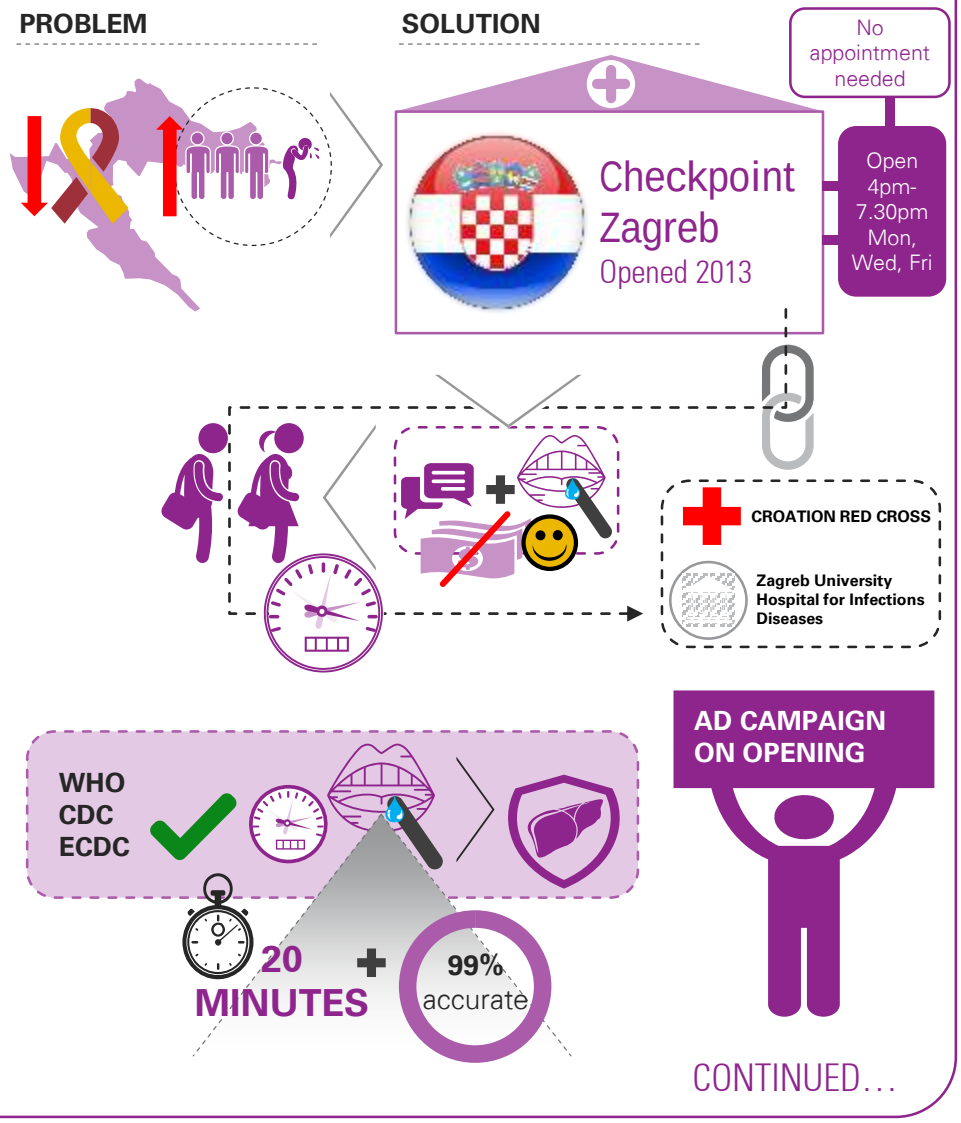
How does the programme work?

Checkpoint Zagreb is open from 4pm to 7.30pm every Monday, Wednesday, and Friday

Anyone wanting to receive advice or be tested can simply turn up on the day. Attendance at the centre is voluntary and is instigated by the patient

Tests are saliva-based, take 20 minutes to return a 99.9% accurate result, and anyone testing positive is provided with psychosocial support and referred to the Clinic for Infectious Diseases for further treatment

When the centre opened, an ad campaign was run, focussing on Zagreb universities and dormitories, with additional coverage in the media. Now the centre mostly relies on its website and social media platforms for exposure



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Sources: 1. KPMG Interviews 2. HUHIC activities report for 2013 http://huhiv.hr/wp-content/uploads/2014/01/HUHIV-activities-report_2013.pdf; 3. CAHIV 2014 activity report http://huhiv.hr/wp-content/uploads/2015/02/CAHIV-2014-Activity-Report.pdf; 4. Checkpoint Zagreb webpage http://huhiv.hr/checkpoint-eng/; Press release ‘Check Point Zagreb Opened’ http://huhiv.hr/check-point-zagreb-opened/

Since opening, 3,000 people have been tested for Hepatitis C

2

CAHIV, CROATIA

What is the impact?

Since opening in 2013, the centre has tested approximately 3,000 people for Hepatitis C, with 25 positive diagnoses. In its first year, the centre tested 1,002 people, with the number rising to 1,230 in 2014. Although this is a low pick-up rate, CAHIV's work helps to reassure visitors and increase awareness of HCV amongst the general public. The integration of Hepatitis testing into sexual health services also sets a good precedent

Counselling and educational sessions were given to 1,319 people in 2013, with this number increasing to 1,461 for 2014

Over 15,000 educational brochures and condoms have been handed out as part of campaigning activities

Although it is expensive to fund this type of project, it is worthwhile as the cost of treating a patient early in their disease cycle is significantly lower compared to someone in the late stages of infection, with more severe symptoms

How was the initiative funded?

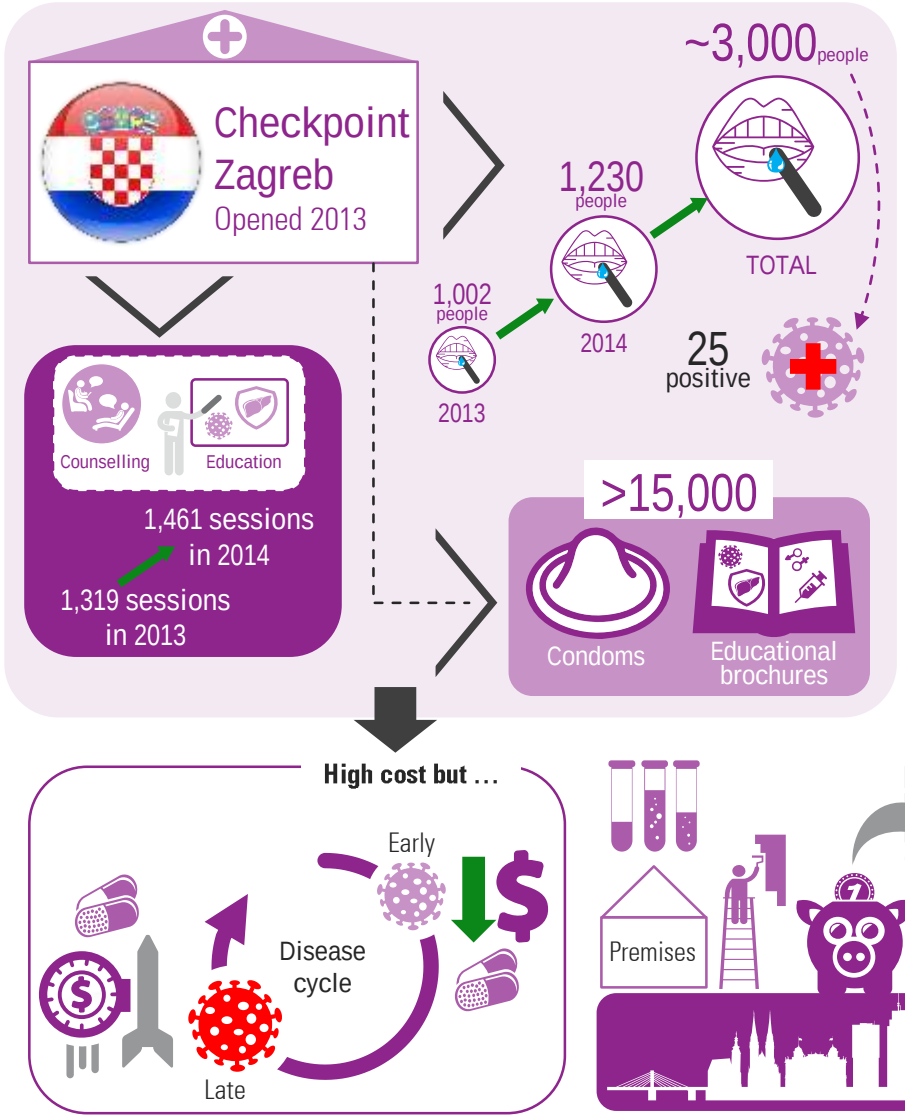
The physical space for the centre, along with 125,000 kuna (~£12,000) for renovation, furniture and equipment costs, were provided by the City of Zagreb

The City also provided an additional 200,000 kuna (~£19,000) for the purchase of 650 HIV detection tests and 650 HCV detection tests

What are the next steps?

In addition to testing for HCV and HIV, there are plans for the centre to begin offering tests for a wider range of sexually transmitted infections (STIs)

Through campaigns and publicity events, such as involvement with World Hepatitis Day, CAHIV hopes to continue to increase the number of people attending Checkpoint Zagreb



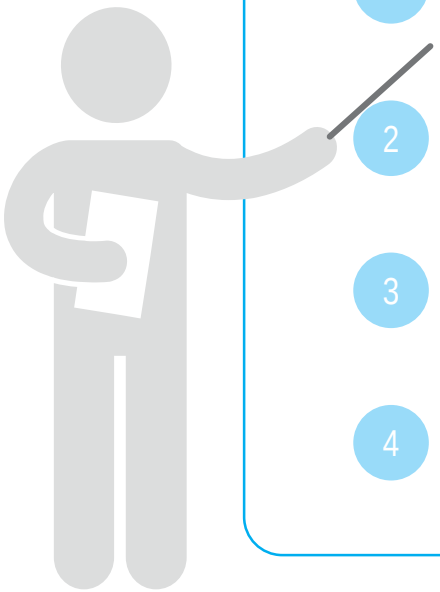
Sources: 1. KPMG Interviews 2. CAHIV activities report for 2013 http://huhiv.hr/wp-content/uploads/2014/01/HUHIV-activities-report_2013.pdf; 3. CAHIV 2014 activity report http://huhiv.hr/wp-content/uploads/2015/02/CAHIV-2014-Activity-Report.pdf; 4. Checkpoint Zagreb webpage http://huhiv.hr/checkpoint-eng/; Press release 'Check Point Zagreb Opened' http://huhiv.hr/check-point-zagreb-opened/

Managed care networks integrate care delivery across multiple providers

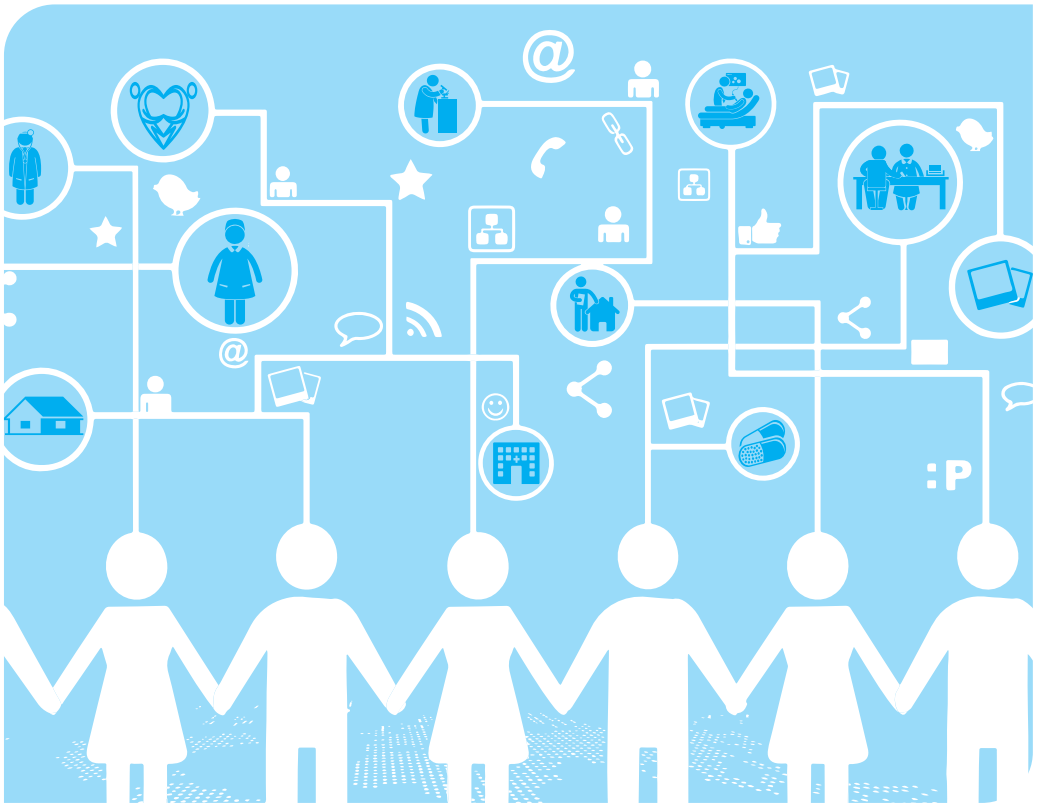
WHAT IS A MANAGED CARE NETWORK?

- Managed care networks involve the integration of health and social care across primary, secondary and tertiary settings, joining up multiple agencies that all directly interact with patients affected by HCV
- The underlying principle of the managed care approach is that community-based services, such as drug services or pharmacies, can have better access to patients than primary care physicians and so can provide a 'wrap-round service'

WHERE HAVE WE OBSERVED SUCH MODELS?



1. **Grenoble University Hospital, FRANCE**
2. **Ninewells Hospital, Dundee, SCOTLAND**
3. **ZNA Stuivenberg, Antwerp, BELGIUM**
4. **Institute of Liver Studies, Kings College Hospital, London, ENGLAND**



The Prométhée network provides increased coordination, psychosocial support and education

1

GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Overview

The **Réseau-Ville Hôpital Prométhée Alpes** is a multi-agency network that operates throughout the region of southern Isère. The network was founded in 1999 by healthcare professionals involved in the management of Hepatitis B and C patients

The network works to optimise the medical and psychological management of these patients, as well as liver transplant patients[2]

Key components of the network include the following:

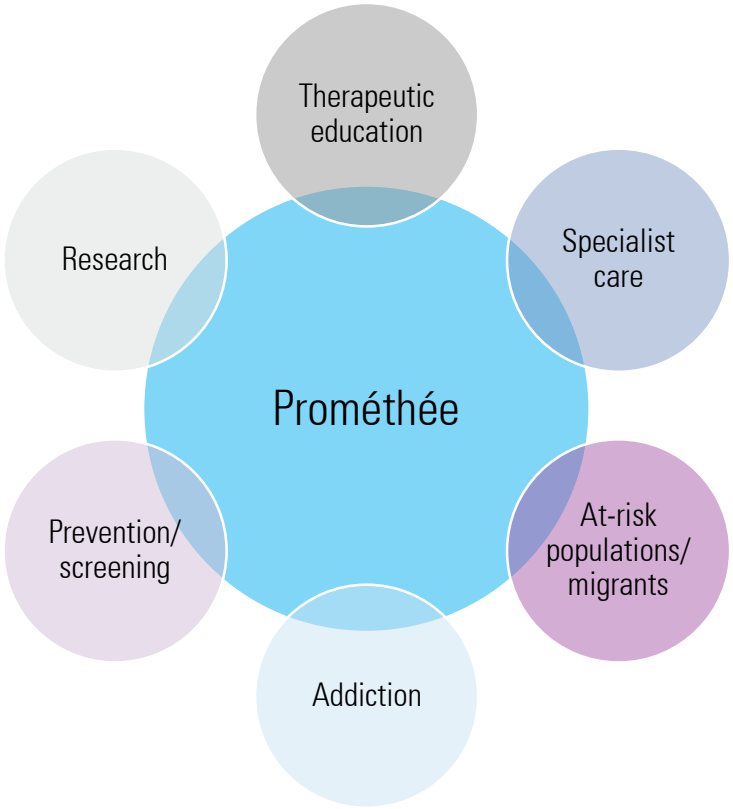
- The president of Prométhée is Dr. Marie-Noelle Hilleret, a hepatologist based at Grenoble University Hospital
- The network is based on the two principles of 1) therapeutic education, and 2) prevention
- The network includes five staff members: a dedicated coordinator, psychologist, nurse, project manager and administrative assistant

What are the objectives?

- Improve the organisation of screening programmes in the region
- Put in place prevention strategies to stop the spread of the virus
- Give all infected patients access to psychological, medical and social support
- Increase patient awareness and offer them therapeutic education to ensure the success of treatment
- Improve coordination between health and social care professionals to respond better to the needs of patients

How are they achieved?

- Coordination of the network
- Initiatives to promote prevention and increase screening for Hepatitis C
- Educational activities to better understand the disease, treatment, and to adapt the treatments to the individual needs of the patient
- Psychological support through individual consultations or group therapy
- Creation of tools and reference guides for the public and HCPs – patients and their families receive newsletters whilst HCPs are provided with educational materials (e.g. on screening)
- Research activity



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Sources: 1. KPMG Interviews 2. Prométhée network website: https://www.hepatites-promethee.org/3. Prométhée Progress Report 2014 https://www.hepatites-promethee.org/doc/File/RA%20Prom%C3%A9th%C3%A9e%202014%20version%20finale.pdf

The network links organisations that work with patients and at-risk populations

1

GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Who is involved?

The team includes care providers from health and social care services, working together to support patients with Hepatitis

The network covers the following domains in Hepatitis C care:

- Therapeutic education
- Specialist care
- Vulnerable populations i.e. migrants
- Addiction
- Prevention/screening
- Research

Some of the main agencies involved outside of the university hospital are:

- CAARUD (Support centre for the reduction of drug-related harm)
- CADA (asylum seekers' centre)
- ROMS Action (association working with the Roma community)

Who are the target populations?

- At-risk populations – migrants, drug users and prisoners
- Patients already infected with Hepatitis C or other types of Hepatitis, and those who have had liver transplants
- Health and social care professionals who are in contact with these populations

What are the steps to replicate this initiative?

- Develop close links between tertiary hospital and community care providers
- Support from central tertiary centre
- Engagement with social care providers

We spoke to members of the Prométhée managed care network

Prométhée serves as an extension of the hospital with a multi-disciplinary team that includes multiple HCPs – gastroenterologist, a general physician, a pharmacist, psychologist etc.

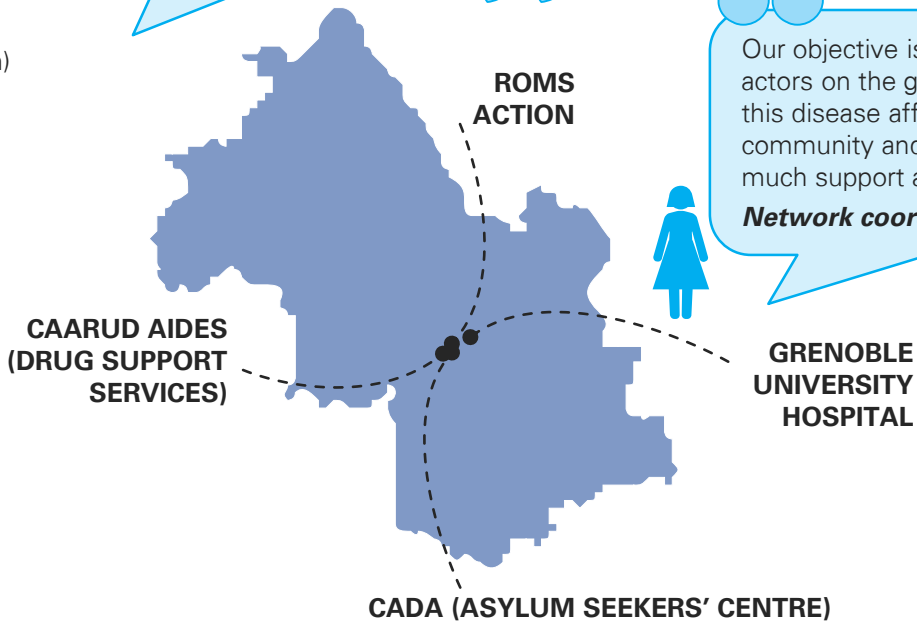
Hepatologist, Grenoble University Hospital

Group therapy sessions help to play down the traditional approach to medical follow-up and also lift taboos associated with the disease.

Network coordinator, Prométhée

Our objective is not to be the only actors on the ground. We know that this disease affects a very targeted community and we try and offer as much support as possible.

Network coordinator, Prométhée



Sources: 1. KPMG Interviews 2. Prométhée network website: https://www.hepatites-promethee.org/3. Prométhée Progress Report 2014 https://www.hepatites-promethee.org/doc/File/RA%20Prom%C3%A9th%C3%A9e%202014%20version%20finale.pdf

Ninewells Hospital is part of the NHS Tayside Hepatitis C Managed Care Network

2

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Overview

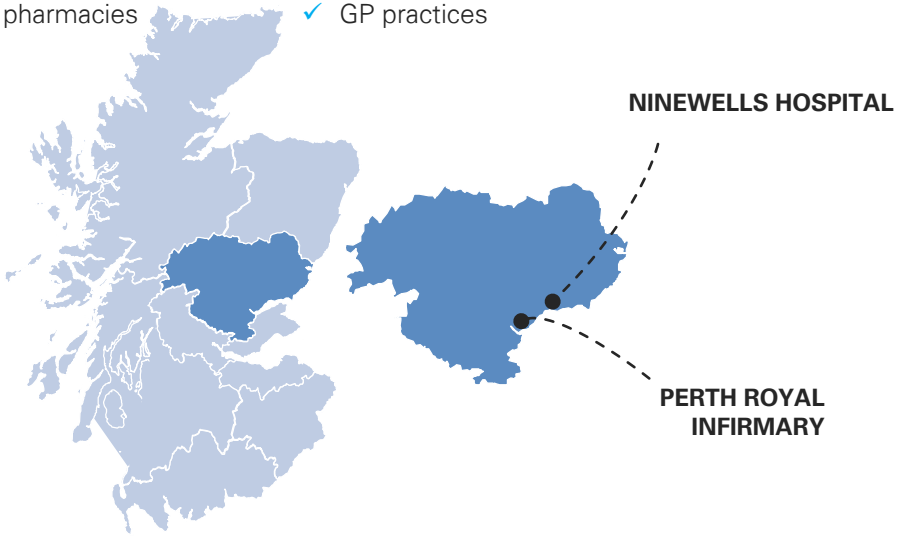
- The **Sexual Health & Blood Borne Virus Managed Care Network (MCN)** is a multi-agency group throughout Tayside (one of the 14 regions belonging to NHS Scotland) which integrates multiple agencies to treat blood-borne viruses
- Ann Eriksen is the Executive Lead for Sexual Health & Blood Borne Virus and Dr. John Dillon from Dundee hospital is the clinical lead
- Under the umbrella of this broader MCN, the Hepatitis C MCN was established in 2004

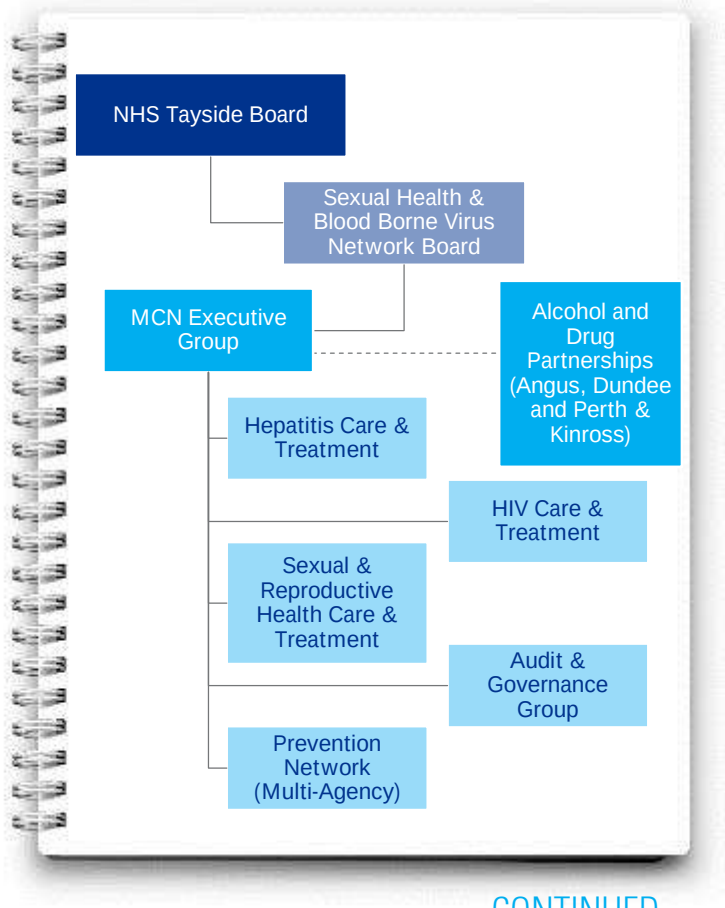
What is the objective?

- Increase referrals and access to specialist services

Who is involved in the network?

- Ninewells Hospital and Perth Royal Infirmary are the two main hospitals in NHS Tayside
- The Hepatitis C specialist service is coordinated from Ninewells Hospital and links to outreach clinics in the community. The main agencies involved in the network include:
  - ✓ Perth and Castle Huntly prisons
  - ✓ Community pharmacies
  - ✓ Drug Problems Service (DPS)
  - ✓ GP practices





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Sources: 1. KPMG Interviews 2. NHS Tayside, 'Clinical Guidelines for Hepatitis C Management' (April 2012) http://www.bbvmcntayside.scot.nhs.uk/Professionals/Guidelines/HCV%20Guidelines/Management%20Guidelines%20FINAL%20April%202012.pdf; 3. HCVAction http://www.hcvaction.org.uk/sites/default/files/resources/Good%20practice%20sharing%20-%20Treatment%20of%20PWIDs%20in%20Tayside.pdf

The managed care network allowed more patients to be treated

2

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

What is the impact?

Increased numbers receiving HCV treatment

- In 2013, 120 people were treated for Hepatitis C – approximately 7% of the chronically infected population in Tayside
- In Scotland as a whole only around 3% of the chronically-infected population receive treatment each year

Above-average treatment outcomes

- The pathway has produced sustained virological response (SVR) rates of 79.5% among the IV drug-using cohort, and 63.9% in the non-drug using cohort

Prevention of new infections

- A local audit on dried blood spot tests (DBSTs) carried out in needle exchange centres showed that significant numbers of attendees were on methadone and were continuing to inject
- Providing treatment to this population enables the network to prevent new incidences of infection occurring

Cost-effective nursing provision

- The current provision of nursing equates to staff costs of £71,132 and equals £711 per treatment episode – a relatively low supplemental cost for health authorities
- The service has therefore provided evidence to commissioners that successful outcomes can be achieved with the addition of very little nursing staff cost

Improved data provision

- The data on non-referred patients has established the number of individuals who are HCV positive and who remain in the region but have not been referred to the specialist service

What are the steps to replicate this initiative?

- The Hepatitis C MCN has implemented a referral and treatment pathway, which includes:
  - ✓ the widespread use of DBSTs
  - ✓ non-medical referrals (i.e. from drug services)
  - ✓ outreach nurse-led clinics
- All the people involved in the network place an emphasis on ensuring that treatment is made as accessible as possible to people who inject drugs (PWIDs)

Sources: 1. KPMG Interviews 2. NHS Tayside, 'Clinical Guidelines for Hepatitis C Management' (April 2012) http://www.bbvmcntayside.scot.nhs.uk/Professionals/Guidelines/HCV%20Guidelines/Management%20Guidelines%20FINAL%20April%202012.pdf; 3. HCVAction http://www.hcvaction.org.uk/sites/default/files/resources/Good%20practice%20sharing%20-%20Treatment%20of%20PWIDs%20in%20Tayside.pdf

The Antwerp Network Hospital extends services via drug addiction centres

3

ZNA STUIVENBERG, ANTWERP, BELGIUM

Overview

- Dr Stefan Bourgeois is head of the Hepatitis C network but relies heavily on the expertise in the surrounding drug addiction centres and particularly the staff working at the Free Clinic
- 50% of the Hepatitis C patients are referred through staff working at the Free Clinic

What was the rationale?

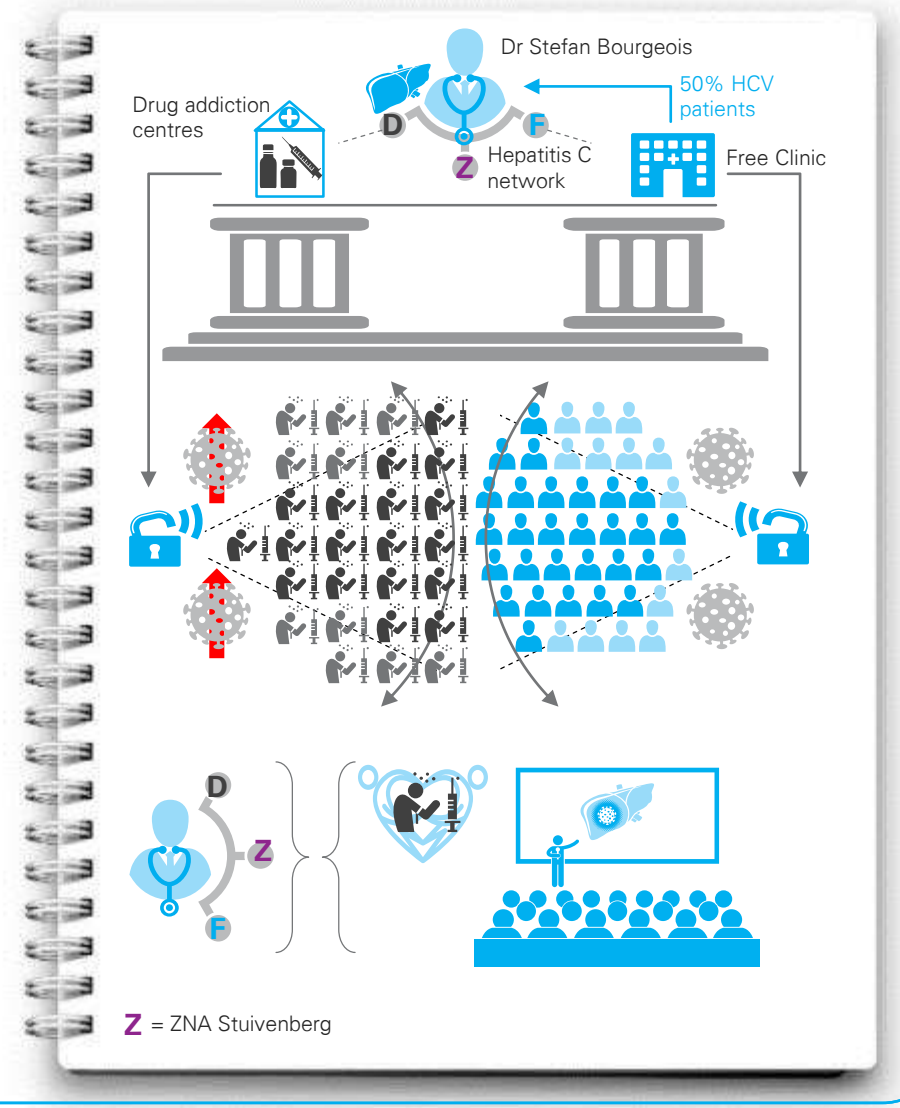
- Dr Bourgeois has limited capacity being the sole hepatologist, working with Hepatitis C patients at ZNA Stuivenberg. Working with the Free Clinic allows him to access a wider patient pool as well as to work together with staff on initiatives to raise awareness
- Working with drug addiction centres also gives the centre access to a patient population that has a high prevalence of Hepatitis C

Who participates in the network?

- ZNA Stuivenberg works with the Free Clinic and other drug addiction centres

What is the impact?

- Close collaboration allows the IV drug-using population to feel more comfortable in the hospital environment. In some cases the nurse at the Free Clinic accompanies clients to their hospital appointments to give them any extra support that they may need in the hospital setting. This is because the drug-using population may previously have had negative encounters with the medical profession
- Dr Bourgeois also delivers a presentation at the Free Clinic along with local staff to educate people about Hepatitis C. The presentation is targeted at patients as well as their friends and family



Source: 1. KPMG Interviews

The Institute of Liver Studies is part of a national liver transplant network

4

INSTITUTE OF LIVER STUDIES, LONDON, ENGLAND

Overview

Dr Kosh Agarwal's team at the Kings College Hospital Institute of Liver Studies is a central part of several networks, delivering services both in London and the wider UK

The Institute is part of a liver transplant network, which includes centres based in Belfast and Plymouth, and also collaborates with seven drug and alcohol support units in London to help educate and treat participants

How does it work?

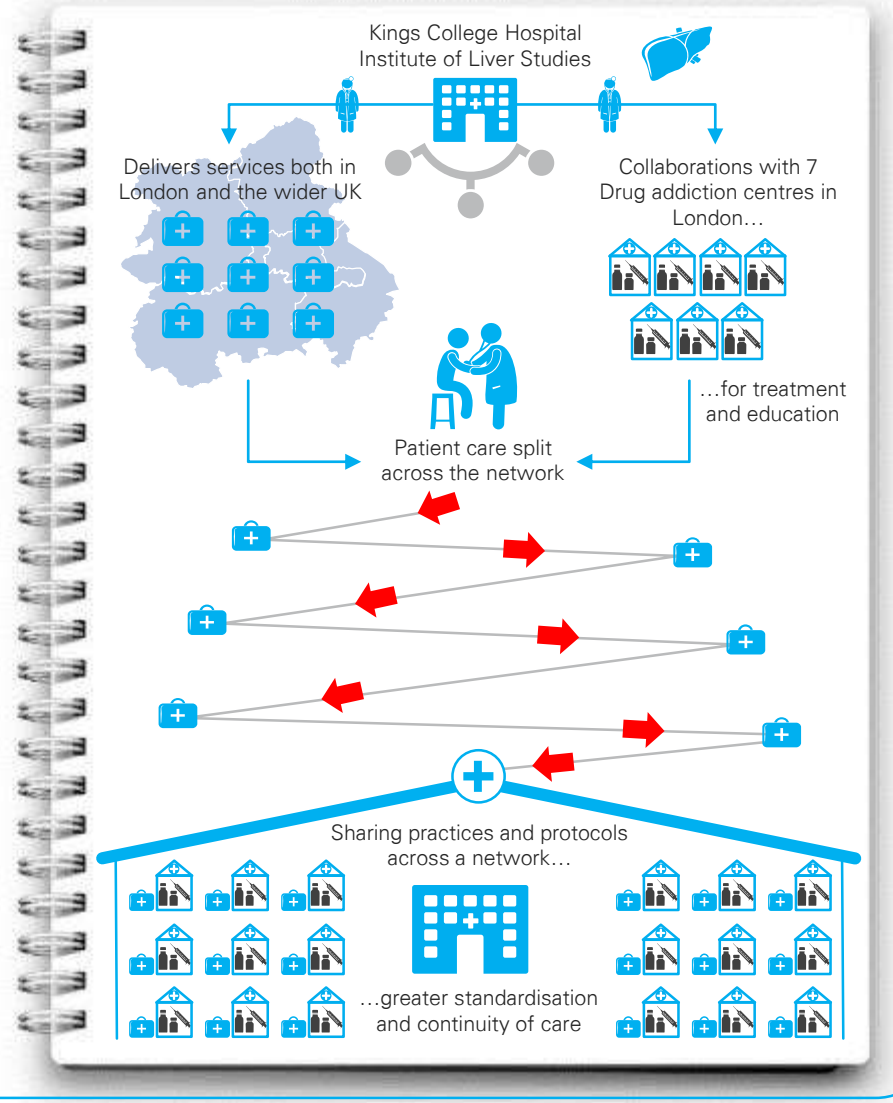
- Patient care is split across the component parts of the network
- Care is primarily managed from the spoke centres (i.e. Belfast or Plymouth), with more specialist aspects of care occurring at the Institute
- For example, initial assessments can be carried out at the spokes, with results discussed across the network via teleconference. Patients will then have their transplant surgery occur in London at the Institute of Liver Studies

What is the impact?

- Other centres with less resources or specialist staff can leverage the Institute's experience in Hepatology
- The Institute is able to draw acute or complicated patients from a wide geographical spread, providing more participants for studies
- By sharing practices and protocols across a network, greater standardisation and continuity of care can be achieved
- Patients referred from the network can benefit from the specialist treatment provided at the Institute

Intervention replication tips?

- Clear and effective lines of communication are vital to ensure that networks operate effectively
- Data management and analysis can be a powerful tool in demonstrating patient outcomes and deciding on next steps
- Commitment and enthusiasm from participants in both the hub and spoke centres is essential to the success of the network



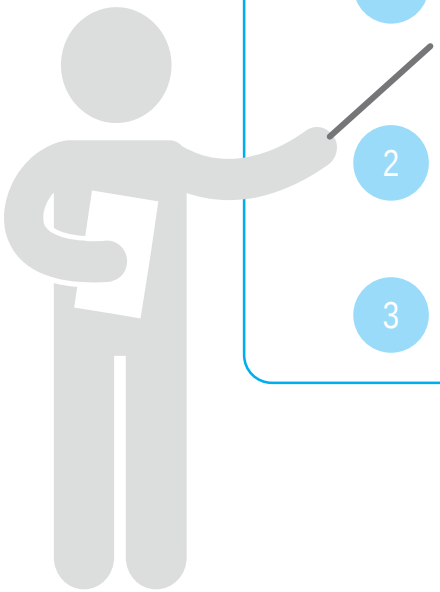
Source: 1. KPMG Interviews

‘Hub and spoke’ networks link expertise to coordinate the delivery of HCV care

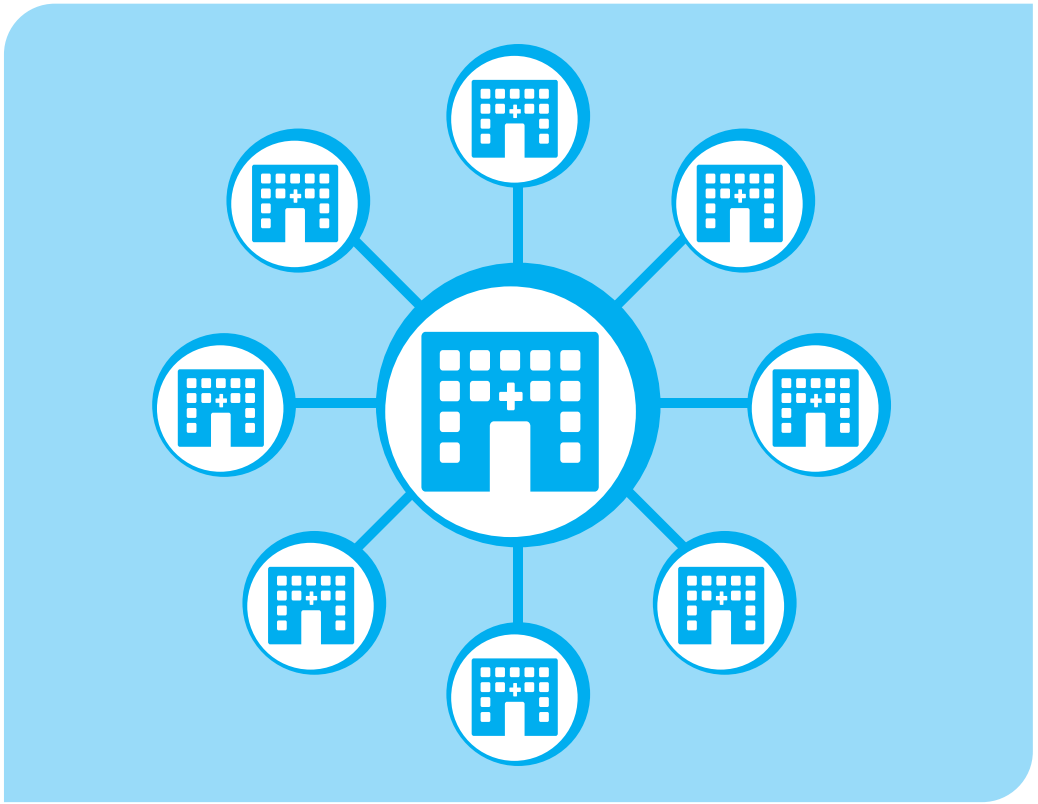
WHAT IS A REGIONAL ‘HUB AND SPOKE’ NETWORK?

- A central hospital (‘the hub’) has the role of coordinating either the distribution of DAAs or the approval of DAAs in other hospitals and/or clinics (‘the spokes’) within the region. In the case of DAA approval, centres may convene a regular MDT with HCPs throughout the region to discuss patients requiring treatment and any questions about the new treatments
- This approach relies on strong, non-hierarchical relationships between the hospitals and HCPs within a region, and helps to provide consistency of care across the network

WHERE HAVE WE OBSERVED SUCH MODELS?



1. **Papa Giovanni XXIII, Bergamo, ITALY**
2. **Queen Elizabeth Hospital, Birmingham, ENGLAND**
3. **Izmir Tepecik Education and Research Hospital**



The Bergamo 'hub and spoke' network enabled the hub to focus on the most severe cases, with the spokes managing the less severe ones

1

PAPA GIOVANNI XXIII, BERGAMO

Overview

The **Bergamo HCV network** is formed of seven selected public and private hospitals (the 'spokes'), in addition to the Papa Giovanni XXIII Hospital (the 'hub'). All centres are able to prescribe the new treatments but Bergamo is the only dispensing centre. The network serves 1.2 million people in total

What are the objectives?

- Improve efficiency in the treatment pathway by reducing treatment time
  - HCV patients have to be seen seven times for one course of treatment. Due to the frequency of visits it was decided that a network was needed, with Bergamo as the hub and the other centres as the spokes, to optimise treatment time
- Centralise monitoring and reporting
- Increase access to care in the periphery

How does the network operate?

- In January 2015, a formal agreement was put in place between the heads of the seven hospitals and the local health authorities to set up the network
- Doctors have an access card and can log into a national portal to check patient eligibility for treatment. They also get a print-out to assess the patient and send a prescription to Bergamo's pharmacy
- The patients from the 'spokes' either come to collect the drugs at the 'hub' or the drugs are sent out to the peripheral pharmacies. This is a unique model that does not currently exist in other parts of Lombardy or other regions in Italy
- The same patient database is used by all the hospitals in the network. The physicians within the network can access Bergamo's system, and book patient appointments
- As part of the network, all participating centres have agreed to be audited regularly to ensure that care is consistent throughout the network

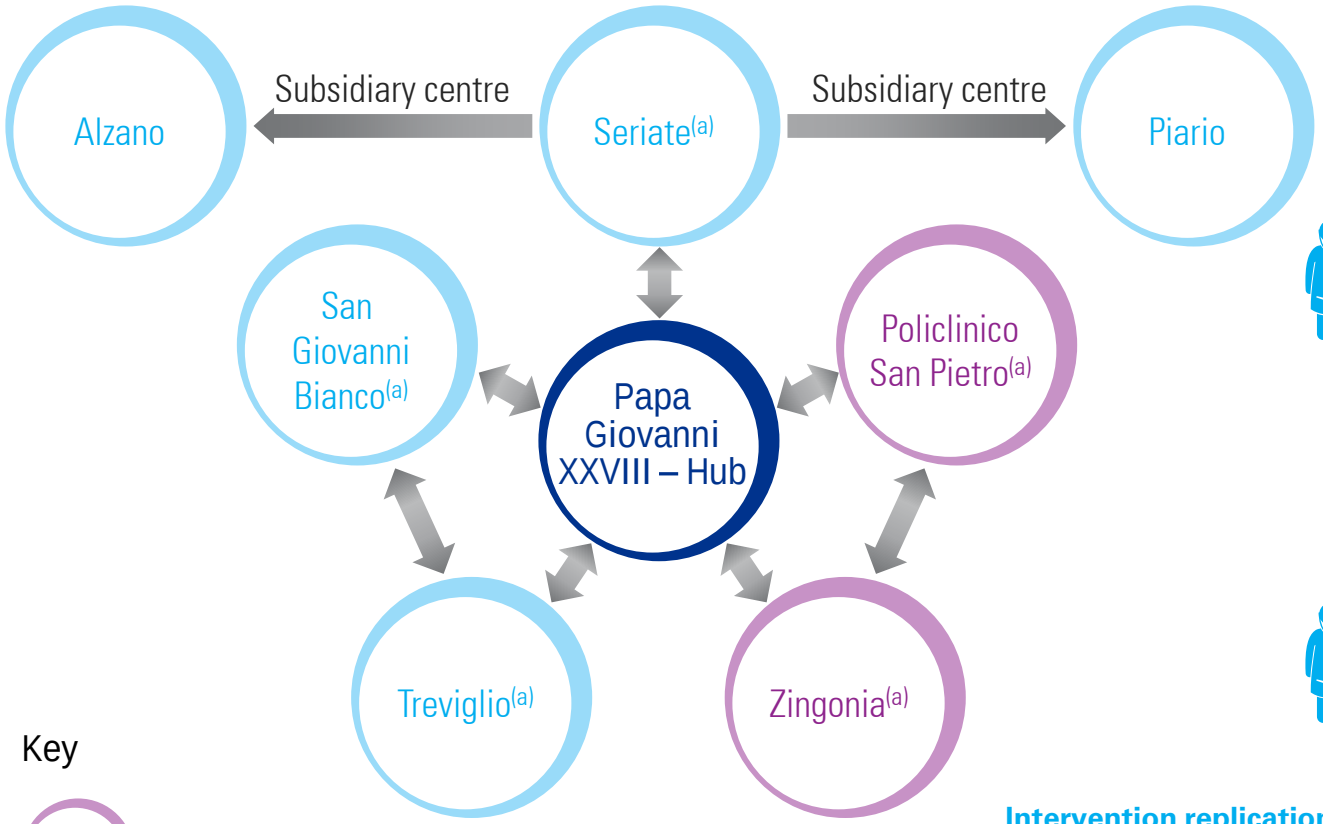
> The principle behind the network is that we aim to make one centre the best but we should raise the level of the average centre to improve care as a whole in the region.
>
> ***Physician, Papa Giovanni XXIII***

CONTINUED…

(a)Prescribing centre
Source: 1. KPMG Interviews

The model centralises monitoring and reporting and increases peripheral access to care

1 PAPA GIOVANNI XXIII, BERGAMO



> The network approach enables reconfiguration of the care setting around the patient and minimises problems in accessing the new treatments.
>
> ***Physician, Bergamo network***

> Patient involvement was key to the success of this network with patient advocacy organisations involved from the beginning.
>
> ***Physician, Bergamo network***

Key

- Private hospital
- Public hospital

Intervention replication tips?

- Guidance and legislation at a national level
- Buy-in from the regional health authorities
- Strong relationships between the centres
- Willingness to undergo regular audits of care provision

(a) Prescribing centre
Source: 1. KPMG Interviews

The Midlands hub and spoke network coordinates HCV care via a multi-disciplinary team

2

QUEEN ELIZABETH HOSPITAL, BIRMINGHAM, ENGLAND

Overview

NHS England introduced Operational Delivery Networks (ODNs) in December 2012 to improve the delivery of specialist care throughout the country

As part of the early-access scheme for Hepatitis C treatment, NHS England mandated that regions in England deliver care through ODNs with one centre – 'the hub' – coordinating care through a specialist multidisciplinary team (MDT) and the peripheral centres – 'spokes' – having treatment authorised through the MDT

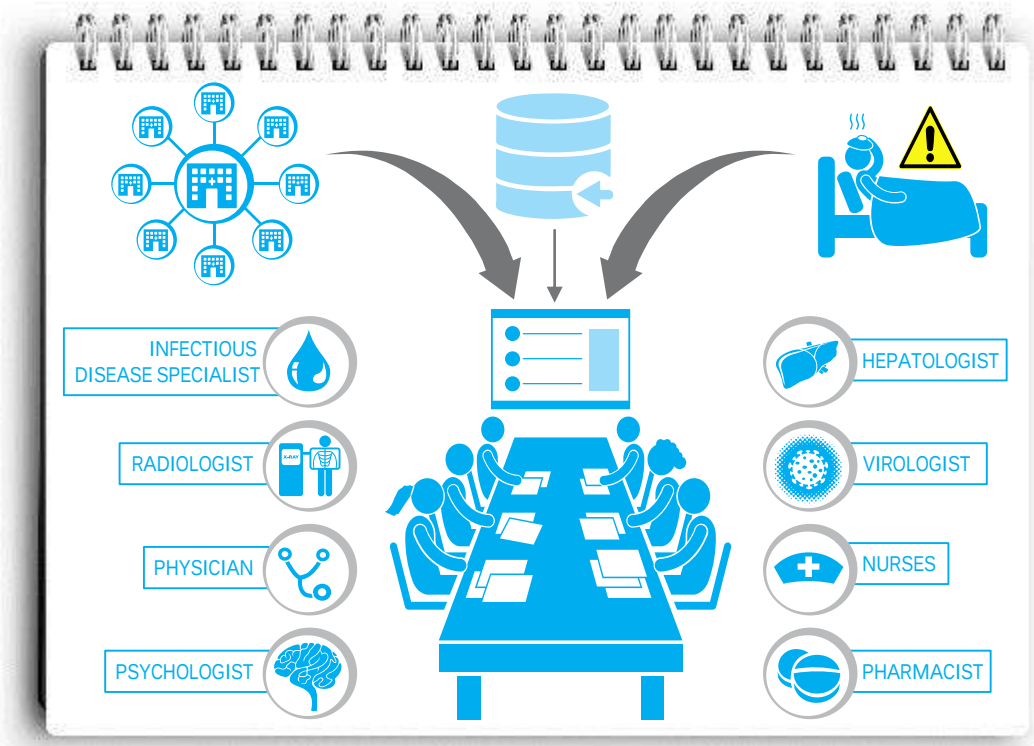
With the regulatory approval of DAAs, 'spoke' centres will be able to hold their own MDTs – e.g. Birmingham Heartlands Hospital has already initiated its own MDT

What happens at the weekly MDTs?

- The HCPs from QE and other participating centres meet once a week to put forward patients requiring treatment or to discuss particularly complicated cases
- The success of the MDT relies to a great extent on the strength of the relationships between the hospitals within the network

What is the impact?

- The MDTs help less experienced centres with the learning curve for looking after HCV patients with the use of DAAs. In the longer run, this leads to a more standardised level of care
- Patients can be treated faster as doubts about patients are immediately addressed through access to specialist expertise in HCV and experienced administrators of DAAs from the QE team



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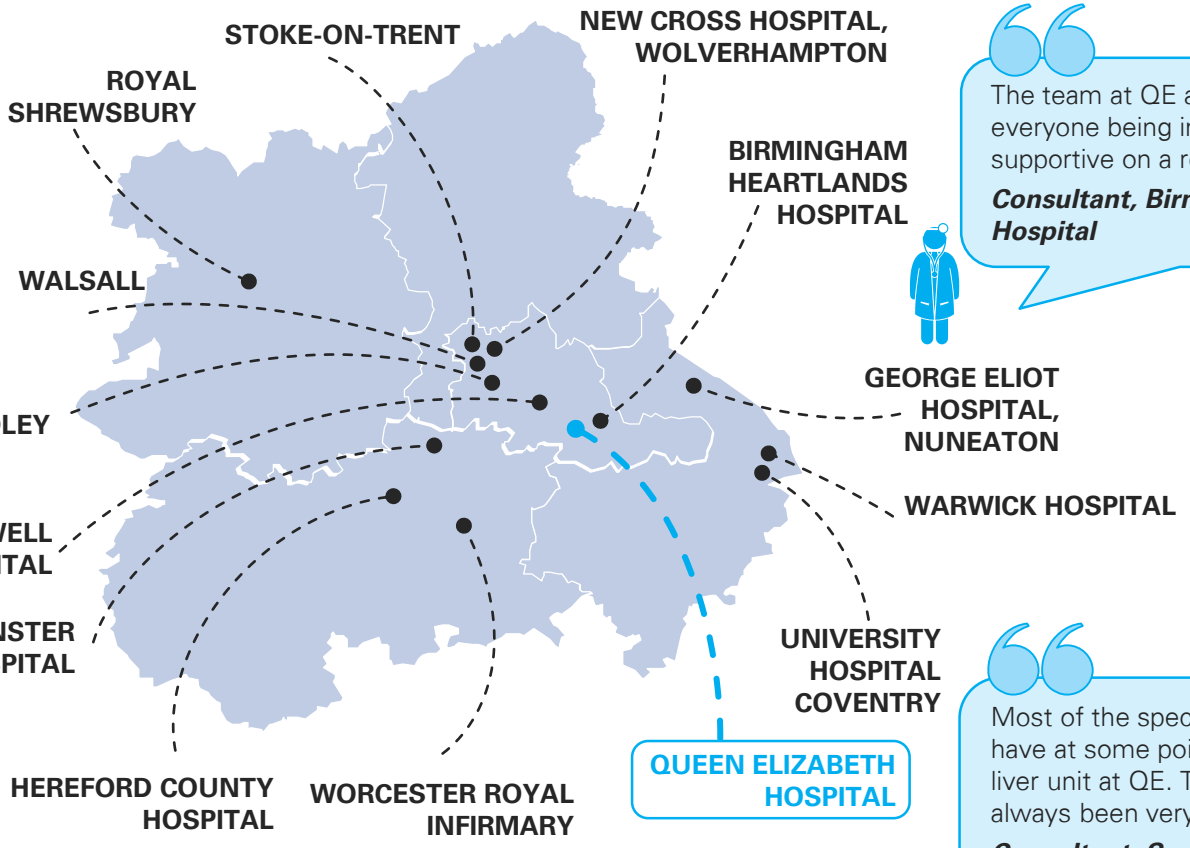
Source: 1. KPMG Interviews

Strong relationships between the hub and spokes are a key feature

2 QUEEN ELIZABETH HOSPITAL, BIRMINGHAM, ENGLAND

We spoke to HCPs from several centres that belong to the Midlands Operational Delivery Network



> Being part of an expert group is great for sharing expertise. It means that our patients go through a more thorough process as we work with doctors who have more expertise with new treatments.
>
> ***Nurse, Sandwell General Hospital***

> The team at QE are very open to everyone being involved. It's very supportive on a regional level.
>
> ***Consultant, Birmingham Heartlands Hospital***

> A number of our cirrhotic patients have been referred to the QE for transplant assessment and the early access programme.
>
> ***Consultant, Kidderminster Hospital***

> Most of the specialists in the region have at some point been through the liver unit at QE. The team at QE has always been very receptive to advice.
>
> ***Consultant, Sandwell General Hospital***

Source: 1. KPMG Interviews

Tepecik targets a high risk region via a 'sister hospital'

3

IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

Overview

Tepecik Hospital has a sister hospital – Kiziltepe Hospital – in the south-eastern city of Mardin, close to the Syrian border. This region has a high level of Hepatitis B and C infection. The prevalence of Hepatitis C is very high, standing at 20%. The prevalence of Hepatitis infection is particularly high in the villages – for instance, there is one village of 300 inhabitants where the entire population is infected with Hepatitis B

What does the partnership involve?

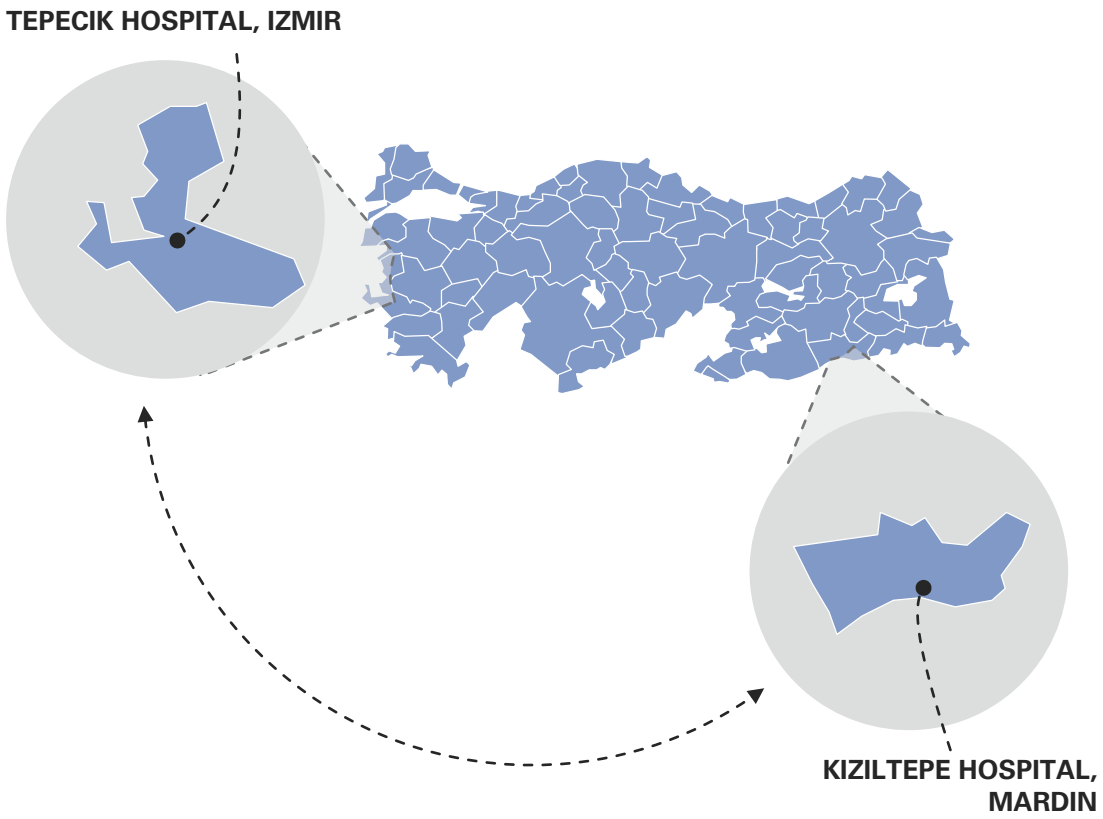
- Staff from Tepecik visit Kiziltepe every three months
- The Tepecik staff train the doctors at Kiziltepe and collect blood samples

What is the objective?

- To target the reservoir of infection in Mardin that often spreads to western cities like Izmir
- To reduce the rate of transmission through unhygienic dental practices
- To target the refugee communities within this region that are infected with HCV

What is the future of this partnership?

- The doctors from Tepecik would like to carry out a screening programme in the refugee camps as they currently do not have the permission of local government



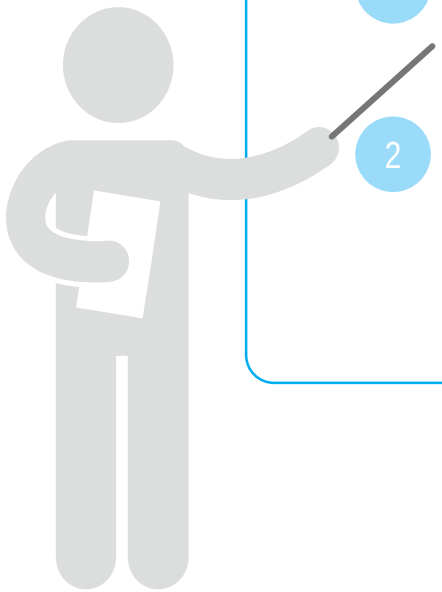
Source: 1. KPMG Interviews

National networks coordinate care nationwide

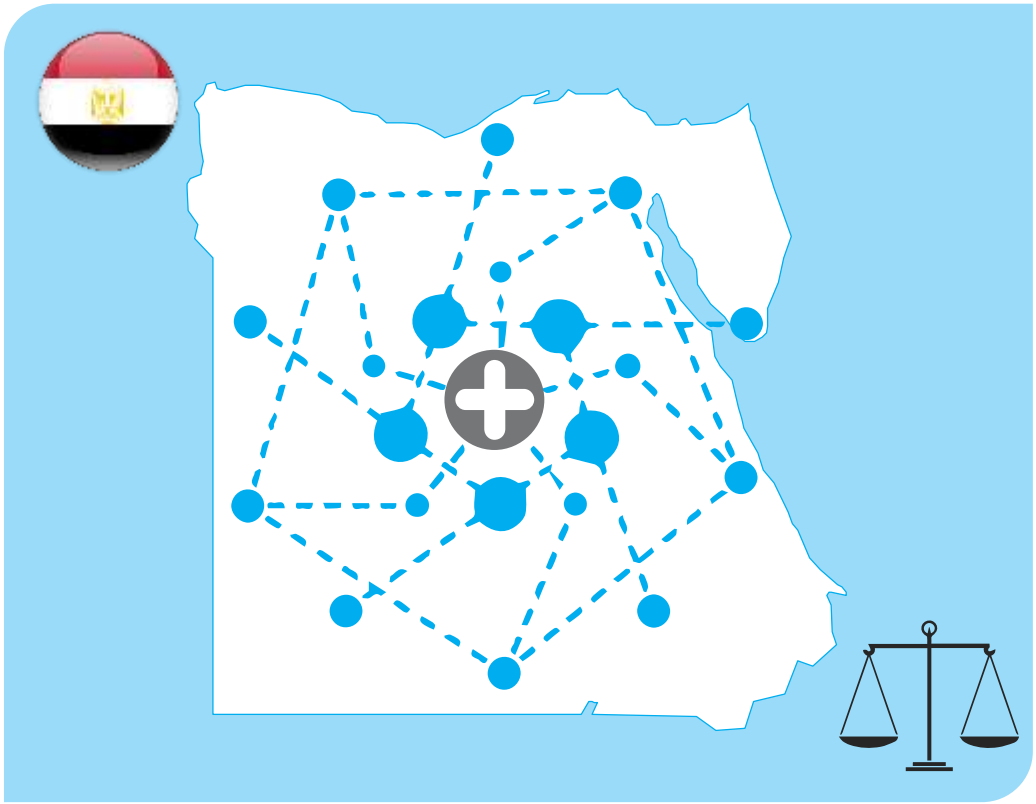
WHAT IS A NATIONAL NETWORK?

- National networks involve the provision of a standardised, coordinated approach to care across an entire country, with the aim of reaching a large number of people nationwide
- Typically, national networks are designed, initiated, and funded by the government or the health department

WHERE HAVE WE OBSERVED SUCH MODELS?



1. **National Programme for Treatment of Chronic HCV, EGYPT**
2. **Government-approved Hepatitis C centres, MEXICO**



The Egyptian government has set up a National Programme for Treatment of Chronic HCV

1

NATIONAL PROGRAMME FOR TREATMENT OF CHRONIC HCV, EGYPT

Overview

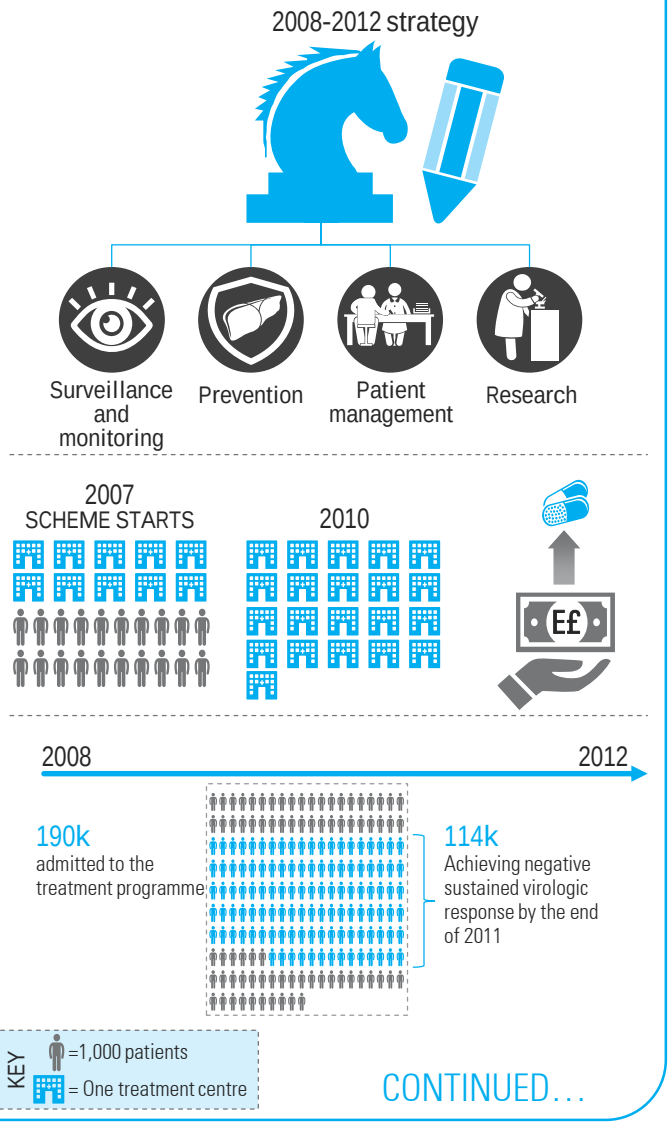
- The Egyptian Ministry of Health established a National Committee for the Control of Viral Hepatitis in 2006. The National Committee developed a National Control Strategy for Viral Hepatitis, which was launched in 2008. Following the completion of the first strategy in 2012, a new national strategy was developed for the years 2014-2018

What is the rationale?

- Egypt has the highest prevalence rate of HCV in the world, with almost 10% of the ~85 million population carrying the infection. Estimates indicate approximately 150,000 to 170,000 new cases of HCV occur in Egypt per year, with liver mortality accounting for 10% of total mortality nationwide. As a result, HCV is one of the country's most significant health challenges[1, 2, 3]
- Socioeconomic factors also link to the HCV challenge in Egypt – the disease is most prevalent amongst lower social and economic members of the population who cannot afford the cost of treatment and lack an awareness about HCV and how to be diagnosed[1]
- As a result of the scale of the problem, HCV is one of the top priorities for the Ministry of Health, hence the development of National Strategies

How did the 2008-2012 strategy work?

- The strategy outlined four key areas of priority focus: surveillance and monitoring, prevention, patient management, and research, with a particular emphasis on treatment, which was reflected in budget allocations[1]
- In 2007, the scheme started with 10 centres, treating 20,000 patients in the first year. The number of active centres rose to 21 by 2010, spread across Egypt, whilst government funding for medications helped improve access to treatment options for patients[4]
- Over the four years of the strategy, 190,000 patients were admitted to the treatment programme, with 114,000 achieving negative sustained virologic response by the end of 2011[1]



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Sources: 1. Egyptian Initiative for Personal Rights, 'HCV Treatment in Egypt – Why cost remains a challenge?', http://www.eipr.org/sites/default/files/pressreleases/pdf/hcv_treatment_in_egypt.pdf; 2. WHO press release: http://www.who.int/features/2014/egypt-campaign-hepatitisc/en/; 3. Plan of Action for the Prevention, Care and Treatment of Viral Hepatitis, Egypt, 2014-2018, http://www.natap.org/2014/HCV/EGYPTIANVIRALHEPATITISACTIONPLAN%20201.pdf; 4. Evaluation of the National Program for Treatment of Chronic HCV in Egypt, http://www.hepbcppa.org/wp-content/uploads/2012/08/Esmat-A-nation-prog-for-treating-chronic-HCV-in-Egypt.pdf; 5. KPMG interviews

The 2014-2018 national strategy aims to increase access to screening and treatment

1

NATIONAL PROGRAMME FOR TREATMENT OF CHRONIC HCV, EGYPT

What are the aims of the 2014-2018 strategy?

- Entitled the Plan of Action for the Prevention, Care and Treatment of Viral Hepatitis, the new strategy aims to continue the work of the 2008-2012 strategy, but with an even greater focus on prevention as well as treatment. The target is to ultimately be able to treat up to 300,000 patients per year, using interferon-based medication as well as new DAA treatments
- The plan is divided into six distinct areas: strengthening surveillance to detect viral Hepatitis transmission and disease; improving blood safety to reduce transmission of viral Hepatitis; promoting infection control practices to reduce transmission of viral Hepatitis; educating providers and communities to increase awareness about viral Hepatitis and its prevention; eliminating transmission of vaccine-preventable viral Hepatitis; and improving care and treatment to prevent liver disease and cancer
- Each topic area of the plan contains recommended goals and action paths[1]

How is the new strategy structured?

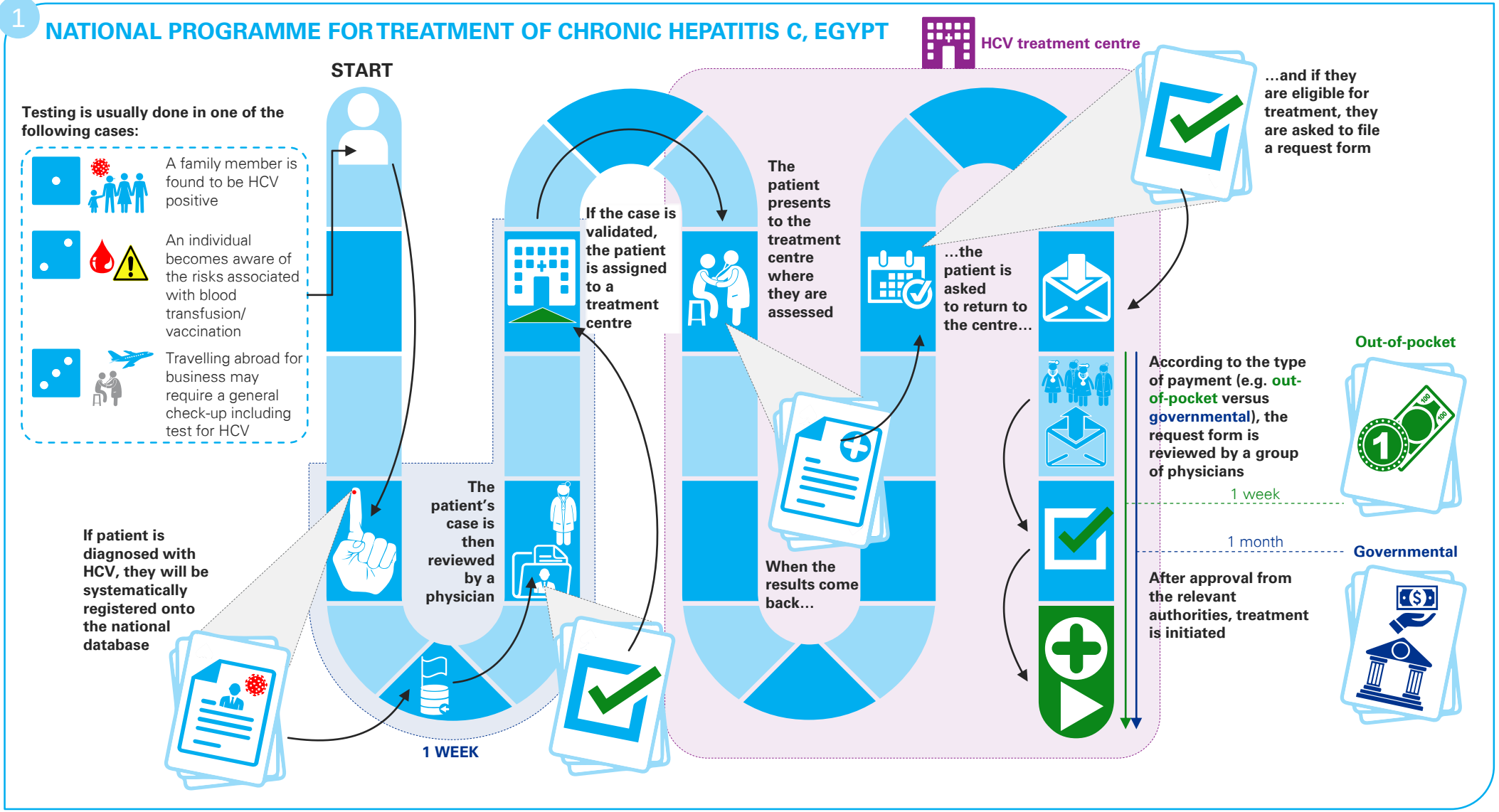
- The Egyptian government is partnering with organisations including the World Health Organisation, the US Centres for Disease Control, and the Pasteur Institute
- Treatment was initially provided by 26 centres, located around the country. This number is set to increase to 40 over the duration of the scheme
- The method of treatment is determined on a case-by-case basis according to guidelines contained within the strategy specifications
- With WHO support, a national HCV data system is being established. A communications campaign is also being developed to help raise awareness[2]

How is the scheme funded?

- The 2008-2012 strategy was funded with an annual budget of USD80 million[1]
- The cost of treatment is balanced across various payers: 38% from the government; 51% by the Health Insurance Organisation; 3% by private payment; and 8% by cash payments at the centres[1]

Sources: 1. Egyptian Initiative for Personal Rights, 'HCV Treatment in Egypt – Why cost remains a challenge?', http://www.eipr.org/sites/default/files/pressreleases/pdf/hcv_treatment_in_egypt.pdf; 2. WHO press release: http://www.who.int/features/2014/egypt-campaign-hepatitisc/en/; 3. KPMG interviews

The national programme focuses on assessment, diagnosis, and treatment



Sources: 1. KPMG interviews

The Mexican government has approved seven specialist HCV treatment centres

2

SPECIALIST HEPATITIS C HOSPITALS, MEXICO

Overview

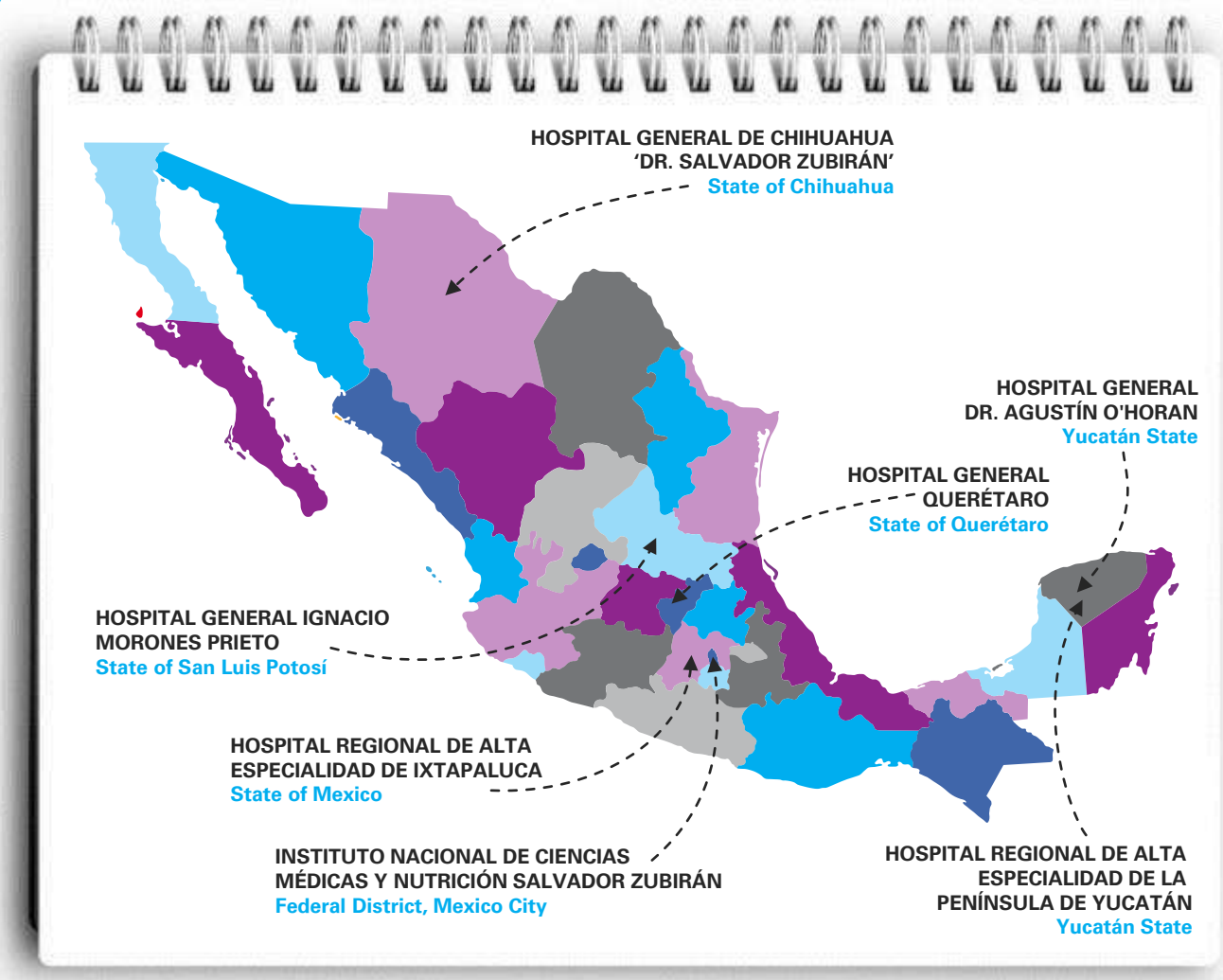
- Hospitals in Mexico require government approval to deliver Hepatitis C treatment. The eligibility criteria include: having excellent facilities suitable for the treatment of Hepatitis C patients, including elastography and ultrasound machines, along with laboratories for analysis, and well-trained, experienced members of staff
- The Mexican government has approved seven hospitals to act as tertiary centres to treat Hepatitis C in the country; the National Institute of Medical Sciences and Nutrition is one such centre
- Patients must be referred to these centres through secondary care channels

How does it work?

- Patients first visit their GP who then refers them on to a secondary centre
- Most hospitals in Mexico are not authorised to treat Hepatitis C, so will then refer patients who test positive to one of the eight government approved centres
- For certain patients, staff from the specialist centres will conduct pre-screenings so that a patient can be properly diagnosed and begin treatment immediately when they are referred

What is the impact?

- Resources can be focussed on the eight specialist hospitals so that they can specialise and excel in the treatment of HCV
- Patients are able to receive a more specialised, experienced service than they would in a more generalised setting



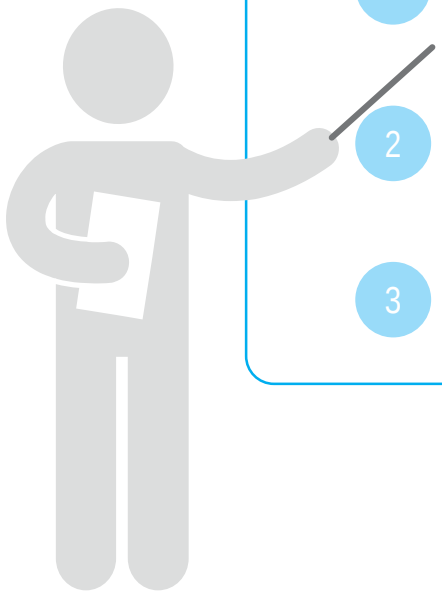
Sources: 1. KPMG interviews

Community-based clinics bring care directly to patients

WHAT ARE COMMUNITY-BASED CLINICS?

- The team delivers care in community centres or uses social workers to identify at-risk patients. This is particularly important for centres where the HCV patient population includes marginalised groups such as IV drug users and the homeless

WHERE HAVE WE OBSERVED SUCH MODELS?



1. **Kaohsiung Medical University, TAIWAN**
2. **Monash Health, Melbourne, AUSTRALIA**
3. **John Hunter Hospital, Newcastle, AUSTRALIA**

Kaohsiung Medical University delivers care to remote, endemic regions

1

KAOHSIUNG MEDICAL UNIVERSITY, TAIWAN

Overview

The Kaohsiung team, with the support of the Taiwan Liver Research Foundation, has set up community clinics for liver-related diseases in specific parts of Taiwan

What was the rationale?

The team observed that in resource-constrained areas such as high mountains and small islands, medical care was not optimal. As a result, they wanted to bring care to these under-served populations

Who is involved?

Volunteers from the Kaohsiung team (hepatologists, nurses and technicians) as well as cured patients run the clinics. The local healthcare professionals join them during the clinics to learn about the diseases and better manage patients locally

How does this work?

The Kaohsiung team first liaises with local leaders to learn the number of patients who will be attending the clinic. This enables the team to prepare the required tools and equipment before traveling to the village/town

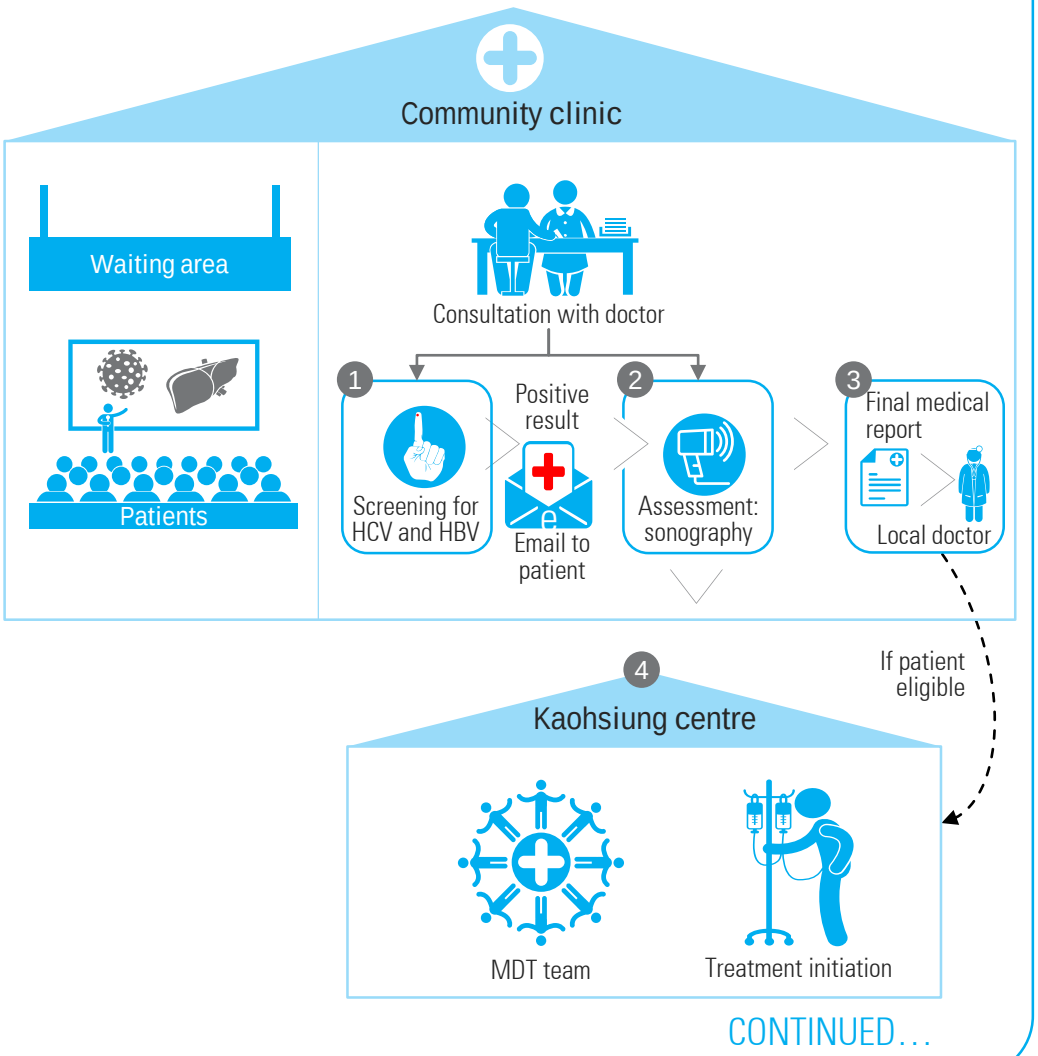
The local institutions provide the nursing manpower as well as a technician to run blood samples

The clinic itself follows a three stage process:

1) Those presenting for the first time are screened for HCV and HBV
2) Once the result is obtained, the patient is asked (via email) to return for a sonography test
3) The assessment report is then shared with the patient's local doctor

In the event a patient is eligible for treatment, they will be referred to the Kaohsiung Medical centre. In the endemic Tzukuan region where the prevalence of the virus is approximately 30%, the team has been allowed by the regional authorities to treat patients locally

Note: During each clinic, one of the physicians educates patients on liver conditions in the waiting room to increase awareness



Source: 1. KPMG Interviews

An average of 10,000 people are screened every year

1

KAOHSIUNG MEDICAL UNIVERSITY, TAIWAN

How often do the clinics take place?

Usually every month, depending on the availability of the volunteers

What is the impact?

On average, the team screens approximately 10,000 people for HCV. The largest number ever screened was 30,000 people

The programme has helped increase accessibility to care for patients from under-served regions and also fostered close relationships between local health institutions and the Kaohsiung Medical centre

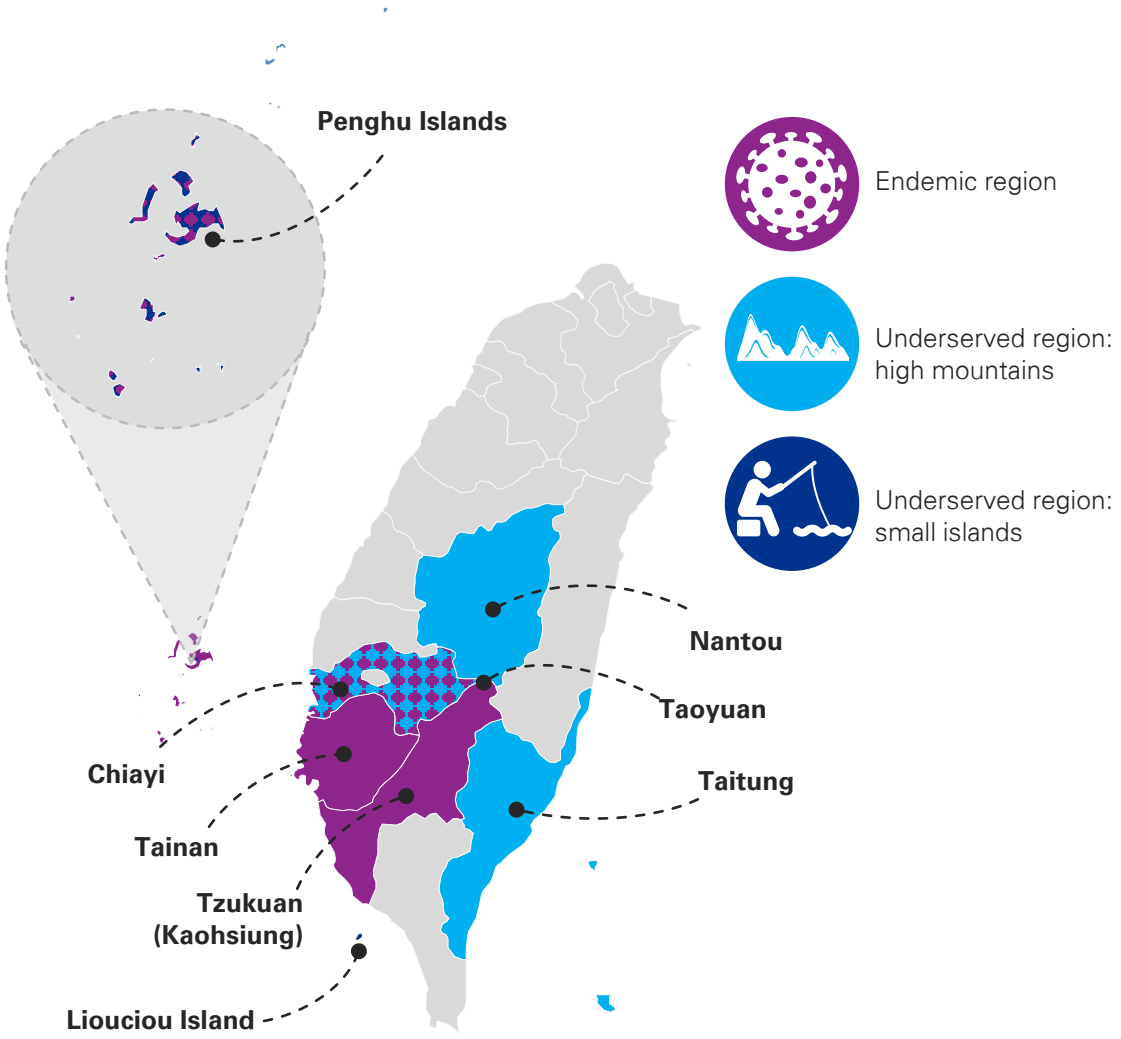
Where does the funding come from?

Half of the funding comes from the budget of the hepatology department at the Kaohsiung Medical University, and the other half from grants and donations from NGOs and the pharmaceutical industry

What were the challenges?

At first the team were unsure of how many patients would come to the clinics. The team now collaborates with the local health authorities to address this issue and bring the relevant number of staff, tools and consumables for each clinic

> To be a doctor, we have the duty to put our patients first and give them access to the best care.
>
> **Hepatologist**



Source: 1. KPMG Interviews

Melbourne community-based clinics serve hard-to-reach minority communities

2

MONASH HEALTH, MELBOURNE

Overview

Over the years, the team at Monash have set up three community-based liver clinics which allow some patients to be treated locally. These clinics are located in Springvale (Melbourne suburb), Cranbourne and Dandenong. The clinic in Springvale was set up in an existing community health centre which belongs to Monash Health, which allowed the Liver Unit to rent the premises cheaply

What was the rationale?

The first clinic was set up 18 years ago in Springvale as the team from Monash noticed that very few patients from this area visited the hospital. Most of the patients come from Vietnam and Cambodia, and speak very limited English. Care had to come to them. The location was also chosen because it was close to many Vietnamese and Cambodian GP practices and so facilitated links to these communities

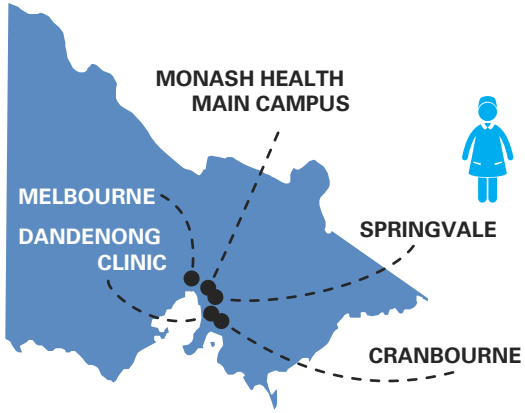
What does patient education involve?

In the waiting room, Hepatitis B patients are given an iPad with a questionnaire on their disease in their own language. When the patient does not reply correctly to a question, this is flagged out to the physician who then discusses it with the patient during the consultation. The team is now considering doing the same for Hepatitis C patients

We spoke to HCPs working within the community-based clinics

What are the steps to consider to replicate this intervention?

- Work with committed colleagues
- Target a high prevalence area to build an adequately-sized patient base
- Follow a one-stop approach by providing access to pharmacy, and pathology, as well as nursing support on site
- Liaise with local GPs to increase awareness and secure buy-in from patients
- Build a viable financial/business model



> You need to work with team members who are willing to travel outside their cocoon.
>
> **Nurse**

Who is on the team?

1 liver nurse

1 pharmacist

2 interpreters for Vietnamese and Khmer and additional interpreters for patients from other backgrounds

Source: 1. KPMG Interviews

John Hunter uses outreach clinics to reach the aboriginal community

3

JOHN HUNTER HOSPITAL, AUSTRALIA

Overview

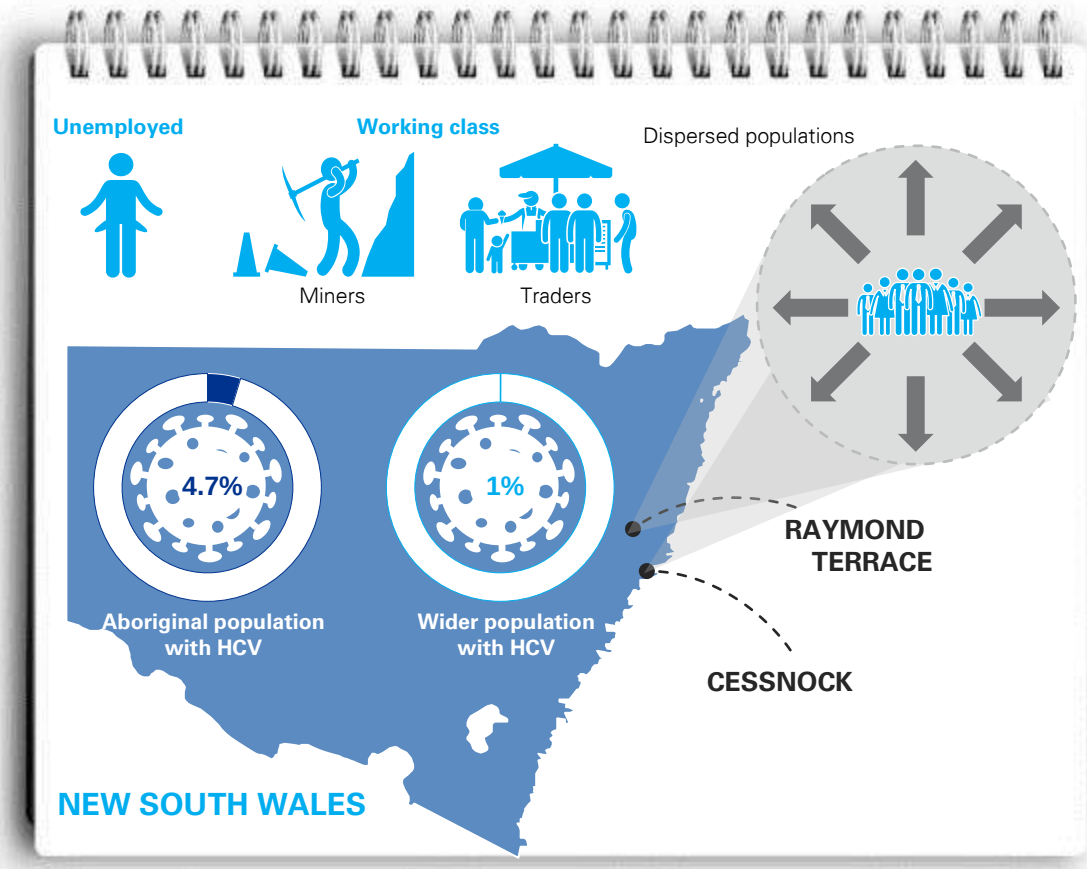
- The centre runs two regular outreach clinics in different locations – Cessnock and Raymond Terrace. Both clinics target vulnerable populations, including the drug using population and the aborigine community
- Cessnock is an area located one hour away from Newcastle, based at the start of the Hunter Valley. The Cessnock clinic was established in 2010
- Both outreach clinics were set up in already established healthcare facilities, and make use of pre-existing facilities

What was the rationale?

- The aim of the outreach clinics is to improve access to care in hard-to-reach communities
- The centre covers a large area with a dispersed population. The population is also socio-economically disadvantaged; many are unemployed or from the working classes (traders and miners)
- There is also a large aboriginal community in both areas who generally have sub-optimal health indicators. There is a high prevalence of HCV in the aboriginal population – 4.7% compared to 1% in the wider population[1]

What do the outreach clinics involve?

- The centre undertook extensive research with GPs and the aboriginal community to decide where to locate the clinics
- Two of the centre's doctors run a clinic once a fortnight with a Hepatology nurse practitioner who also brings a portable elastography machine
- All the staff attended aboriginal cultural respect training to de-mystify stereotypes and to improve their understanding and awareness before running clinics for this population
- The training was funded by the 'Close the Gap' initiative which is sponsored by the government and focusses on closing the gap in indigenous disadvantage[2]



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Sources: 1. KPMG Interviews 2. 'Closing the gap in indigenous disadvantage' https://www.coag.gov.au/closing_the_gap_in_indigenous_disadvantage

Success relies on managerial support and integration into local communities

3

JOHN HUNTER HOSPITAL, AUSTRALIA

What are the challenges?

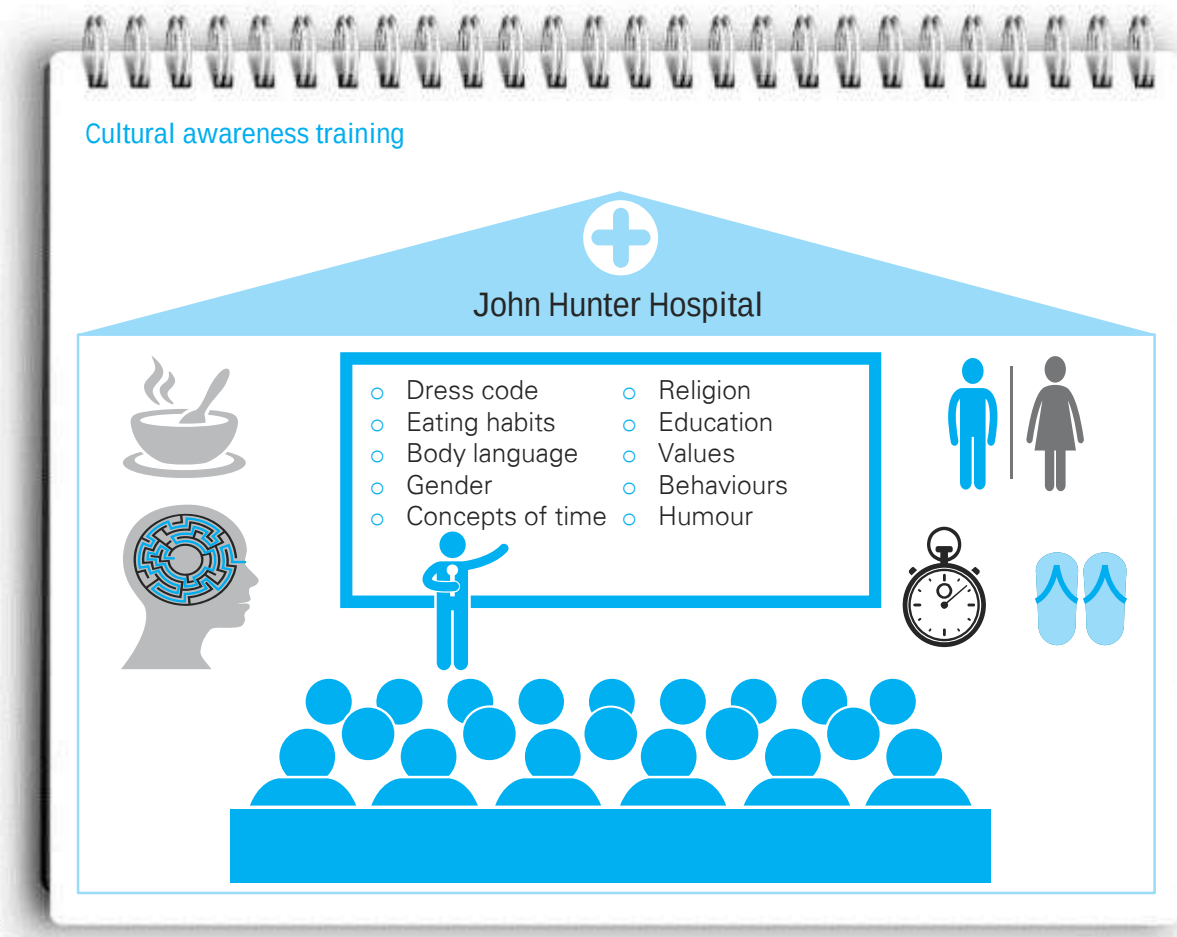
- Choosing the locations for the clinics was an initial challenge. The hospital staff had to make contact with the local authorities to identify the right locations
- Patients sometimes fail to attend appointments

What is the impact?

- The clinics have increased access to care for the aboriginal community as they are seen in an environment that is less intimidating than a central hospital setting

Intervention replication tips?

- Support of the management team is required to ensure that the initiative can be put into place
- Making contact with the staff already working in the facility is important
- The staff need to be integrated into the local community. For example, in Cessnock, one nurse was asked to be involved as she was already working on chronic diseases within the aboriginal community
- Cultural awareness training allows staff to interact with the patients in an appropriate and culturally sensitive manner
- Organising educational sessions with GPs and investing time in promoting the initiative contributes towards the sustainability of the project



Source: 1. KPMG Interviews

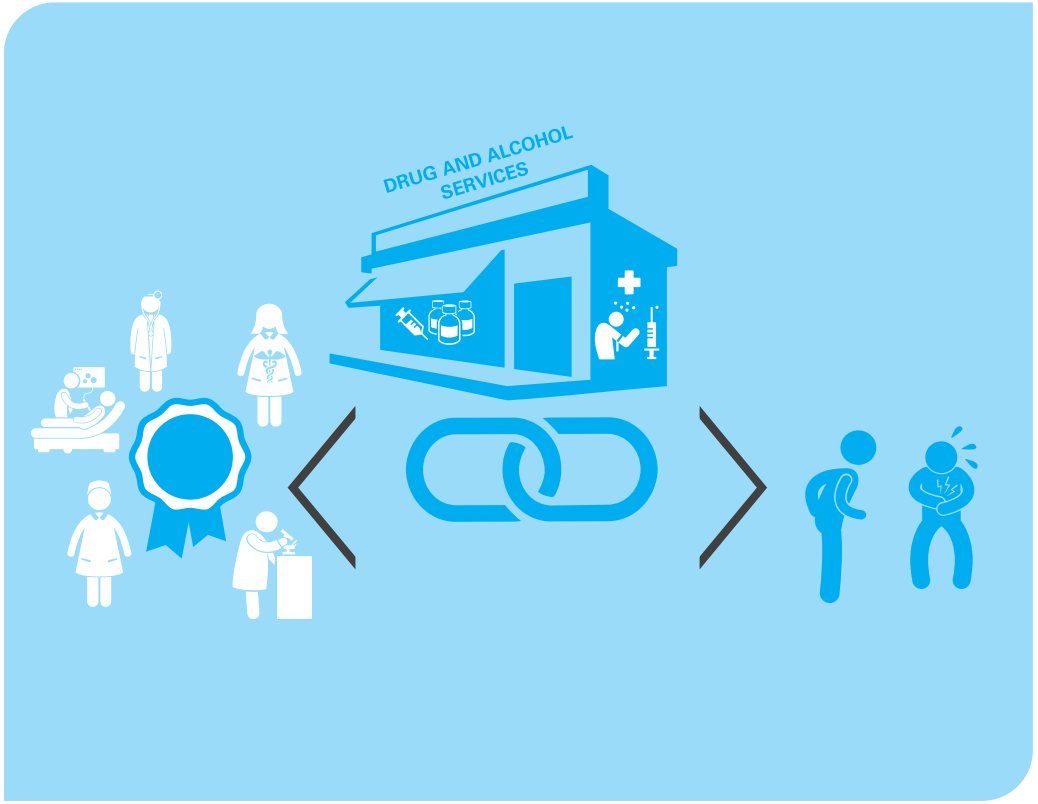
Drug and Alcohol Services access and refer HCV positive drug-injecting populations

WHAT IS THE ROLE OF DRUG AND ALCOHOL SERVICES?

- Outreach to Drug and Alcohol Services offers a way of engaging with an unstable patient population that may spread the virus within the IV drug-using population

WHERE HAVE WE OBSERVED SUCH SERVICES?

1. **Ninewells Hospital, Dundee, SCOTLAND**
2. **Queen Elizabeth, Birmingham, ENGLAND**
3. **Prindsen Mottakssenter and Partners, Oslo, NORWAY**
4. **Praxiszentrum Kaiserdamm, Berlin, GERMANY**



The Eradicate study allows Ninewells to target active IV drug users directly

1

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Overview

- Dr John Dillon coordinates the Eradicate study which targets the active IV drug-using population for testing and treatment
- It has been launched by the University of Dundee in collaboration with NHS Tayside, and is being carried out in the CAIR Scotland Needle Exchange Centre in Dundee
- CAIR provides intensive support programmes, such as blood borne virus interventions and sexual health programmes in partnership with local authorities and NHS boards[2]
- The £2.2 million project is funded by pharmaceutical companies[3]
- The aim is to test the assertion that disease prevalence can be reduced by using treatment as a means of prevention

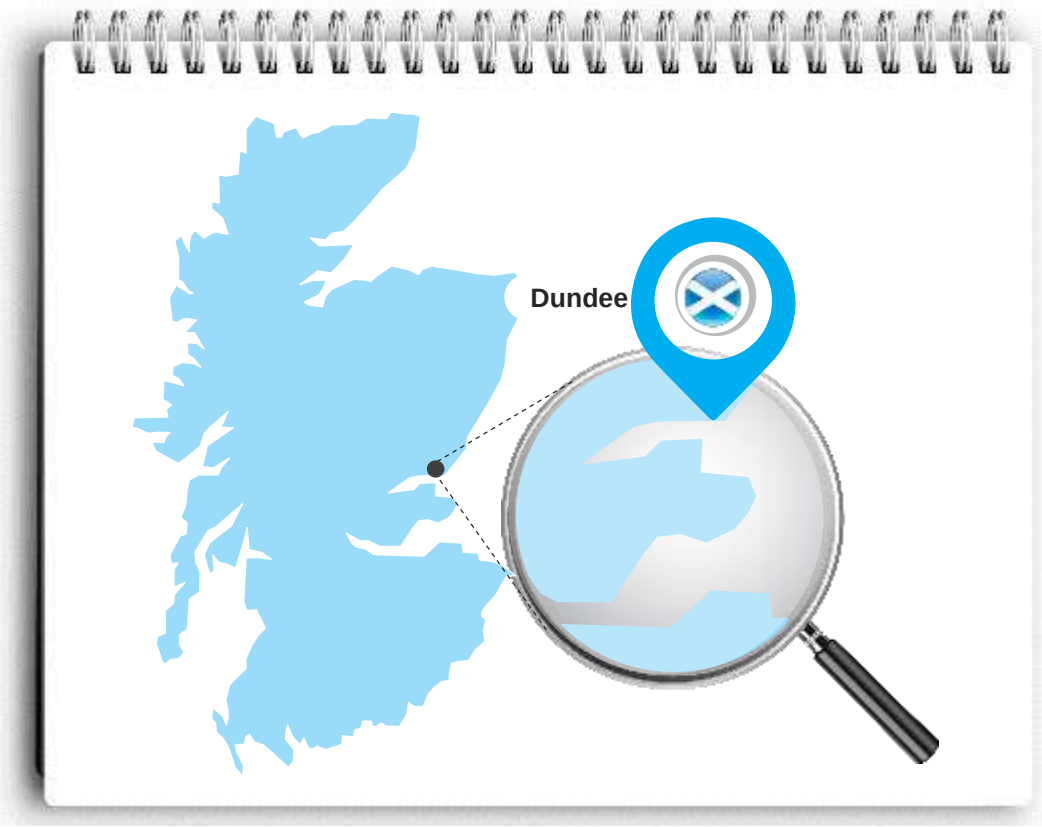
What is the rationale for such an initiative?

- The programme aims to counter the notion that it is 'waste of time' working with the drug-injecting population as they are too hard to reach
- The time spent not engaging with the drug-using population leads to a deterioration in the health of this patient population and also allows the virus to be spread
- There have been several recent studies in Europe that have showed success in treating this traditionally isolated population that struggles to engage with healthcare systems[4]
- There may be an overlap between the prison population and those patients that become involved in the Eradicate study
- Approximately 30% of the prison population have been infected through IV drug use and there are no drug exchange programmes within prisons

What is the objective?

- To test the IV drug using population and deliver a full cycle of treatment to those who are HCV positive

CAIR SCOTLAND working together for change



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Sources: 1. KPMG Interviews 2. CAIR Scotland http://www.cairscotland.org.uk/3. University of Dundee, School of Medicine press release (19 Feb 2013): http://medicine.dundee.ac.uk/news/tackling-hepatitis-c-people-who-inject-drugs 4. European Journal of Gastroenterology, 'Hepatitis C testing and treatment among active drug users in Amsterdam: results from the DUTCH-C project,' (Jan 2011).http://www.ncbi.nlm.nih.gov/pubmed/21042221

Participants receive community care and are incentivised with food vouchers

1

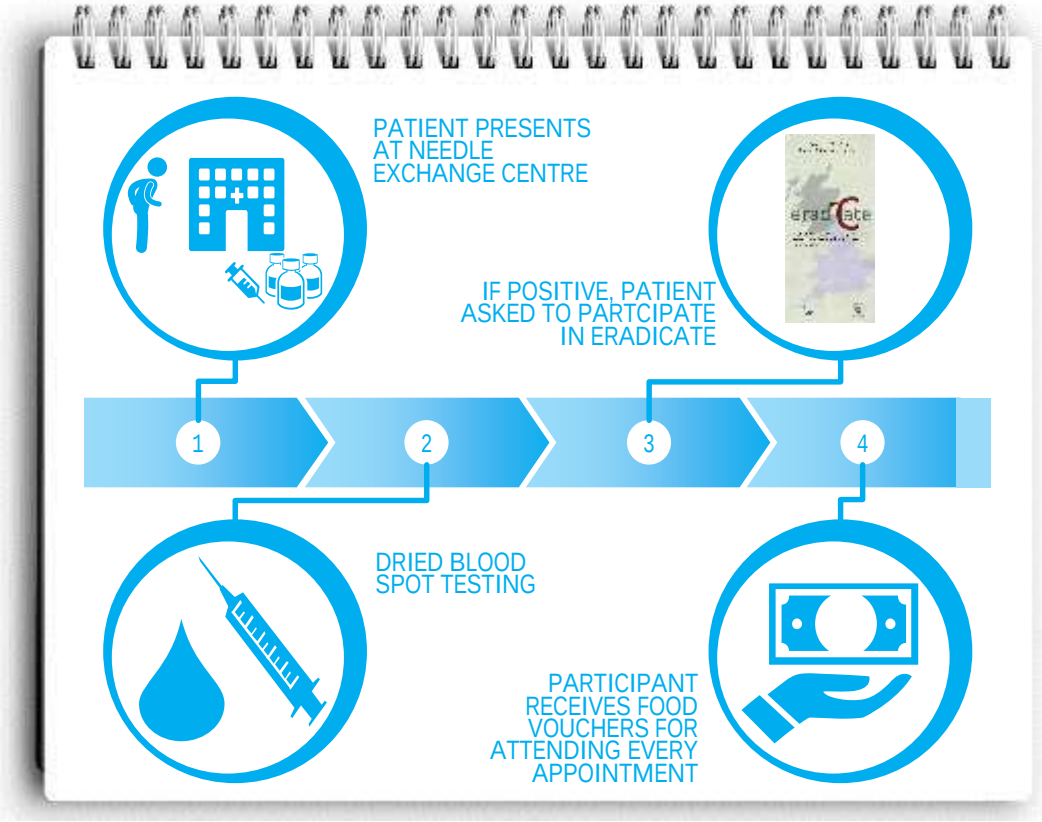
NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

What is the study's operating model?

- Dried blood spot testing (DBST) is used to test patients for HCV. Those that test HCV positive and agree to participate in the study are given a small food voucher (£5-£10) for a local supermarket in return for attending each treatment appointment
- The patients receive a £10 food voucher if they refer friends into the study
- The participants receive protein drinks which help to mitigate their weight loss (due to drug use)
- The funding comes from NHS Scotland as part of the Healthy Living Initiative[2]
- Patients may also be offered a methadone prescription while participating in the trial

What is the impact?

- The Eradicate study along with the development of DBST has allowed the drug addiction services to move from testing to treatment in a single, more seamless pathway
- As the patients usually belong to the younger demographic they tend to be easier to cure than older patients who may be more cirrhotic
- Based on recruitment figures from December 2012 to September 2014, 72 patients were eligible for the study and ultimately 43 ended up starting treatment[3]
- There has been a high level of adherence with only three participants dropping out after having initiated treatment, which is unusual for what remains an unstable population
- The patients will be followed up until 2017 when the follow-up study is due to end[3]



Sources: 1. KPMG Interviews 2. Dundee Healthy Living Initiative http://www.dundeehealth.com/3. CAIR Scotland, 'Making the Impossible Possible – Eradicate Hepatitis C Virus]: A pilot of treatment as a prevention in active drug users' (2014)

The Queen Elizabeth team works with local Drug and Alcohol Services

2

QUEEN ELIZABETH, BIRMINGHAM, ENGLAND

Overview

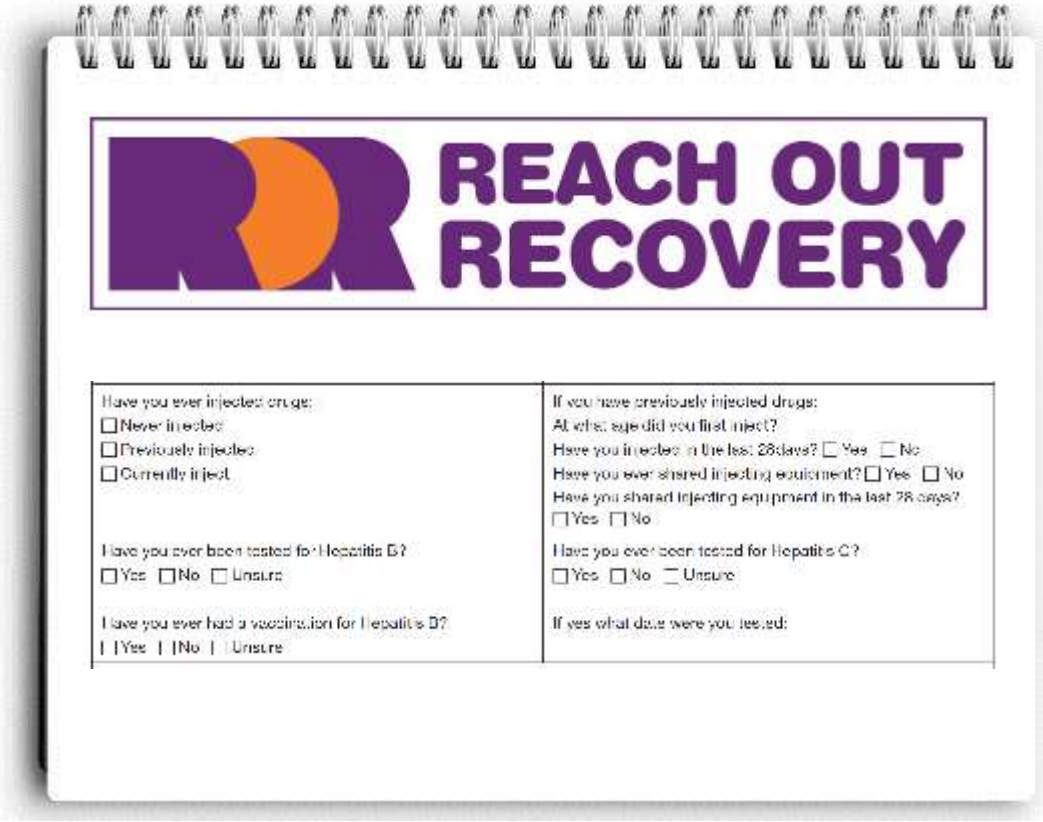
- Reach Out Recovery (CRI) has sites throughout central Birmingham and offers treatment and recovery services to anyone experiencing difficulties with drugs and alcohol
- There are approximately 6,000 clients open to CRI's services

What does the HCV population look like?

- There are roughly 210 patients that are reported as having HCV, although one employee noted that this appeared to be a very low number for a high-risk population
- The patient population includes those who are active or former drug users
- This population is often fearful of the stigma associated with HCV, wary of diagnosis and generally uninformed about the new treatment options
- There is also a lot of misinformation around the side effects of the new treatments which may discourage patients from seeking treatment

How does the centre encourage HCV testing?

- CRI's initial referral form includes targeted questions on whether clients have been tested for Hepatitis B and C
- All of the staff at the centres are trained in carrying out dried blood spot tests (DBSTs)
- There is peer support that meets once a month to help people to get to appointments for Hepatitis tests



Sources: 1. KPMG Interviews 2. Reach Out Recovery Birmingham http://www.cri.org.uk/content/reach-out-recovery-birmingham

The Oslo low threshold network focuses on drug users

3 PRINDSEN MOTTAKSSENTER AND PARTNERS

Overview

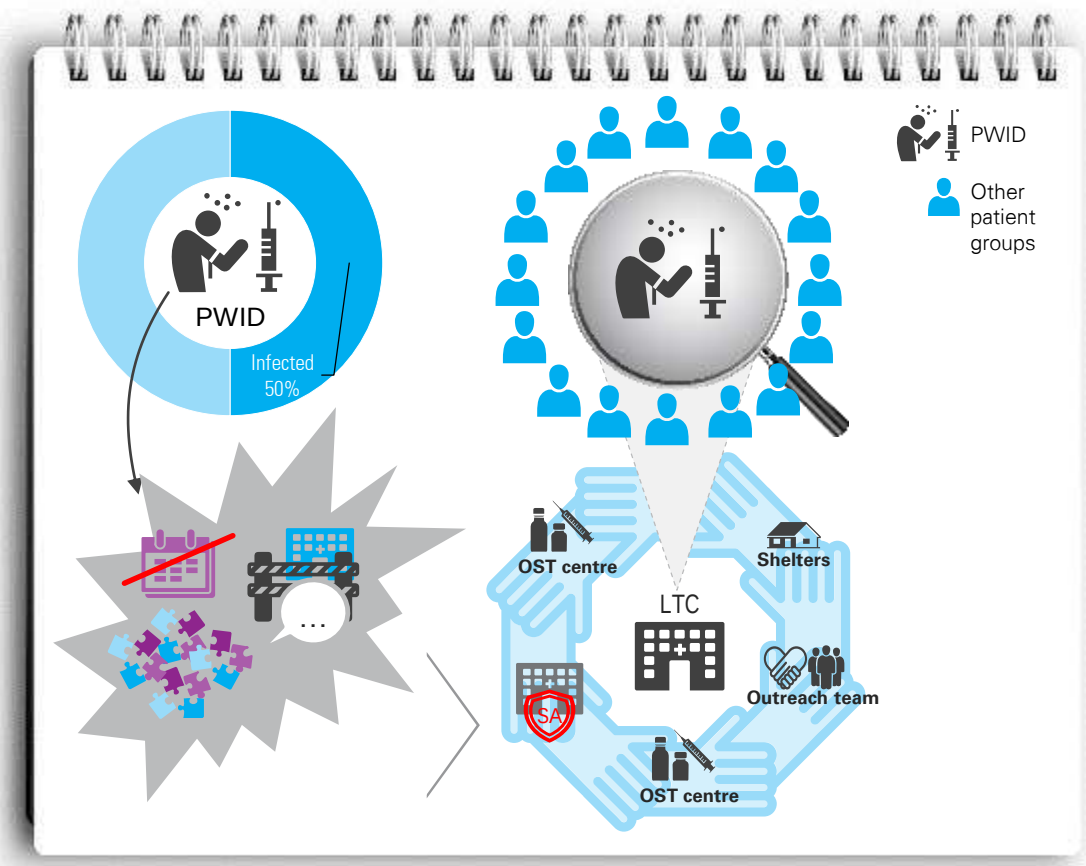
- The Prindsen Mottakssenter low threshold clinic and its partner organisations focus on the treatment of people who inject drugs (PWIDs) in Oslo
- Staff from the low threshold clinic have developed a collaborative relationship with numerous other organisations in Oslo, including the city's opioid substitution therapy (OST) centres, a private street hospital operated by the Salvation Army (Gatehospitalet), and an addiction shelter (24SJU)
- These centres collaborate to test, diagnose, treat, and support PWIDs, both for Hepatitis C and other problems such as addiction, injuries (e.g. wounds and abscesses) and mental health issues

What is the rationale for such an initiative?

- PWIDs have a very high rate of chronic Hepatitis C infection (as high as 50%) compared to the rest of Norwegian society. This group is difficult to reach via traditional healthcare routes because of their chaotic lifestyles
- Professor Dalgard from Akershus University Hospital identified that there was a difficulty in treating HCV in drug users, and approached the Oslo City Authorities with the idea to begin Hepatitis C treatment at an existing low threshold clinic in the city. This began operating in 2013 at Prindsen Mottakssenter
- In addition to active and former drug users, the centre also caters to migrants and homeless populations

What is the objective?

- The Hepatitis C project was set up to specifically target PWIDs and deliver care to them in a way better suited to their specific lifestyle challenges, integrating with existing measures put in place to provide addiction support
- Ultimately, the aim is to ensure that HCV is eradicated amongst the PWID community



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Source: 1. KPMG Interviews

Collaborative delivery of care supports the lifestyle needs of drug users

3

PRINDSEN MOTTAKSSENTER AND PARTNERS

What is the programme's operating model?

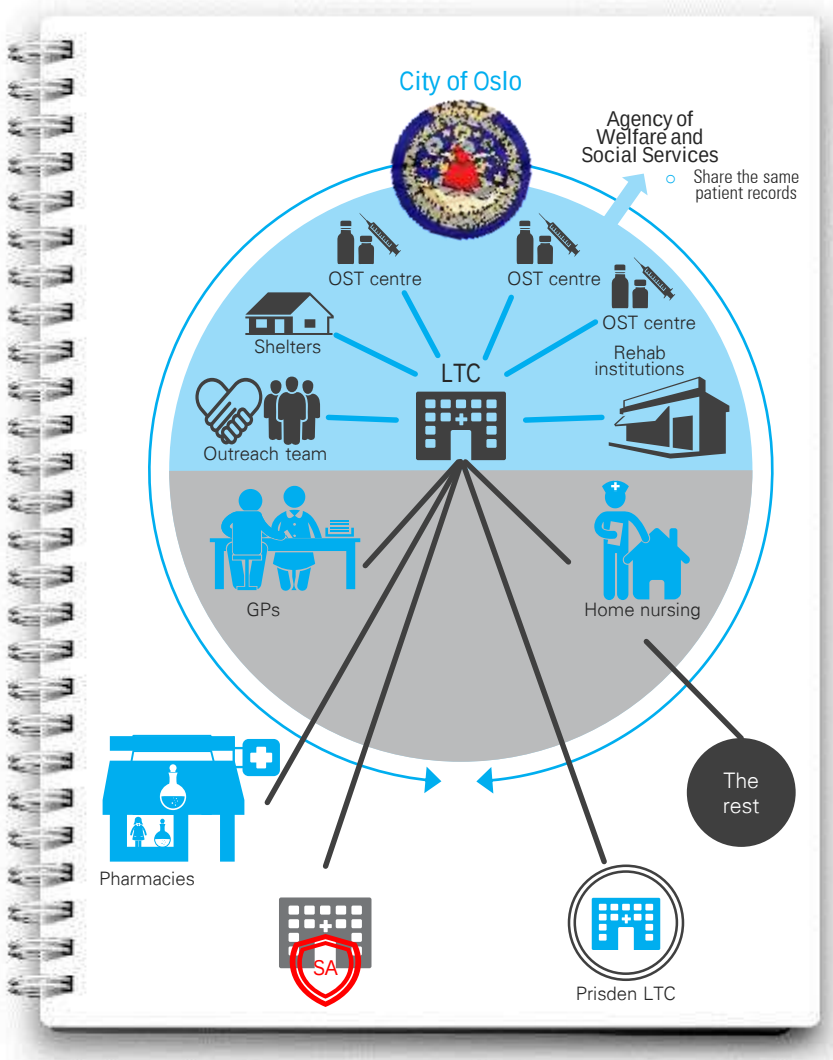
- Prindsen Mottakssenter acts as the central testing and treatment hub
  - Patients can visit the centre without an appointment to be tested (blood and elastography) or receive support, and receive cirrhosis care
  - Staff also visit patients in their homes or at other locations, such as the Salvation Army's Gatehospitalet or OST centres. A portable elastography machine, shared with the Salvation Army offers further flexibility
- Medication is dispensed to suit the patient's schedule – they can come to the low threshold clinic to collect it, or receive it from OST centres when they go to receive their substitutions. The low threshold clinic also collaborates with pharmacies to dispense DAAs to patients when they visit to collect their methadone
- The different organisations within the network communicate closely, yet informally, to ensure that each patient is addressed in a way that suits their particular circumstances

What is the impact?

- Prindsen Mottakssenter is currently operating at maximum treatment capacity. Due to staff limitations, they can only treat five patients at any one time. Since opening, the low threshold clinic has treated 35 patients with HCV
- In the 2.5 years of operating, Prindsen Mottakssenter has diagnosed 168 patients with HCV
- The centre is well known amongst Oslo's PWID community and has a good reputation for providing support

Intervention replication tips?

- Connect and collaborate with OST services. It is possible to reach several patients this way, since they are already integrated into the system
- Have having one or two specialist doctors associated with the clinic, supported by a significant team of nurses
- Approach each patient's case individually, take time to figure out their habits and routines, and plan care accordingly. A significant part of working with PWIDs is developing the relationship between carer and patient



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Source: 1. KPMG Interviews

The Salvation Army's Gatehospitalet and Prindsen Mottakssenter share resources

3

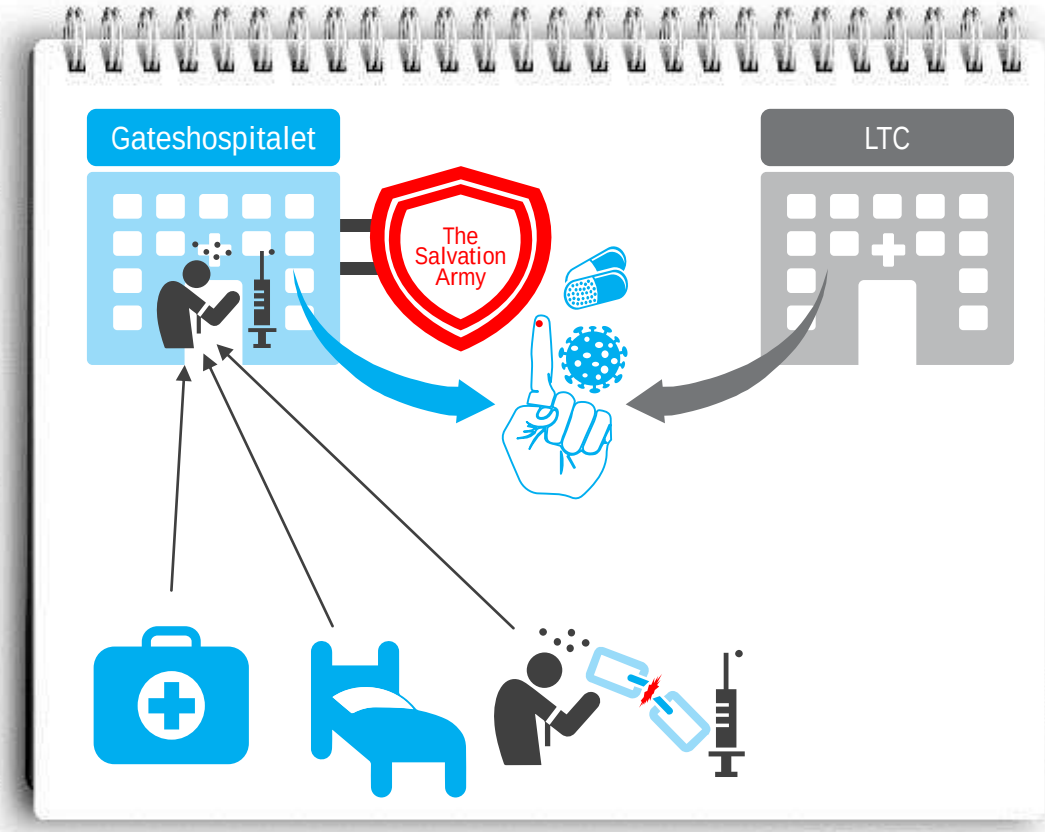
PRINDSEN MOTTAKSSENTER AND PARTNERS

Overview: Gatehospitalet 'Street Hospital'

- The Salvation Army runs a private hospital in Oslo that acts as a centre where PWIDs can receive treatment and support. There is no religious element to the centre, although it does operate within the value framework of the Salvation Army
- The hospital has a team of three doctors, supported by nurses, dedicated to providing care to PWIDs. The hospital building has three gender-segregated wards where patients can stay for extended periods
- It is estimated that up to 70% of the hospital's patients have HCV antibodies, making Hepatitis C a real issue for the centre
- The centre operates as a 'respite care hospital', operating in between primary and secondary care for patients too unwell to be in a hospital, but not unwell enough to be in specialist care

Integration with the network

- The Gatehospitalet received a portable elastography machine as a donation, which they share with the low threshold clinic. Gatehospitalet has the machine on Wednesdays and Thursdays; Prindsen Mottakssenter the rest of the week
- When a patient is diagnosed with HCV, the hospital liaises with Professor Dalgard to get a prescription for medication, since specialists are required to prescribe in Norway
- Because patients often stay at the Gatehospitalet for at least a few weeks, it presents a valuable opportunity to get them tested for HCV and instigate treatment, involving staff from the low threshold clinic as necessary. This gateway to care is valuable considering the chaotic lifestyle of many PWIDs
- One of the nurses based at Gatehospitalet has 30% of her utilisation assigned to the Prindsen Mottakssenter's Hepatitis C project, and so acts as a natural bridge between the centres



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Source: 1. KPMG Interviews

OST centres and the 24SJU addiction shelter refer patients and provide support

3

PRINDSEN MOTTAKSSENTER AND PARTNERS

Overview: OST Centres

- Each administrative region within the city of Oslo has its own OST centre where PWIDs can go to receive substitutions for drugs, as well as receiving psychological, social, and medical support
  - The Villa MAR BA OST centre, which we visited, has 30 active patients, all of whom attend the centre every day
  - Staff estimate that up to 90% of their patients are Hepatitis C positive. Most of the patients are in their 40s and 50s and are long-standing drug users

Integration with the network

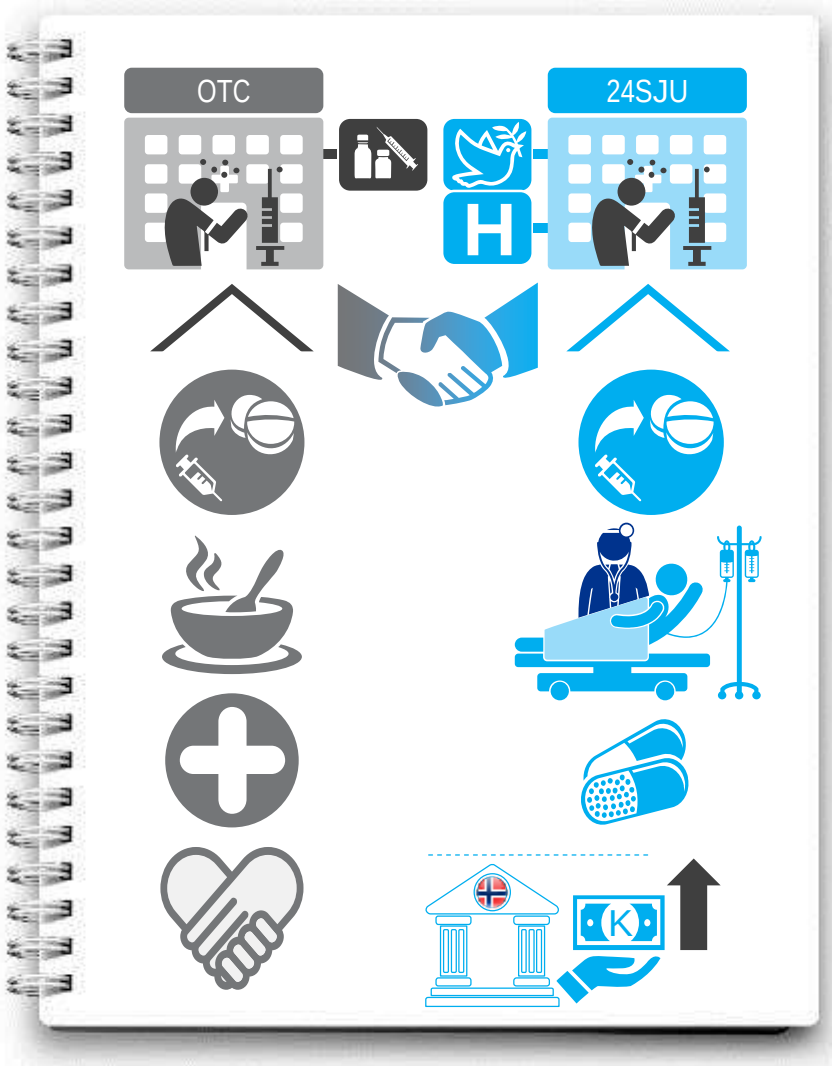
- The OST centres can administer interferon-free medication to patients daily when they attend to take their substitutes. However, there is a challenge in maintaining adherence at weekends and during holidays, when the centres are shut. Staff can call patients to remind them, and ask to verify adherence on Mondays
- Nurses from the low threshold clinic can visit the OST centres to conduct tests for HCV. This approach is flexible and accommodates patients' chaotic lifestyles

Overview: 24SJU

- The 24SJU addiction shelter was established in 2009-10 by mandate of the Norwegian government to provide care and support for Oslo's community of PWIDs and homeless people
  - The centre has almost 3,000 people on its books, with 800 active patients. The centre provides substitutions and support to between 50 and 100 people on a daily basis, and is operating at maximum capacity
  - Staff estimate that between 80-90% of patients are Hepatitis C positive, due to their long-standing drug use

Integration with the network

- Staff at 24SJU conduct blood tests and then refer patients to the low threshold clinic for further testing if necessary. The centre acts as a gateway to the rest of the network
- 24SJU collaborates with local hospitals and Professor Dalgard to independently prescribe medication to patients



Source: 1. KPMG Interviews

At Praxiszentrum Kaiserdamm, patients are treated entirely in the community

4

PRAXISZENTRUM KAISERDAMM, GERMANY

Overview

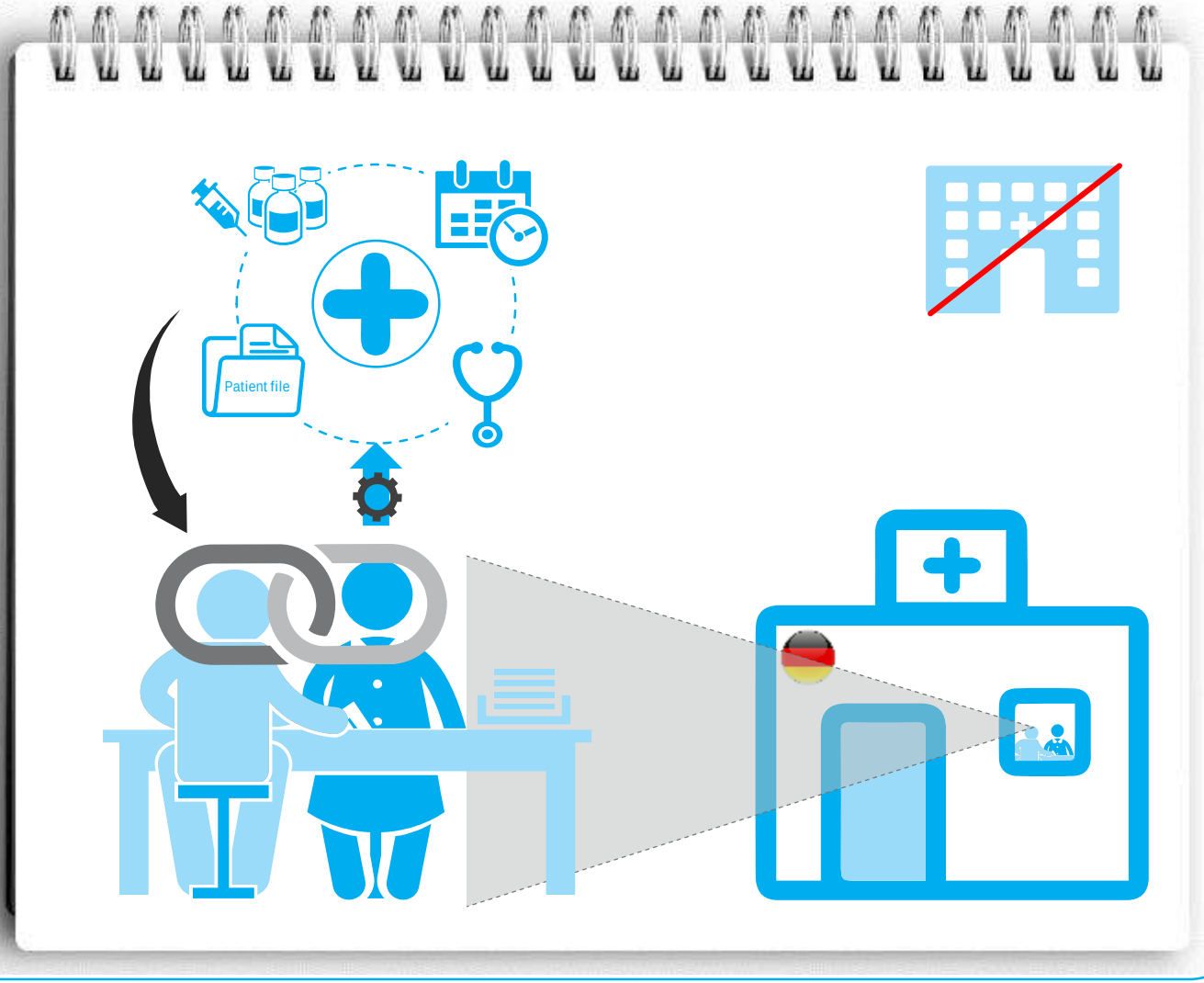
- Whereas the typical patient pathway in many health systems begins with a referral by a GP to a specialist hepatology centre, at Praxiszentrum Kaiserdamm patients with HCV receive their treatment entirely in the community. This model occurs in many large cities in Germany, where GPs play a larger role in managing complex diseases

How does it work?

- Doctors manage the patient's entire journey, from initial appointment, testing and diagnosis, through to the initiation of treatment and management of the disease through to cure
- This encourages a more holistic, personal and one-stop approach to managing patients

What is the impact?

- Such a holistic approach can be particularly beneficial for PWIDs (who make up to 40% of HCV patients in Germany), who benefit from forming a long-term, knowledgeable relationship with their doctor
- Doctors are fully aware of any further complications surrounding the HCV infection, such as co-infections (particularly with HIV), lifestyle issues, or psychological problems, and can tailor treatment accordingly themselves
- Praxiszentrum Kaiserdamm collaborates with OST programmes to provide an even more integrated service to patients who are PWIDs
- Staff from Praxiszentrum Kaiserdamm also target areas where PWIDs tend to live to help encourage them towards treatment



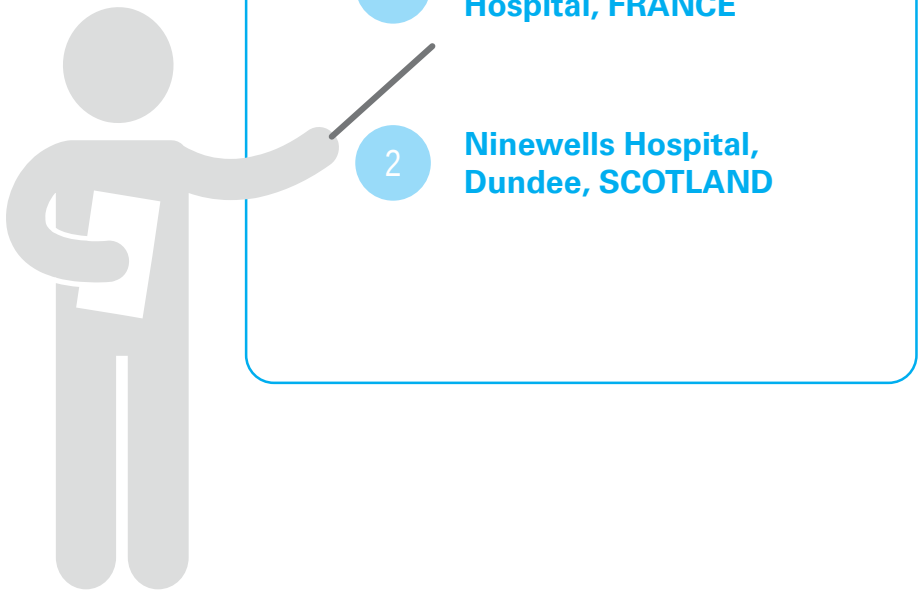
Source: 1. KPMG Interviews

Hospitals work with prisons to combat the high prevalence of blood-borne viruses

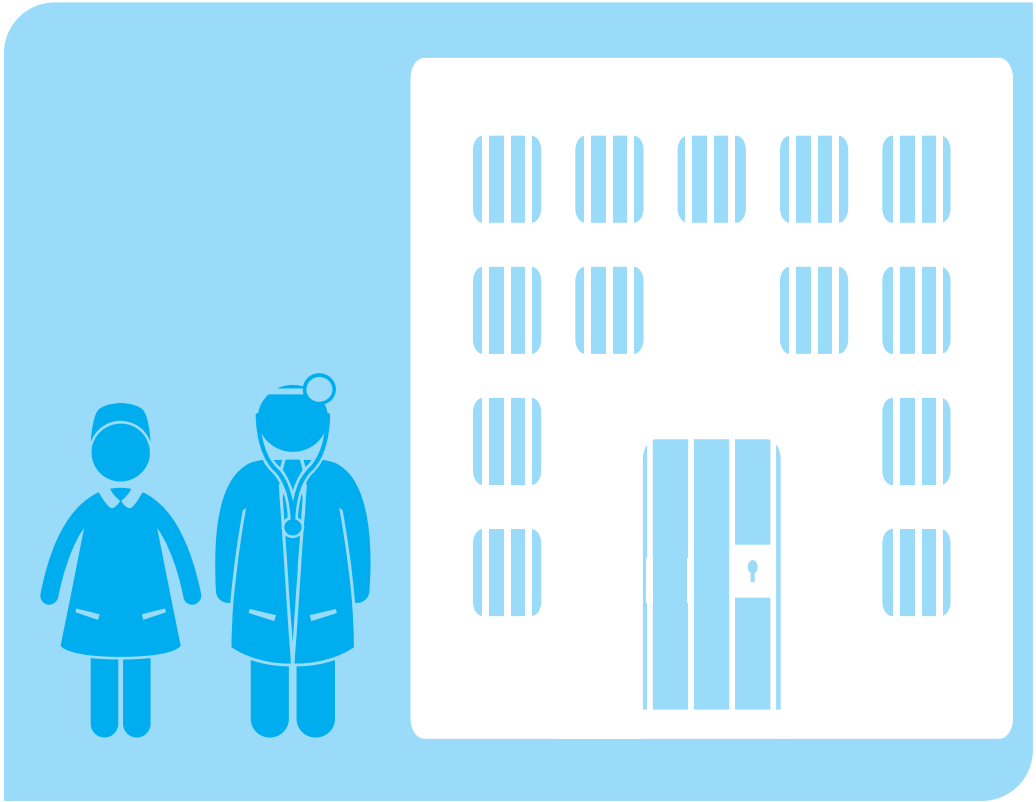
WHY WORK IN PRISONS?

- There is a high rate of HCV infection in prisons with the population becoming infected through sharing needles for drug use and tattoos. A specialist nurse can hold regularly clinics to test and diagnose patients
- Such a programme relies on an integrated health and prison system as well as strong relationships with external HCPs and internal prison staff

WHERE HAVE WE OBSERVED SUCH MODELS?



1. **Grenoble University Hospital, FRANCE**
2. **Ninewells Hospital, Dundee, SCOTLAND**



In Grenoble, a hepatologist delivers care in the prison environment

1

GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Overview

A hepatologist from Grenoble University Hospital goes to the Varces remand centre once a month and holds clinics for patients who have already been screened for Hepatitis C by the prison nurses. In Varces there are approximately 300 prisoners, 7% of whom are HCV positive

What was the rationale?

- It was difficult to bring patients to clinics. They were often brought to the hospital in wrist and ankle restraints, which seemed inhumane to the team
- Prisoners would also get seen only once by the hepatologist and then end up being lost in the system

What were the objectives?

- Treating prisoners on-site for Hepatitis C
- Educating prison staff to better understand Hepatitis C
- Preventing the spread of the virus

How were they achieved?

- At least once a year, the hepatologist organises 'health cafes,' (café santé) which are education sessions for prisoners on specific themes such as the liver, alcohol or Hepatitis
- The Prométhée network has developed an information leaflet on Hepatitis which has been translated into 19 different languages to meet the needs of the diverse prison population
- This leaflet has been distributed to many other centres within France

What are the challenges?

Screening:

- Prisoners often refuse testing because they fear being stigmatised by their fellow inmates if it becomes widely known that they have Hepatitis C
- In order to tackle this problem, when the prisoner is called for their appointment, they are told that a 'specialist' wants to see them, with no specific details provided

Prison staff:

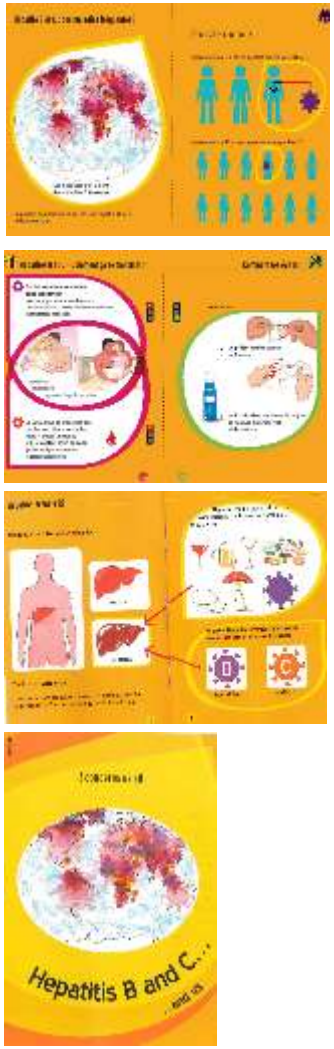
- Some staff may not be well educated on Hepatitis C and hence may not provide sufficient support to the HCPs working in the prisons
- The staff may not have a negative attitude towards providing prisoners with treatment

Language barriers:

- There is a high immigrant population in prisons who speak languages other than French
- This makes it difficult to communicate information on Hepatitis C

What are the future steps?

- The team want to acquire a mobile elastography machine so it can be used at the prison and also in other settings (such as in drug addiction centres visited by the Promethée network)
- Currently the liver scan is carried out at the hospital which is difficult due to the challenges of transporting prisoners securely



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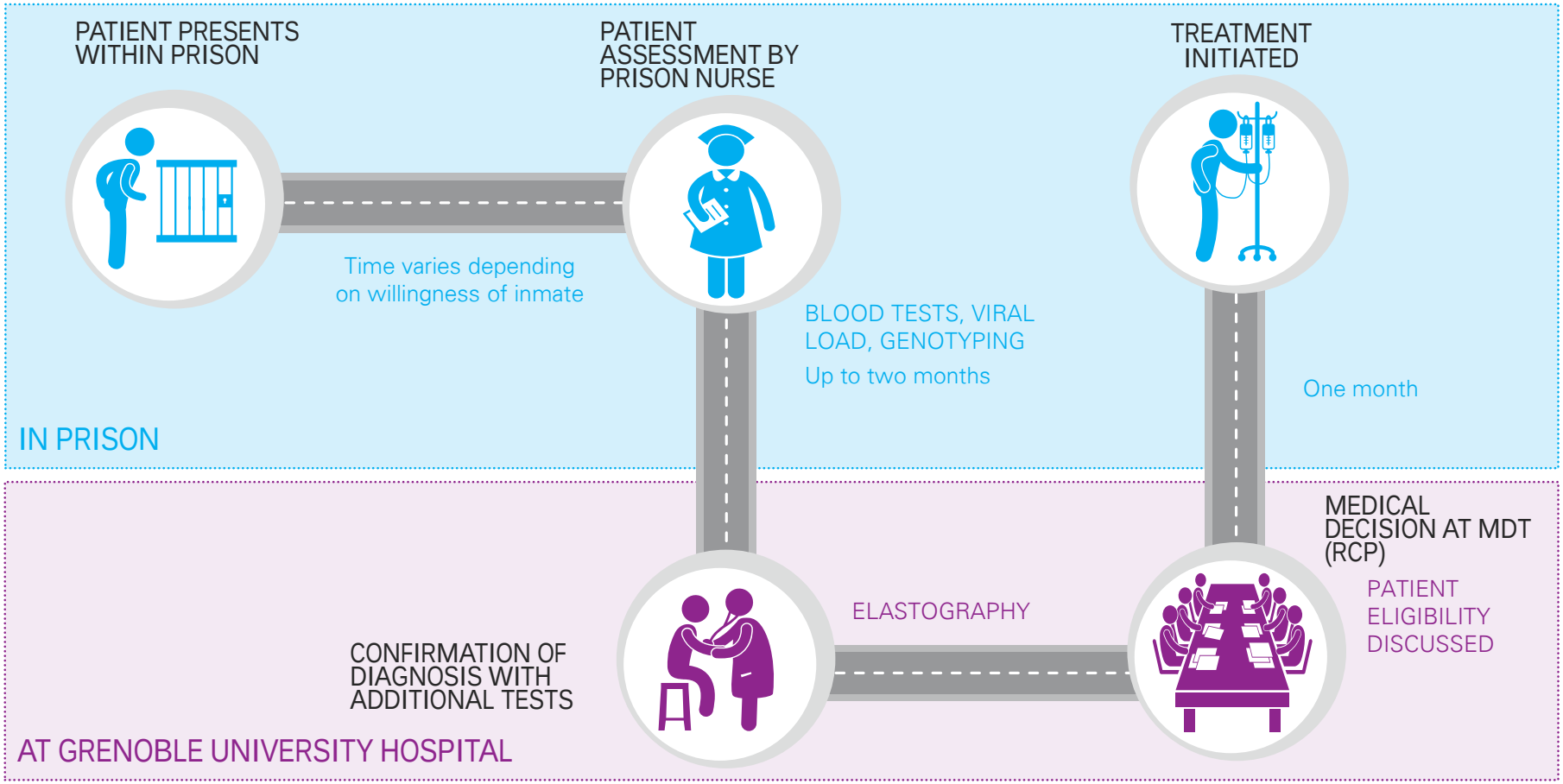
Source: 1. KPMG Interviews

The majority of care occurs within the prison setting

1 GRENOBLE UNIVERSITY HOSPITAL, FRANCE



Source: 1. KPMG Interviews

Ninewells targets a prison population with a high prevalence of Hepatitis C

2

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Overview

The outreach into prisons is part of the Tayside HCV Managed Care Network (MCN)

The prison outreach in Tayside currently extends to Perth Prison and Open Estate Castle Huntly (a minimum security prison)

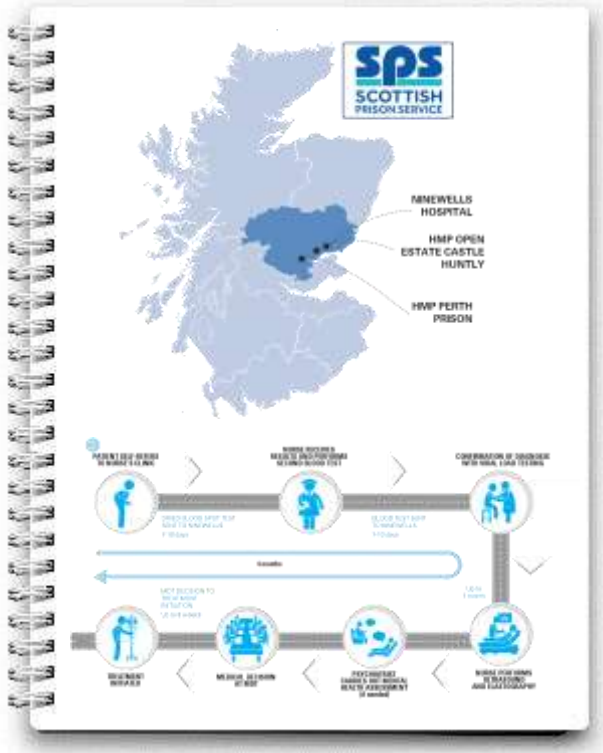
Prison is seen as a 'reservoir for infection' – approximately 75% of the 1,000 patients in the two prisons are known to be HCV antibody positive – mainly due to the sharing of needles in IV drug use and tattoos

What was the impact?

- The on-site specialist nurse had direct access to prisoners on a regular basis
- The specialist nurse built strong, sustainable relationships with prisoners and prison staff
- Being part of the MCN allowed the nurse to share knowledge with and benefit from the expertise of HCPs from Ninewells and the other centres involved
- The strong link with the substance misuse team allows the nurse to share patients that may leave prison and seek support in managing drug or alcohol addiction

What are the challenges?

- Lack of access to on-site liver elastography. Having a machine available at all times could speed up the patient pathway as currently the specialist nurse from Ninewells only goes to the prison once a month with a portable elastography machine
- Limited prisoners are starting on treatment due to the mental health side effects of peginterferon and the high cost of DAAs
- Patients undergoing treatment are sometimes transferred with little notice and the specialist nurse does not have the time to notify the receiving prison
- HCV-positive prisoners are lost in the transition between prison healthcare and external healthcare services



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Source: 1. KPMG Interviews

Challenges remain once prisoners are released

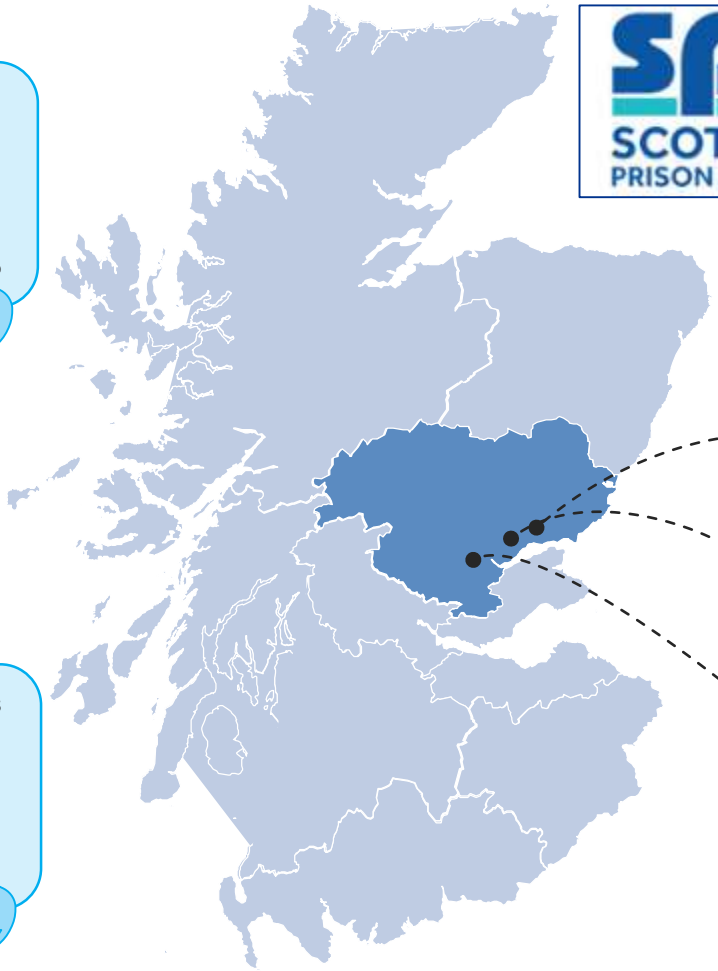
2

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

We spoke to a specialist nurse working in Perth prison

Patients go in and out of prison so it acts as a reservoir for infection. It is also a setting in which prisoners will be initiated to the consumption of drugs.

Employee, Drug Problems Service



All 750 patients that are infected with HCV could be treated on the new treatments… The main barrier is the financial cost of the drugs.

Specialist nurse, Perth Prison

It takes a while to build relationships with prison staff. Some have the attitude that the prisoners are just 'junkies' and it's their fault if they have Hepatitis C.

Specialist nurse, Perth Prison

At the moment we prioritise patients who are staying in prison long-term but in the future we could start more patients on treatment in prison and then continue them on treatment out of prison.

Specialist nurse, Perth Prison

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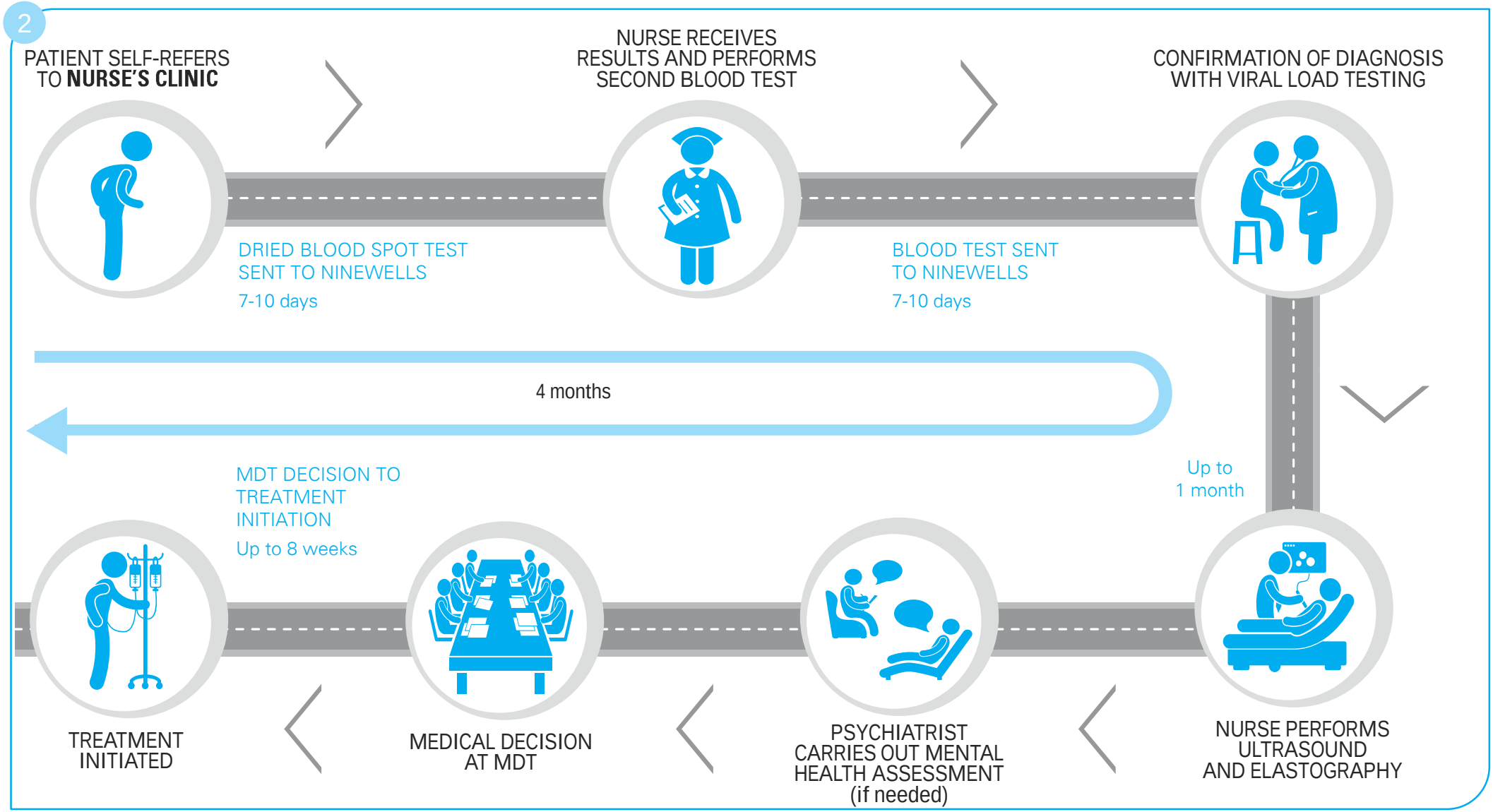
Source: 1. KPMG Interviews

Bringing care to the patient is central to Ninewells' approach to treating prisoners



Source: 1. KPMG Interviews

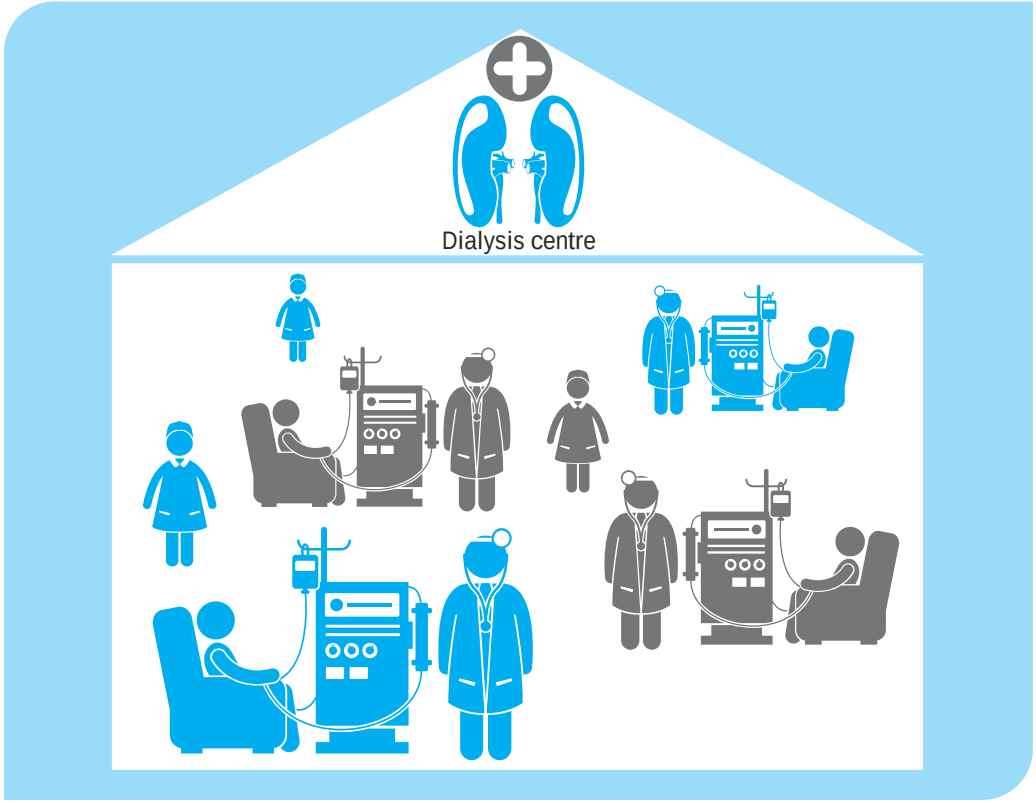
Educating dialysis centre staff about equipment sterilisation can reduce infection rates

WHY WORK WITH DIALYSIS CENTRES?

- Educating dialysis centres in how to prevent Hepatitis B and C infection and proper sterilisation techniques is instrumental in reducing infection rates. Working with dialysis centres has been shown to halve infection rates in a decade

WHERE HAVE WE OBSERVED SUCH AN INITIATIVE?

1 **Izmir Tepecik Education and Research Hospital, TURKEY**



Tepecik provides training to haemodialysis centres to improve the quality of HCV care

1

IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

Overview

- There are 34 haemodialysis centres in Izmir. The team at Tepecik has a relationship with all of these
- In 2005, the team invited all the doctors from the 34 haemodialysis centres to attend training on good hygiene practices and methods to prevent the spread of Hepatitis B and C
- In 2007, there was a two day symposium on Hepatitis and haemodialysis, attended by 120 doctors
- The current programme involves visiting haemodialysis centres in Izmir every six months to carry out inspections

What was the rationale?

- 10 years ago when there were less treatment options, working with haemodialysis centres was seen as a way of reducing the spread of the virus
- Almost every centre has approximately 100 patients, 5% to 6% of whom were infected with HCV. Interferon-based treatment was considered too difficult for these dialysis patients due to an unfavourable level of treatment tolerance among this patient group[2]

What does the education programme involve?

- How to prevent Hepatitis B and C infection
- How to sterilise tools
- How to treat Hepatitis B and C

CONTINUED…

Sources: 1. KPMG Interviews 2. Berenguer M., 'Treatment of chronic hepatitis C in hemodialysis patients' (Nov 2008) http://www.ncbi.nlm.nih.gov/pubmed/18972442

The relationship ensures that hygiene standards are maintained to minimise infection

1

IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

How does the hospital evaluate the progress of haemodialysis centres?

- Tepecik monitors centres to ensure that infection measures are effectively applied
- If a patient is diagnosed with Hepatitis at a haemodialysis centre, the Tepecik team will provide further training
- The Tepecik team also recommends that centres carry out retrospective screening on patients
- If the infection is thought to originate from haemodialysis centres then this will be reported to the Healthcare Directorate, which then takes further action

What is the impact?

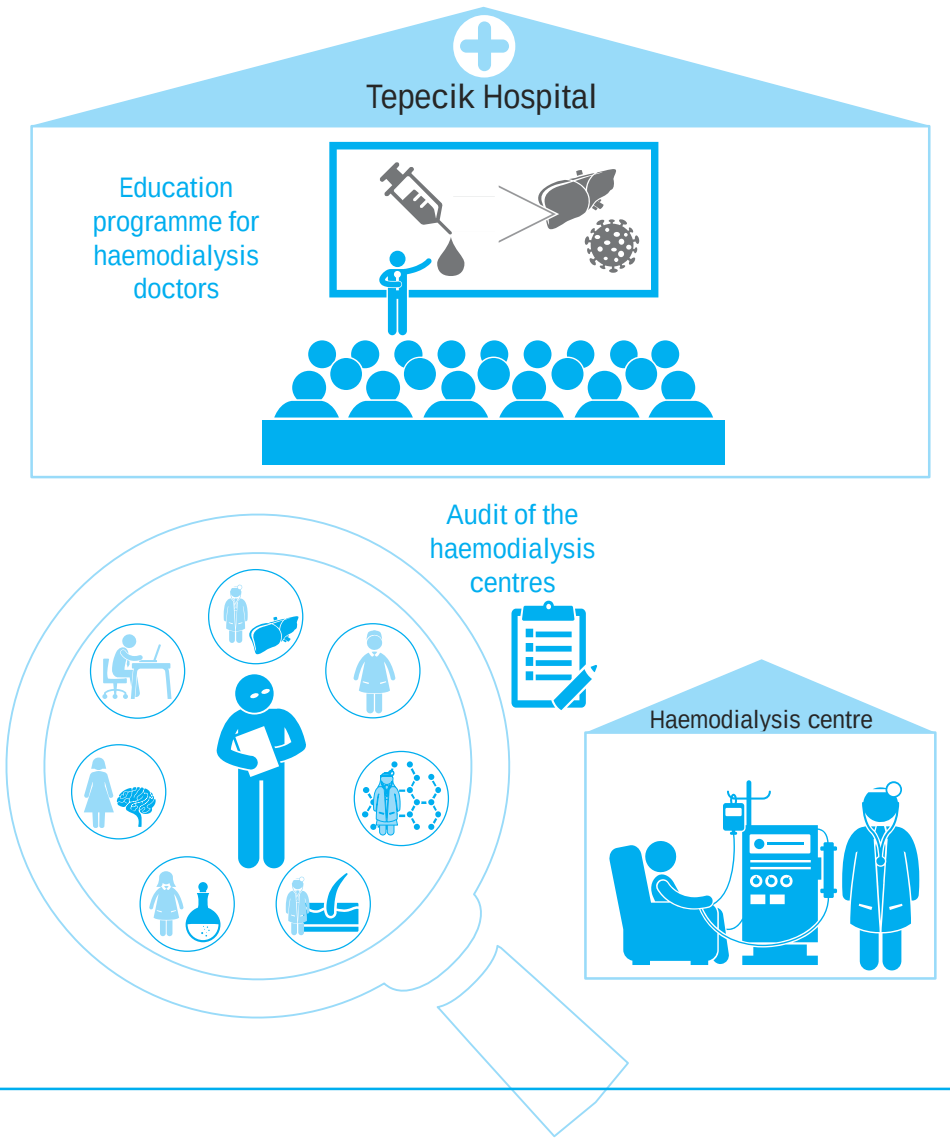
Hepatitis C prevalence and transmission in and around Izmir has been reduced through close follow up of haemodialysis patients and good communication between centres

What are the steps to replicate this initiative?

- Strong relationships and communication between a coordinating hospital and haemodialysis centres
- Standardised hygiene measures should be implemented at haemodialysis centres, with regular inspections to ensure compliance

What is the future of this programme?

- The team believes that Izmir represents a pilot programme that could potentially be extended to other regions of Turkey and could be eligible for the support of the Ministry of Health
- When inspectors have visited centres, patients have expressed their gratitude, underlining that this programme is providing a valuable service
- There is an increasing need for high standards as the high prevalence of kidney failure amongst the Syrian refugees entering the country will increase the burden on haemodialysis centres



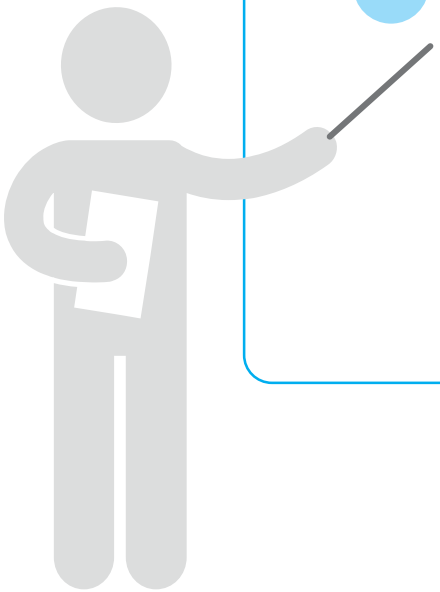
Source: 1. KPMG Interviews

Outreach programmes with brothels deliver care to at-risk sex workers

WHY WORK WITH SEX WORKERS?

- Sex workers are a known high-risk demographic for HCV infection and a proactive approach is needed to mitigate infection and transmission of the virus amongst this population. Working with brothels to screen and identify the workers who have been infected can reduce the risk of the virus spreading
- Having a clinic based at the brothel also allows HCPs to test for other STIs, as well as ensuring hygiene rules – such as condom usage – are being followed

WHERE HAVE WE OBSERVED SUCH AN INITIATIVE?



1 **Izmir Tepecik Education and Research Hospital, TURKEY**

The Tepecik team works with a brothel-based clinic to screen for HCV

1

IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

Overview

The Tepecik team works with a state-regulated brothel in Izmir, in which a health clinic has been built. Turkey has approximately 3,000 licensed sex workers who work in 56 state-run brothels known as *genel evler*, or 'general houses'. These people need to the screened in order to prevent the transmission of Hepatitis and other STDs

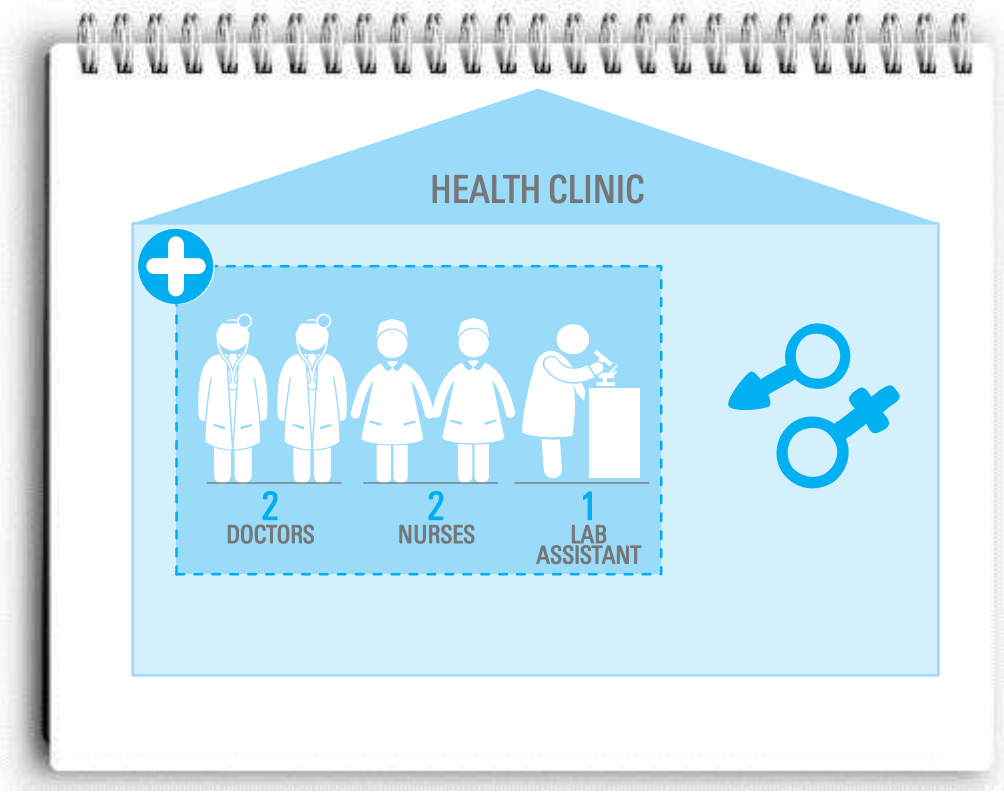
There are two doctors, two nurses and one lab technician involved. These staff regularly test the sex workers for HCV as well as other blood-borne viruses and sexually transmitted infections

What is the objective?

- The aim is to identify sex workers who are HCV-infected and mitigate transmission of the virus within this at-risk community

What is the role of the health clinic?

- The physicians from Tepecik work with the team members of the health clinic within the brothel to carry out screening of each sex worker on a monthly basis
- HCV-positive sex workers are prevented from working until their treatment options have been considered and clearance of the virus is achieved
- The team also tests for HCB, HIV and sexually transmitted infections (STIs)
- Condom usage is mandatory in brothels, and one of the physicians will regularly check rubbish bins to monitor condom use
- Members of the clinic also test sex workers to check if there is semen in the vaginal area. If the sex worker tests positive for semen, then she is warned against engaging in unprotected sex and the brothel house operative is fined



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Source: 1. KPMG Interviews

The collaboration allows the team to reach a high-risk population and reduce transmission

1 IZMIR TEPECIK EDUCATION AND RESEARCH HOSPITAL, TURKEY

What is the impact?

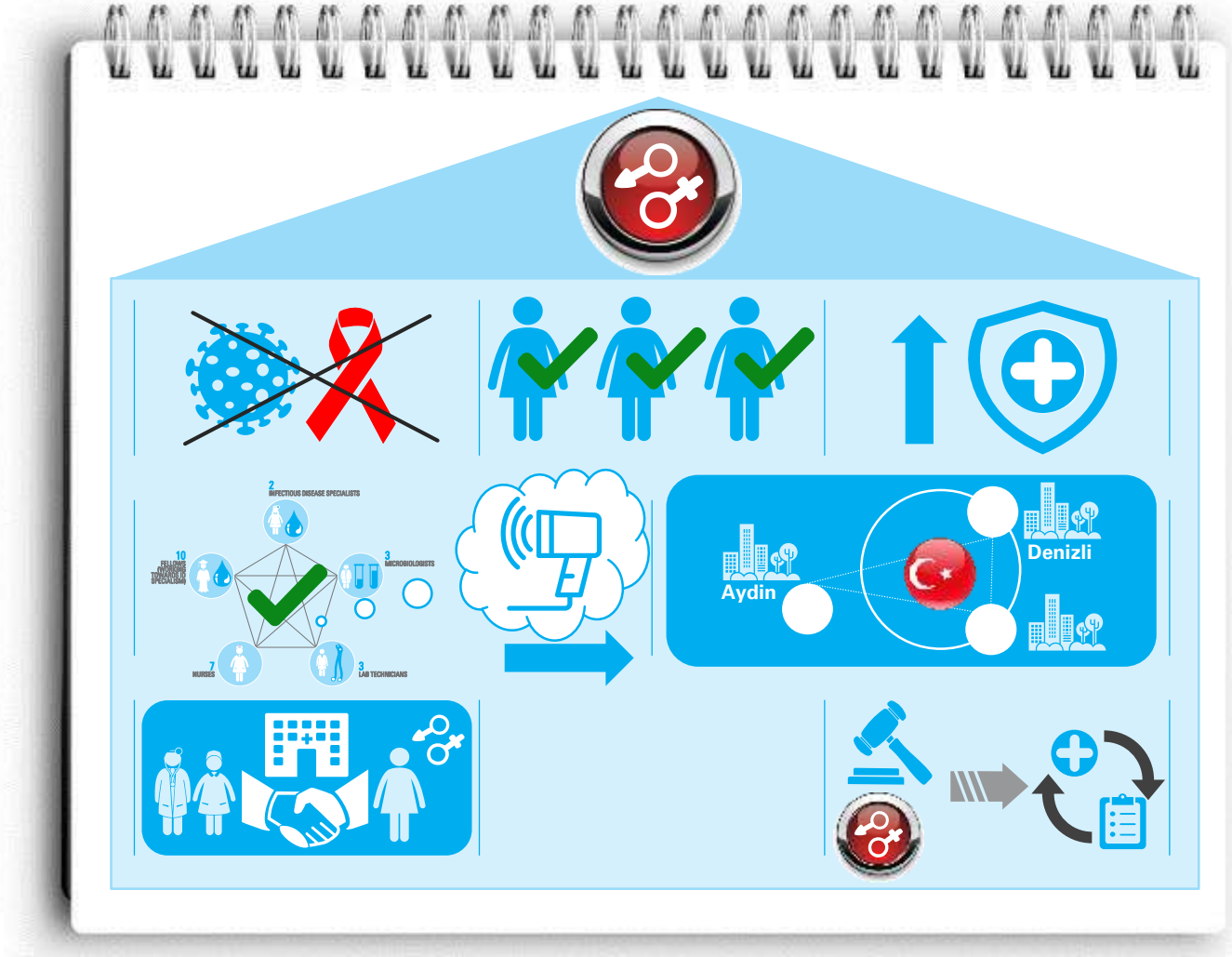
- In the past three years, the brothel has had no HCV or HIV incidents
- Sex workers who were infected at the time of the team's arrival have since been treated and cured
- The preventative measures within the brothel zone have increased as a result of the training provided by the Tepecik team

What are the future developments?

- Although the team has sufficient medical staff based at the clinic, they would like to have more sophisticated screening tools within the clinic
- Other cities in neighbouring provinces, including Aydin and Denizli, may be keen to replicate this initiative

What are the steps to replicate this initiative?

- In order for such an outreach to be effective, strong lines of communication need to be established with public health specialists
- The fact that the brothel zone is state regulated helps to facilitate a formalised public health initiative



Source: 1. KPMG Interviews

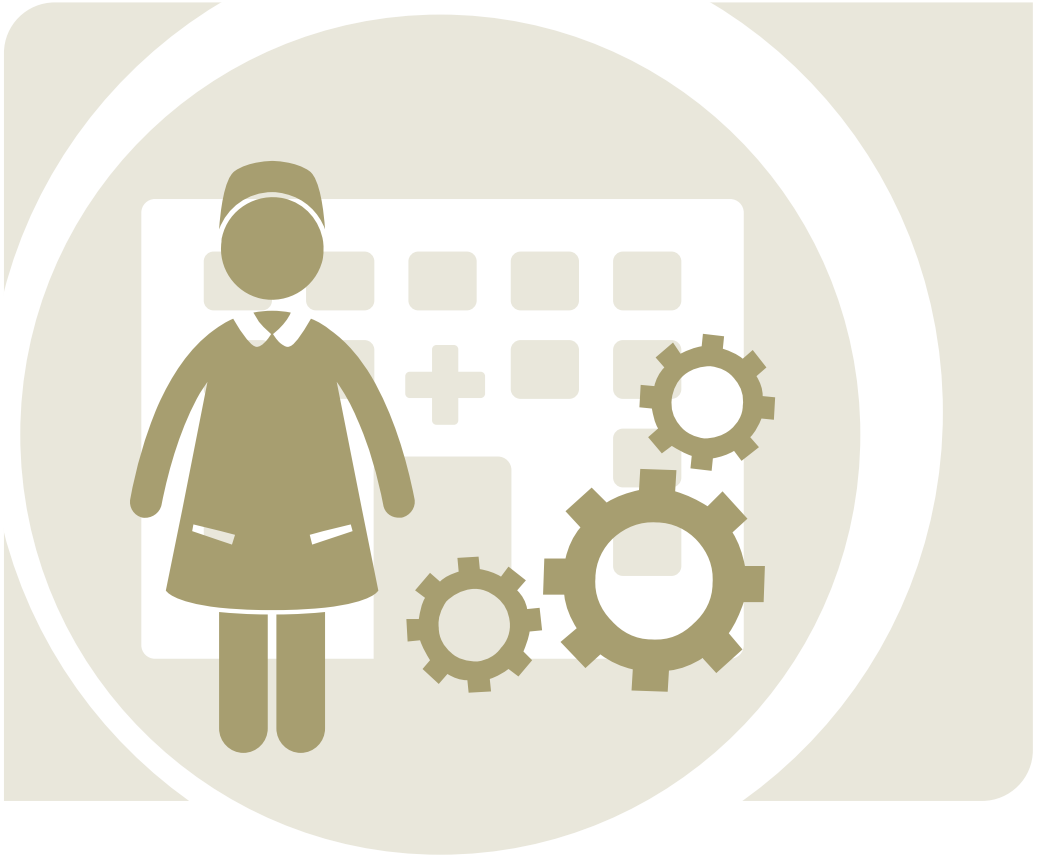
Nurse-led clinics improve patient access to treatment

WHAT ARE NURSE-LED CLINICS?

- Nurses support physicians in the management of patients by taking over some key tasks such as blood tests and elastography tests. This frees up the physician's time to focus on the most relevant problems

WHERE HAVE WE OBSERVED SUCH MODELS?

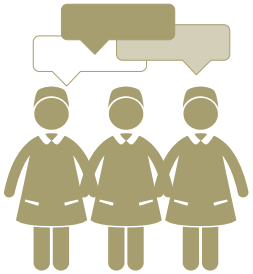
1. Monash Health, Melbourne, AUSTRALIA
2. Ottawa General Hospital, CANADA
3. Queen Elizabeth Hospital, Birmingham, ENGLAND
4. Karolinska University Hospital, Stockholm, SWEDEN



At Monash Health, nurse-led clinics have increased access for patients

1

MONASH HEALTH, MELBOURNE, AUSTRALIA



Overview

- Most of the clinics run by the Liver Unit at Monash Health follow a nurse-led model in which the nurses support the physicians in the management of the patients

What is the objective?

- To increase physician capacity by transferring some of their workload to nurses

What is the impact?

- The physicians were able to see more patients following up the set-up of these nurse-led clinics

How is it achieved?

- The nurses take ownership of specific activities that are conducted during patient visits:
  1. Pre-assessment of the patient:
     - On their initial visit, patients are seen by a nurse who will take a blood sample and review mental and medical health histories, including checking for any recent ultrasounds
     - Nurses also run education sessions, which are similar to counselling, to help patients prepare for treatment
  2. Medical assessment
     - A meeting is booked with a doctor for a full medical assessment
  3. Treatment and follow-up:
     - Patients are introduced to the pharmacy to better understand their medication
     - They are regularly seen by the nurses to monitor the progress of their treatment, and by the physicians when required
- The nurses run a patient database which they have designed themselves
  - They record and regularly update key pieces of patient information (e.g. antibodies, genotype, past treatments and patient responses, GP details, etc.)

What are the tips given by the team to replicate this intervention?

- Get buy-in from hospital management and work with a business manager
- Secure:
  - funding to cover secretarial cost and any other administration support
  - space to accommodate the clinic
- Work with pharmacy, pathology and radiology (the latter should have adequate knowledge regarding the detection of hepatocellular carcinoma)
- Have contact details for nurses and pharmacists to give out to patients
- Create and monitor a patient database

> All these tips (*see left*) are very important and need to be followed before you start the clinic. I would not want to be seen as unprofessional when I see my patients!
>
> ***HCV nurse, Monash Health***

Source: 1. KPMG Interviews

In Ottawa, nurse-led clinics allow the physicians to focus on specialist tasks

2

OTTAWA GENERAL HOSPITAL, CANADA

Overview

- The team have been running nurse-led clinics for approximately two years where nurses carry out initial patient work, including elastography and blood tests

What are the objectives?

- To enable physicians to have a more efficient and informed discussion with patients
- To increase throughput in the clinic so more patients are seen

What is the impact?

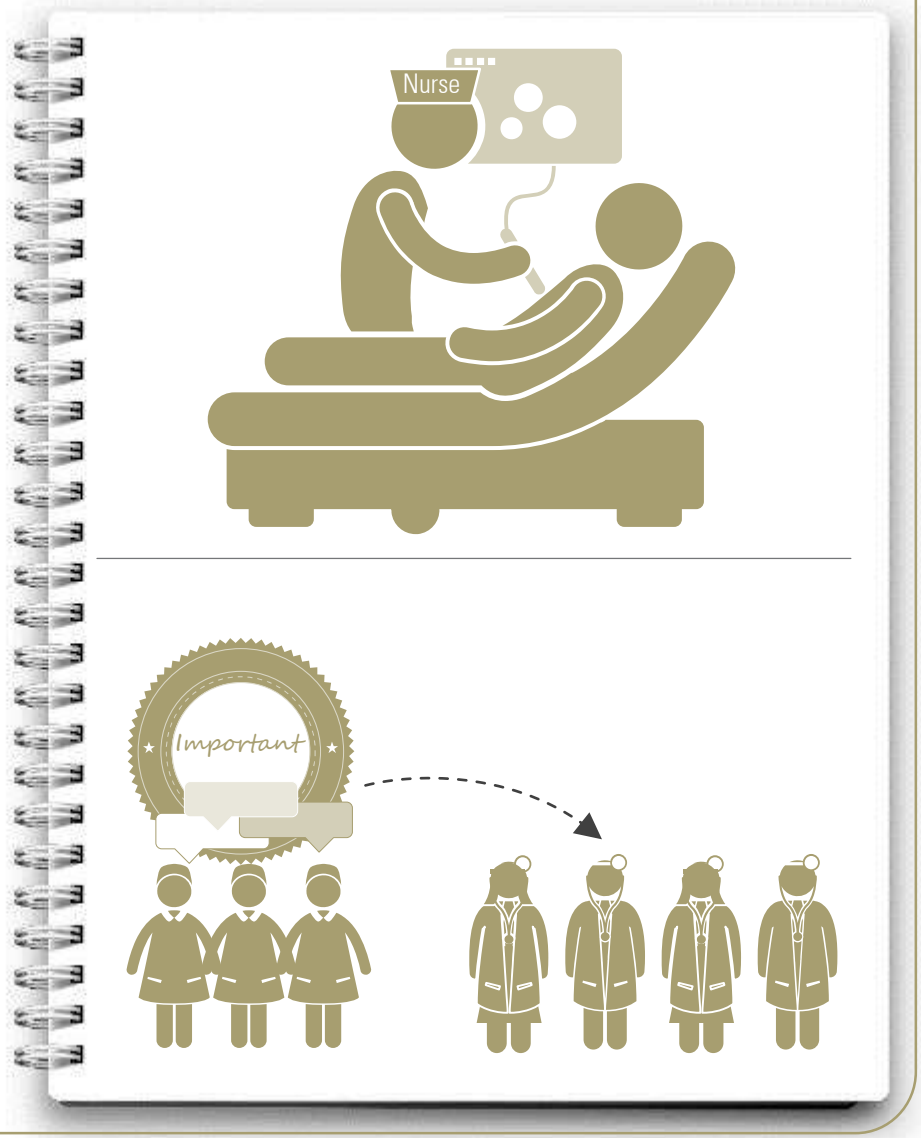
- The clinics allow physicians to see an extra 20 patients per day. There is a significant benefit in being able to treat greater numbers as there are 206 cases of Hepatitis C in Ottawa alone[1]
- The initial, nurse-led assessment of the patient has the advantage of targeting cirrhotic patients. If the nurses run an elastography test indicating an F4 level, the patient is then seen by one of the physicians within a month
- The model also helps better identify if patients need psychosocial help

How is it achieved?

- The nurses compile information on how many patients the physicians have seen, the course of treatment, background of patients, and risk factors
- They also carry out elastography and blood tests before the physicians see the patients.
- As a result, the physicians can focus their patient interaction on the most relevant issues in a shorter time

What are the tips to replicate this intervention?

- Enable nurses to perform and/or order lab tests
- Have an elastography device on site and train nurses to use it



Source: 1. KPMG Interviews

Nurses at Queen Elizabeth Hospital have developed their own protocols and benchmarks

3

QUEEN ELIZABETH HOSPITAL, BIRMINGHAM, ENGLAND

Overview

- The team at Queen Elizabeth have set up nurse-led viral Hepatitis clinics

What is the objective?

- To provide more consistent care to patients based on the profile of nurses have historically focused and engaged in a more narrow spectrum of activities

What is the impact?

- The nurses both ease the burden on physicians and improve the efficiency of patient management

How is it achieved?

- The nurses split their viral Hepatitis clinics into three distinct clinics:
  1. New treatment patient clinics
  2. Follow-up Hepatitis C clinic
  3. On-treatment Hepatitis B clinic
- Their main role is to drive adherence by encouraging patients to take their medications regularly
- The nurses have designed their own protocol for managing HCV patients
- The nurses have also developed benchmarks that highlight the side effects of new drugs. The nurses go over these benchmarks with patients to ensure they are aware of all the potential side-effects from the start. Patients are able to take the document home to process the information
- Nurses from the clinic attend the Midlands Hepatitis Nurses' Forum four times a year. These visits are classed as study days. The forums feature talks by specialist consultants and nurses

What are the steps to replicate this intervention?

- Identify, recruit and retain nurses who can develop the skills required and function effectively in an MDT/hub setting
- Provide appropriate training to nurses
- Give access to non-medical prescribing courses (providing the regulatory system in the country allows nurses to prescribe)
- Develop centre-specific protocols as part of the learning experience (as opposed to relying on existing protocols)

> Nurses are classically very good at implementing protocols.
>
> ***Hepatologist, Queen Elizabeth***

> Nurses do away with the disadvantages of doctor-run clinics with less consistent and less expert doctors who participate in delivery of clinics, particularly with registrars.
>
> ***Hepatologist, Queen Elizabeth***

Source: 1. KPMG Interviews

At the Karolinska, nurses take a lead role in patient care

4

KAROLINSKA UNIVERSITY HOSPITAL, STOCKHOLM, SWEDEN

Overview

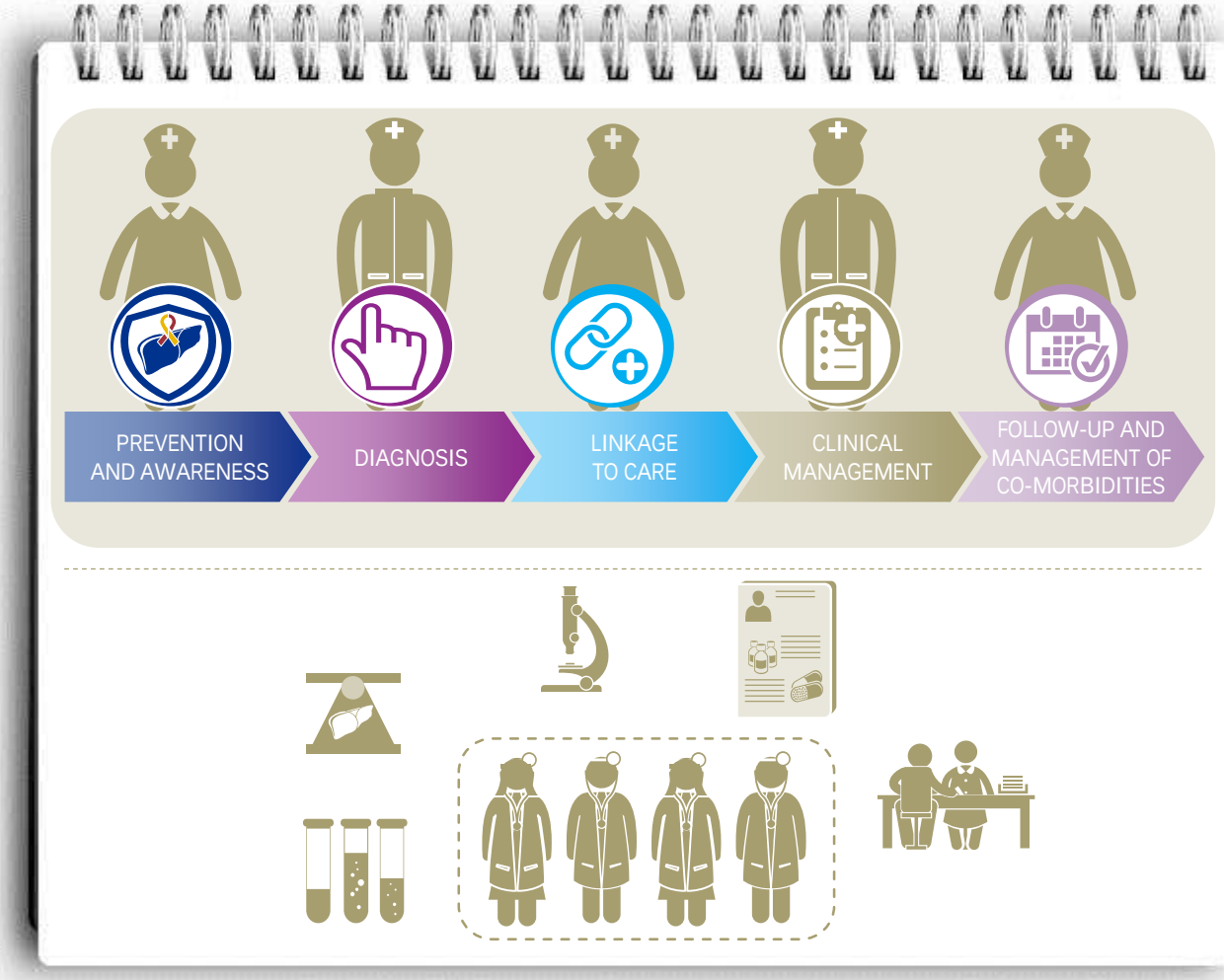
- At the Karolinska, nurses handle the majority of a patient's care along the patient pathway
- Doctors' involvement is limited to analysing test results, deciding on medication plans, and holding occasional discussions with patients to follow up on treatment. When a patient is more acute, their involvement increases
- The Karolinska is in the process of hiring two specialist Hepatitis C nurses to supplement their existing nursing staff to help manage the increasing demand for treatment

What are the objectives?

- To allow doctors to prioritise patients who most need specialist care
- To increase the centre's ability to manage more patients

How does it work?

- Nurses act as the first point of contact for patients, and manage their progress along their journey
- Patients have a phone number for direct access to the nurses in case of emergency
- Nurses are able to conduct blood tests, before passing the results on to doctors for analysis
- Doctors decide on a treatment plan, which is then administered by the nurses. Regular blood tests are used to ensure that the treatment plan is working
- Should a patient's case be critical, doctors become more involved, otherwise they only interact with the patient once during treatment, and at the conclusion of treatment for a follow-up meeting



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Source: 1. KPMG Interviews

Giving nurses greater responsibility allows doctors to focus on specialist issues

4

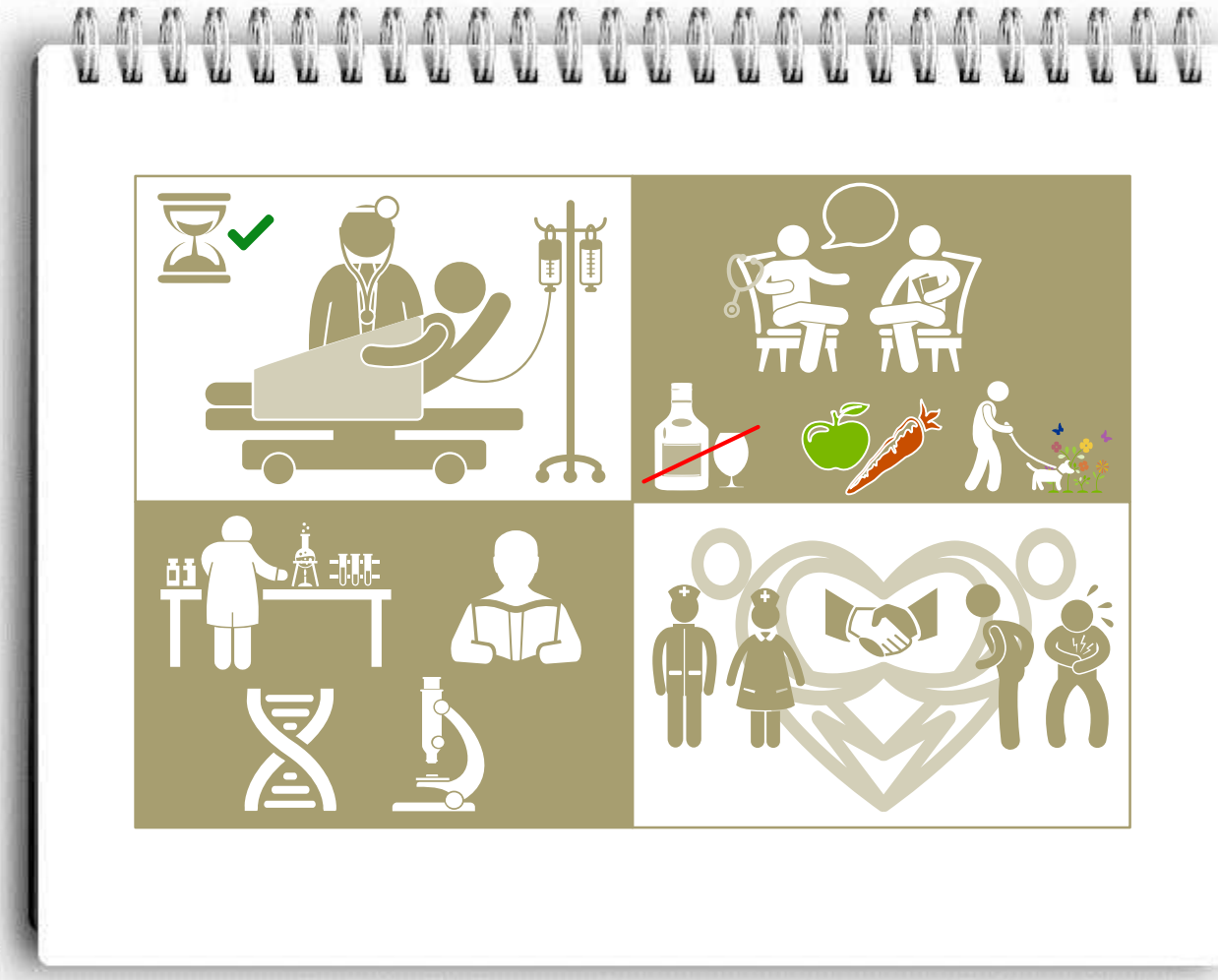
KAROLINSKA UNIVERSITY HOSPITAL, STOCKHOLM, SWEDEN

What is the impact?

- Since nurses handle most aspects of care, doctors are able to focus on more specialist areas, such as:
  - Dedicating more time to treating the most acute and unique patients
  - Discussing lifestyle issues with patients, with a particular emphasis on post-cure lifestyle changes, such as reducing alcohol intake
  - Conducting research
- Because nurses are heavily involved at every stage of the patient pathway, they are able to develop stronger, more knowledgeable relationships with patients

Intervention replication tips?

- Develop a strong, trusting relationship between doctors and nurses, based on strong communication
- Provide nurses with adequate training so they are able to take on additional duties
- Contact time with staff can be increased or decreased according to the patient's severity



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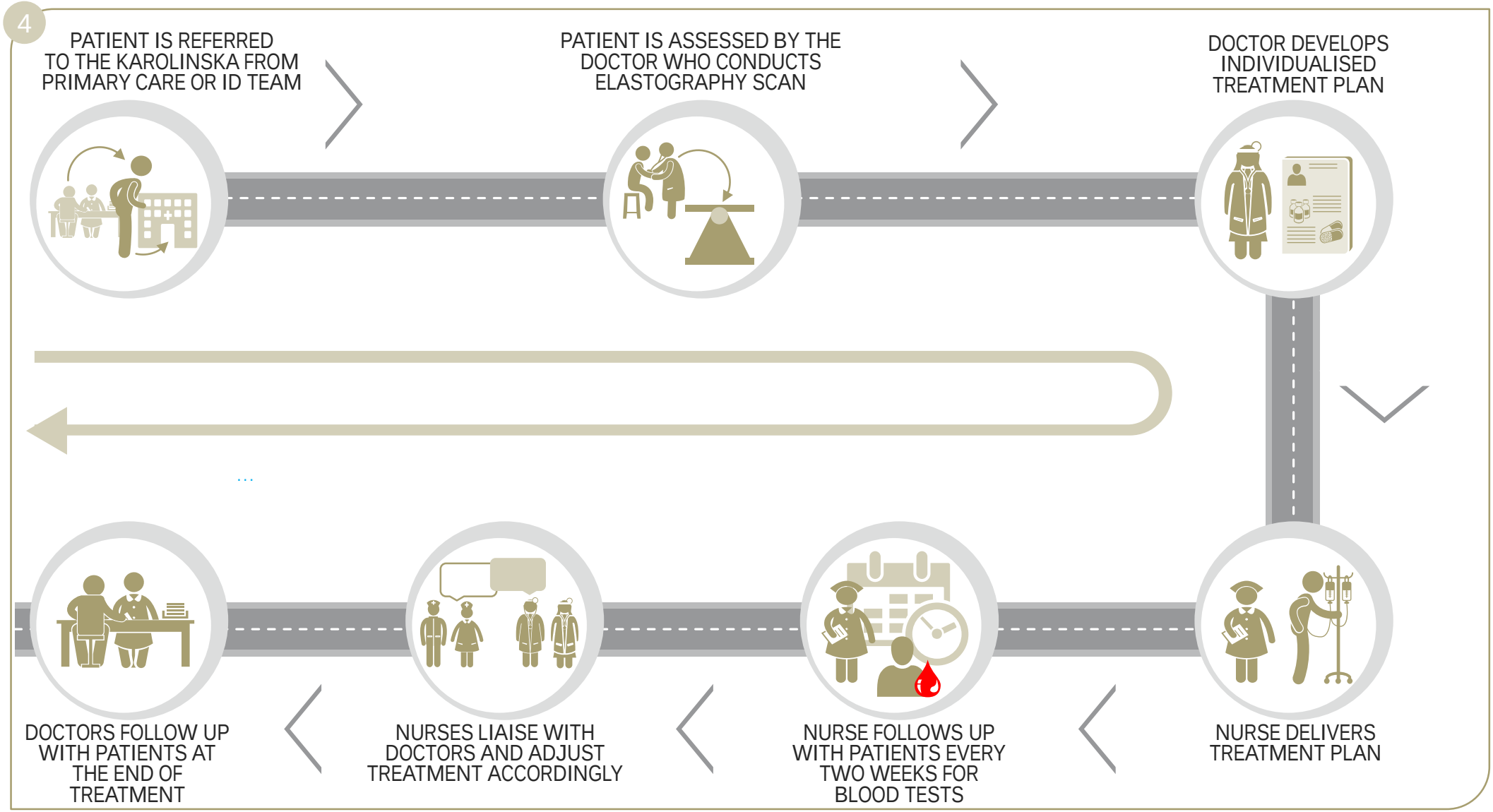
Source: 1. KPMG Interviews

Nurses manage patients with minimal doctor interventions



Source: 1. KPMG Interviews

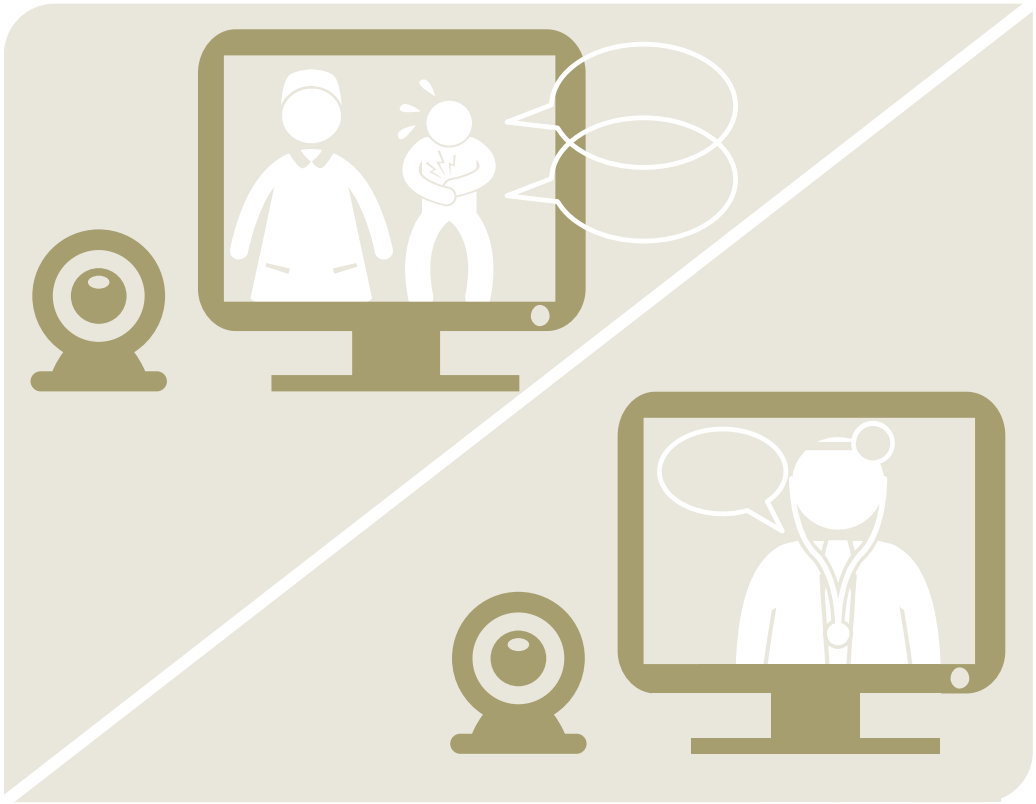
Telemedicine provides remote access to HCV care

WHAT IS TELEMEDICINE?

- Telemedicine is the use of telecommunication technologies to provide direct care to patients who are HCV-positive and unable/unwilling to visit clinics in person. It helps to mitigate barriers to healthcare and improve access to treatment for those who would otherwise struggle to be seen in a central hospital setting. This is a programme which is likely to be implemented in centres with more geographically dispersed patient populations

WHERE HAVE WE OBSERVED SUCH A MODEL?

1 **Ottawa University Hospital, CANADA**



Ottawa University Hospital uses telemedicine to offer direct care to remote patients

1

OTTAWA UNIVERSITY HOSPITAL, CANADA

Overview

The Ontario Telemedicine Network (OTN) is one of the largest telemedicine networks in the world, with more than 2,000 HCPs delivering care in 615 sites across the province.[1] The Hepatitis C programme acts in synergy with the OTN and currently operates through 10 different sites that include a mix of hospitals and community health centres

The consultations are focused on evaluating treatment readiness and providing ongoing monitoring. Education is provided on the various treatment options, testing and care plan. Multidisciplinary visits including nursing, social work and psychiatric assessments are also available through telemedicine[2]

What is the impact?

Improving access

- The no-show rate – which may be as high as 60%[3] in countries such as Canada with large, remote regions where travel to and from appointments is time-consuming – can be greatly reduced by the use of telemedicine

Targeting hard-to-reach patients

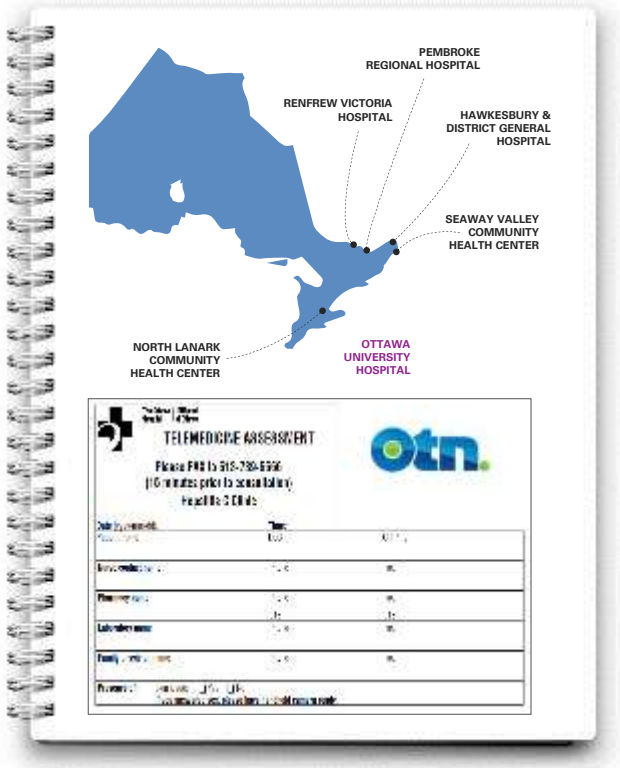
- Hepatitis C often affects marginalised groups i.e. homeless populations and drug addicts. These populations may have limited funds or access to a car, thereby reinforcing the need for alternative clinical care options that are embedded in the community

Integrating care

- Telemedicine relies on existing health centres in the OTN, which provide services in other disease areas ranging from dermatology to diabetes. This increases the incentives for patients to attend the centres and be seen for these conditions as well as Hepatitis C

Providing education

- Telemedicine offers an opportunity to educate patients and local healthcare professionals (HCPs), disseminating best practices amongst a wider patient and physician community



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Sources: 1. Ontario Ministry of Health, 'A Proposed Strategy to Address Hepatitis C in Ontario,' 2009-2014; 2. Ottawa Hospital 'Hepatitis C Telemedicine Clinic Protocol', November 2013; 3. KPMG interviews; 4. Ontario Telemedicine Network https://otn.ca/en

Collaboration is needed to ensure that all patients receive comprehensive care

1

OTTAWA UNIVERSITY HOSPITAL, CANADA

Key

Ottawa Hospital Staff

Patient Site Staff

The **Hepatitis Outreach Nurse** will:

- Identify eligible new patients for consultations from the clinic roster
- Contact patient to confirm their willingness to be seen via telemedicine
- Liaise with locally-based Telemedicine Nurses

The **Telemedicine Scheduler** will:

- Contact the patient and confirm their appointment date and time
- Confirm resources at the referring site and schedule the appointment
- Provide clinic list to Hepatitis Outreach Nurse and Clinical Telemedicine Nurse, one week prior to clinic date for chart preparation

The **Telemedicine Nurse**, who covers all disease areas, will:

- Contact the Patient Site Nurse to inform of documents, assessments and tests to be completed prior to consultation
- Send required documents and instructions to Patient Site Nurse

The **Patient Site Nurse** will:

- Notify patient of appointment time, duration and location
- Fax the required documents e.g. nurse intake form and Hepatitis worksheet, to the consulting site depending on the appointment type

The **Hepatitis Outreach Nurse** will:

- Visit local clinics with a portable elastography device to carry out a fibrosis assessment or make arrangements for the patients to go to Ottawa University Hospital

CONTINUED…

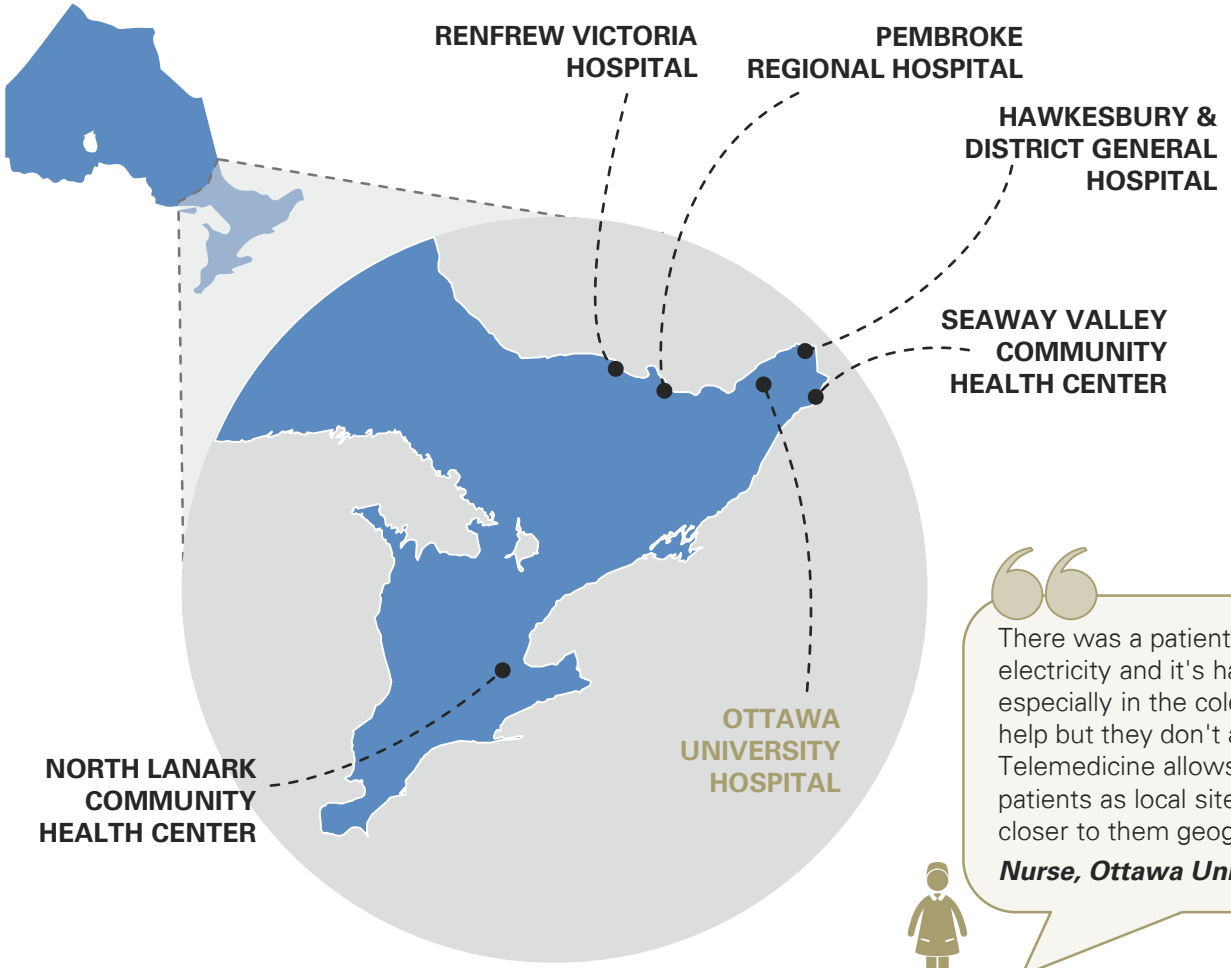
Sources: 1. Ottawa Hospital 'Hepatitis C Telemedicine Clinic Protocol', November 2013; 2. KPMG interviews

Feedback is positive, showing that telemedicine improves access to care

1

OTTAWA UNIVERSITY HOSPITAL, CANADA

We spoke to HCPs from five of the ten HCV telemedicine sites which form part of the Ontario Telemedicine Network (OTN)



> Now telemedicine has become an expectation, our patients don't drive to Ottawa because they know they can be serviced in their own community and serviced well.
>
> ***Nurse, Renfrew Victoria Hospital***

> Huge savings for them to be seen in their own backyard as some of them don't drive in the city and cannot afford the parking and the gas.
>
> ***Nurse, North Lanark CHC***

> There was a patient who had no electricity and it's hard to reach them especially in the cold. They like the help but they don't ask for it. Telemedicine allows us to reach these patients as local sites are so much closer to them geographically.
>
> ***Nurse, Ottawa University Hospital***

Sources: 1. Ottawa Hospital 'Hepatitis C Telemedicine Clinic Protocol', November 2013; 2. KPMG interviews

A multi-disciplinary team approach is key to delivering high-quality HCV care

WHAT IS AN MDT APPROACH?

- At all of the sites we visited, HCV care for patients was delivered through a multi-disciplinary team approach with the involvement of a diverse range of HCPs and allied health professionals
- This approach treats HCV patients holistically so that they are best placed to receive treatment – close coordination is crucial as centres and care professionals take time to get used to the new therapies

What is the rationale for such an approach?

- Patients with HCV care often have a complex range of issues, both somatic and psycho-social
- New therapies require new training for existing team members, and access to specific expertise; the MDT ensures specialist care for all patients

Who is involved?

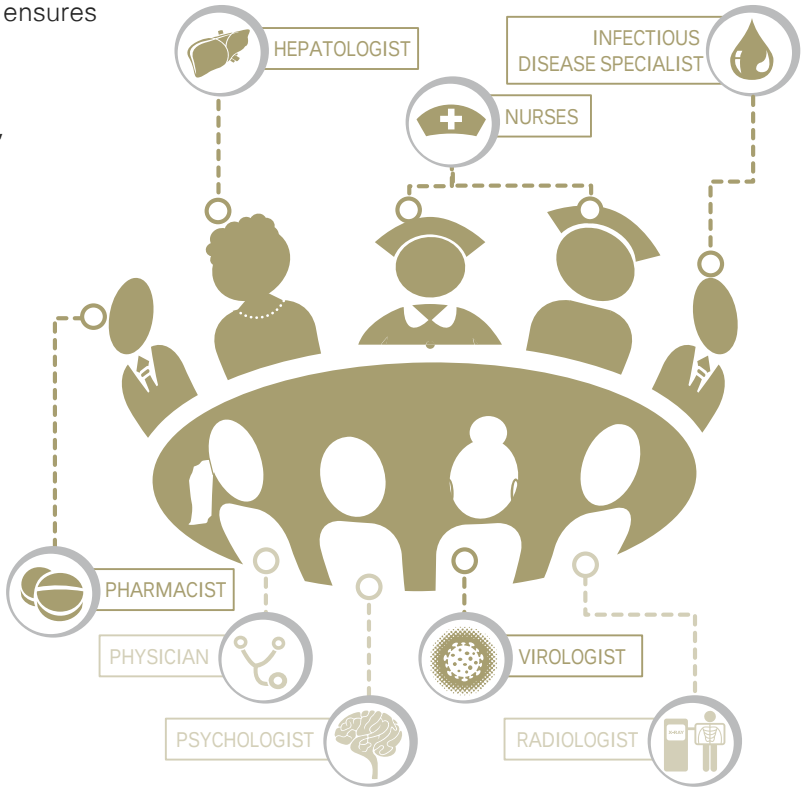
- A diverse range of HCPs including hepatologists, ID specialists, surgeons, gastroenterologists, nutritionists, psychologists and others manage patients suffering from liver disease, including Hepatitis C
- All these professionals, although not officially belonging to the same team, consult each other on their areas of expertise both on a formal basis with weekly MDT meetings but also on an ad hoc basis

What are the steps to replicate this approach?

- The MDT allows the team members to share their knowledge and experience on the disease and treatments
- This platform can also help less experienced regional centres linked to the tertiary centre to have a manageable learning curve towards managing HCV patients with the use of DAAs
- In addition, patients can be treated faster as doubts about treatment options are immediately addressed by those with expertise in HCV and experience of using DAAs

What are the steps to replicate this approach?

- Involving curious and engaged colleagues from other specialities that are willing to contribute to the MDTs
- Building relationships between the hospitals within the network
- Using technology, such as video conferencing to enable HCPs and affiliate centres to participate remotely



In France and England, the DAA prescribing decision must be made by an MDT

All centres we visited follow an MDT approach. However, NHS England and the French *Haute Autorité de Santé* have national guidelines on the provision of MDTs as a condition of delivering DAAs.

2

GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Overview:

- The HCPs from Grenoble and other smaller centres in the region meet on a weekly basis to approve treatment decisions

National mandate:

- In June 2014, the French government stipulated that, with the introduction of DAAs, treatment decisions needed to be approved through a réunion de concertation pluridisciplinaire (RCP) or MDT meeting including at least a virologist and a hepatologist[3]

What is the objective?

- Ensure that the therapeutic strategy being provided is based on existing protocols and includes the input of a variety of specialists

What is the impact?

- Leads to informed treatment decisions
- Limits the use of DAAs to centres with access to specialist input

What are the challenges?

- Many specialists at a national level have complained about the administrative burden of the RCPs
- The RCP forms can be difficult for secretaries to fill due to technical language such as the genotype or the fibrosis value
- The high number of patients and relatively small number of RCPs may also have slowed down the ability of centres to process cases of Hepatitis C

Future developments:

- Smaller centres in the region will begin to have their own RCP as expertise spreads within the region

3

QUEEN ELIZABETH, BIRMINGHAM, ENGLAND

Overview:

- The HCPs from Queen Elizabeth (QE) and other affiliate centres belonging to the same regional network meet up once a week to discuss patients who require DAA treatment or to discuss complicated cases

National mandate:

- In June 2015, NHS England stipulated in its Clinical Commissioning Policy Statement, that delivery of Hepatitis C care needed to be formalised through Operational Delivery Networks (ODN). The ODNs deliver care through coordinated MDTs[2]

What are the objectives?

- Provide uniform standard of care across England
- Report objective measures using standardised monitoring and outcome data collection system[2]

What is the impact?

- Helps less experienced regional centres to learn how to treat HCV patients with DAAs
- Allows patients to be treated faster as doubts about patients are immediately addressed by those at QE with expertise in HCV and experience of using DAAs

Future developments:

- Other smaller hospitals within the ODN are beginning to hold their own MDTs

> The workload will be easier when other smaller centres have their own MDTs.
>
> ***MDT secretary, Grenoble University Hospital***

> Now that we have the ability to prescribe and there are so many different drugs, I like to run through my decisions at the MDT.
>
> ***Hepatologist, Sandwell General Hospital***

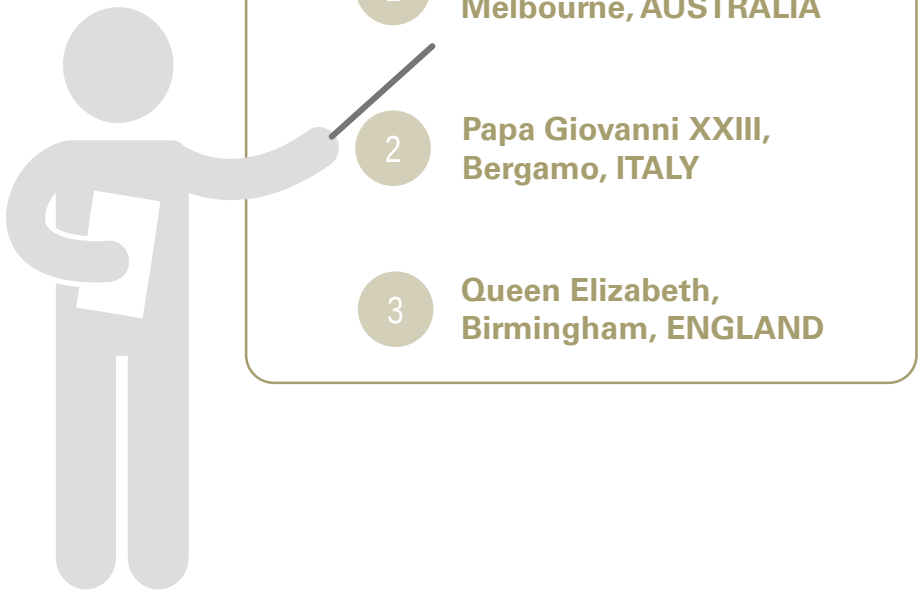
Sources: 1. KPMG Interviews 2. NHS England, Clinical Commissioning Policy Statement: Treatment of chronic Hepatitis C in patients with cirrhosis (June 2015) http://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/06/hep-c-cirrhosis-polcy-statmnt-0615.pdf
3. HAS, http://www.has-sante.fr/portail/upload/docs/application/pdf/2014-07/hepatite_c_prise_en_charge_anti_viraux_aad.pdf

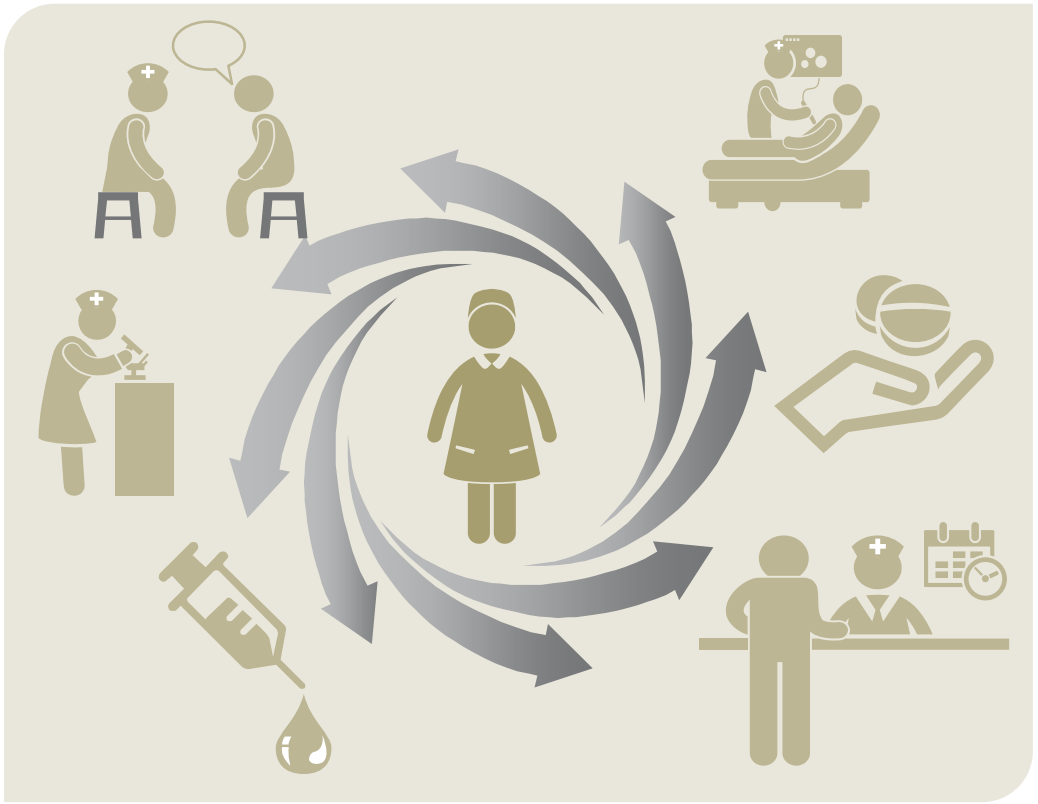
Specialist HCV nurses increase the capacity of physicians

WHAT IS HAPPENING TO THE ROLE OF SPECIALIST NURSES?

- Due to the arrival of the new therapies, the role of specialist nurses is evolving and their new responsibilities vary from one centre to another. It is highly likely that the role will extend beyond case management and education
- In some centres nurses play the role of nurse practitioners, carrying out blood and elastography tests so that specialists can focus their time on more specialised issues. For an unstable patient population, nurses can also provide a consistent and supportive point of contact

WHERE HAVE WE OBSERVED SUCH AN EVOLUTION?





Australia has national guidelines on the role of the HCV nurse

1

MONASH HEALTH, MELBOURNE, AUSTRALIA

Overview

- In 2012, the Australasian Hepatology Association (AHA), an organisation representing and supporting nurses and allied health professionals caring for people suffering from liver diseases, published nursing guidelines for the care of patients with Hepatitis B, Hepatitis C, Advanced Liver Disease and Hepatocellular Carcinoma
- A dedicated expert writing group which included both consultants and nurses focused on the role of nurses in the management of Hepatitis C

According to the guidelines, what is the role of the HCV nurse?

- The expert writing group defined the role of the HCV nurse across five domains:
  1. Provision and management of nursing care of patients with, or at risk of, Hepatitis C (testing, patient assessment, patient empowerment, patient education, both treatment- and post-treatment-related care, cancer surveillance)
  2. Inter-disciplinary coordination and care for patients with Hepatitis C (explain roles to patients, liaise with GP, patient referral to other team members)
  3. Non-discriminatory practice (confidentiality, culturally appropriate care)
  4. Professional self-care and development (identification of individual scope of practice, reflective practice, professional development)
  5. Clinical and community leadership (promotion of role, mentoring, education provider to peers and community (awareness))

What is the impact?

- The document became a reference guide in the country, with nurses from other countries (UK, Canada and China) contacting the team to seek advice for HCV care

What are the future developments?

- The guidelines are currently being updated and a new section dedicated to transplant nurses will be added
- The team want to acquire a mobile elastography machine so it can be used at the prison and also in other settings (such as in drug addiction centres visited by the Promethée network)
- Currently the liver scan is carried out at the hospital which is difficult as it is a challenging process to extract prisoners from the prison and take them to the hospital – adapting to carry out tests in the prison in future would avoid this

Sourcse: 1. KPMG Interviews 2. Australasian Hepatology Association Practice Standards for the Hepatology Nurse

Specialist nurses have HCV expertise and strong relationships with patients

2

PAPA GIOVANNI XXIII, BERGAMO, ITALY

Overview:

The tasks of the nurse coordinator in Bergamo include:

- Processing paperwork and setting up appointments
- Coordinating follow-up visits
- Checking drug distribution and administrative problems

Nursing capacity

- One nurse per 10 patients with the support of nurse assistants
- In intensive care, one patient gets 240 minutes of a nurse's time
- In normal care, one patient gets 60 minutes of a nurse's time

What is the impact?

- The role of the nurse coordinator allows the centre to process on average 40-55 Hepatitis C patients per daily outpatient clinic
- The wide responsibilities of the nurse coordinator frees up physician time and allows the physician to concentrate more on the patient and less on administration
- Having a specialist, dedicated Hepatitis C nurse enables the patient to have continuity of care via a stable point of contact

3

QUEEN ELIZABETH, BIRMINGHAM, ENGLAND

Overview:

- The specialist nurses at the Queen Elizabeth split their viral Hepatitis clinics into three distinct clinics – 1) new treatment patient clinics 2) follow-up Hepatitis C clinic 3) on-treatment Hepatitis B clinic
- There are three specialist nurses (one part-time) who are independent medical prescribers
- Nurses focus on driving adherence and encouraging patients to take their medications regularly
- The nurses are also given time to undergo extra training, for example elastography training and courses on hepatology

How are nurses involved in the Midlands Hepatitis Nurses' Forum?

- The nurses attend forums four times a year – these are classed as study days The forums feature talks by specialist consultants and nurses
- There are 15-20 nurses from the West Midlands region that participate in the network

What is the impact?

- With more specialist nursing staff, the centres could go from treating 130-150 cirrhotic patients to over 200

> We have tried to build a system in which a patient can see the same person over a period of time when the care is ongoing. Continuity of care is key for these patients.
>
> ***Nurse, Papa Giovanni XXIII***

> I have time here to secure training and to read up on Hepatitis C. I have been on hepatology and transplant courses. The hospital is very proactive in getting us trained up.
>
> ***Nurse, Queen Elizabeth***

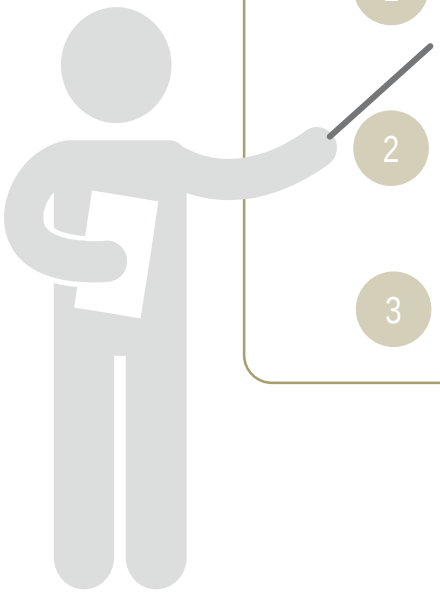
Source: 1. KPMG Interviews

Pharmacists are taking a more active role in clinical management

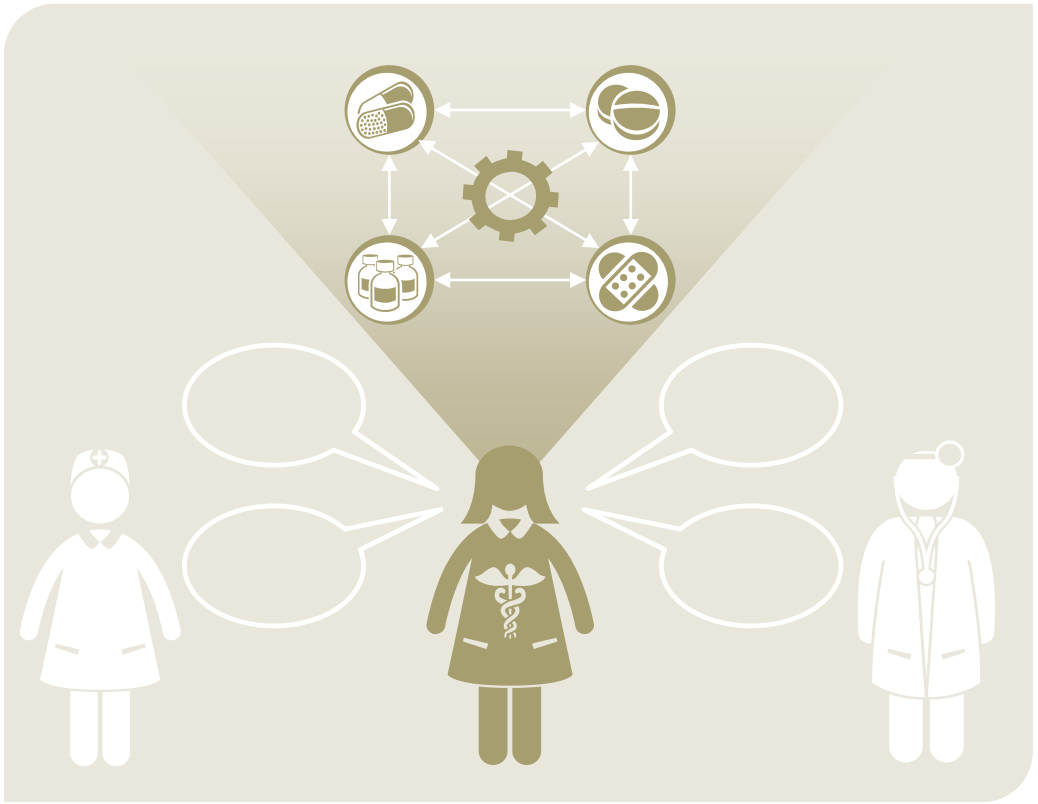
WHAT IS HAPPENING TO THE ROLE OF THE PHARMACIST?

- The new treatments are complex and lead to a high percentage of drug-drug interactions particularly in co-infected populations (HIV/HCV). A pharmacist's expertise can be crucial for advising specialists on treatment and managing side effects
- As a result, pharmacists are taking a more active role in clinical management and participating more regularly in MDTs

WHERE HAVE WE OBSERVED SUCH AN EVOLUTION?



1. **Grenoble University Hospital, FRANCE**
2. **Ninewells Hospital, Dundee, SCOTLAND**
3. **Queen Elizabeth, Birmingham, ENGLAND**



The pharmacist is a key member of the MDT

1 GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Overview:

- The pharmacist has an innovative role in the hospital as a clinical pharmacist, separate from the central hospital pharmacy
- As a clinical pharmacist, she has a role at the heart of the care-delivery team
- The doctor still chooses the treatment but the pharmacist offers a unique pharmacological perspective

What is the pharmacist's role in the MDT?

- The pharmacist participates in the MDTs with a focus on identifying drug-drug interactions
- She has also helped to design patient education material, such as brochures that give information on the new treatments

What are the challenges?

- It can be difficult to convince hospitals to have pharmacists detached from the central service
- It takes time for pharmacists to develop the knowledge for this relatively clinical role
- Teams may be sceptical of the contribution the pharmacist can make if they have not previously seen evidence of such an impact

> If a patient is late and the pharmacy is already closed, I will open the pharmacy to dispense the treatment.
>
> ***Pharmacist, Grenoble University Hospital***

2 NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Overview:

- The specialist clinical pharmacist is an independent prescriber

What is the pharmacist's role in the MDT?

- The pharmacist participates in MDTs and as part of the group helps to decide which patients need treatment
- As a qualified prescriber, he can make a decision to prescribe without the approval of specialist doctors or nurses
- The pharmacist only prescribes within areas of competency, having a non-medical background

How has national legislation affected the role of the pharmacist?

- In September 2013, the Scottish government issued a strategy document, 'Prescription for Excellence'
- By 2023 all pharmacists will be required to be NHS Scotland-accredited clinical pharmacist independent prescribers in order to provide clinical care to patients in the community[3]

What is the impact?

- The prescribing process is now more efficient and less dependent on medical staff

> Now that I'm qualified as a prescriber, I no longer have to chase up specialists or nurses.
>
> ***Pharmacist, Ninewells***

3 QUEEN ELIZABETH, BIRMINGHAM, ENGLAND

Overview:

- The pharmacist is responsible for paperwork on both the supply and clinical side of the prescription of the DAAs. She also has a key role in identifying drug-drug interactions

What is the pharmacist's role in the MDT?

- The pharmacist is keen to regularly attend the MDT meetings
- Some of the more difficult decisions relating to prescriptions may go through the MDT e.g. with HIV co-infection the HIV medication may change to accommodate the HCV treatment
- The pharmacist has a key role in decision-making and regularly consults with specialists if there are any concerns about treatment or drug-drug interactions

What are the tips for a pharmacist new to HCV?

- Join a liver or Hepatitis C pharmacy group
- Consult with the HIV pharmacist who already has experience with similar treatments
- Use the Hepatitis Drug interactions website set up by the University of Liverpool as an extra resource[2]

> The nightmare scenario is having an epileptic patient as anti-convulsants are difficult treatments to swap.
>
> ***Pharmacist, Queen Elizabeth***

Sources: 1. KPMG Interviews 2. University of Liverpool, Drug-Drug interactions http://www.hep-druginteractions.org/3. http://www.gov.scot/resource/0043/00434053.pdf

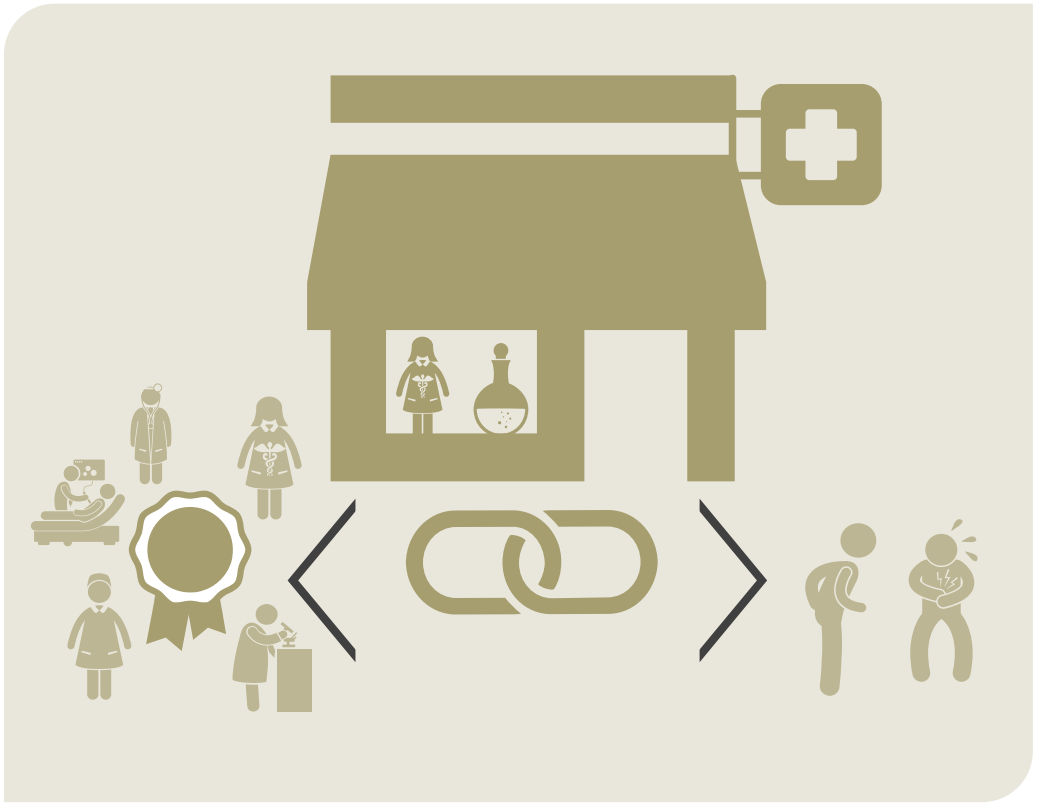
New treatments allow community pharmacists to be more involved

WHAT IS HAPPENING TO THE ROLE OF COMMUNITY PHARMACISTS?

- Community pharmacists are at the front-line of the relationship with marginalised patients who may find it difficult to engage with the tertiary care setting. These pharmacists may have existing relationships with patients who collect prescriptions for other treatments or in the case of the drug-using population, prescriptions for methadone. As a result, community pharmacists could play a more active role in the management of HCV patients

WHERE HAVE WE OBSERVED SUCH AN EVOLUTION?

1 **Ninewells Hospital, Dundee, SCOTLAND**



In Dundee, community pharmacists are an effective link with hard-to-reach patients

1

NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Overview:

- NHS Tayside is one of the few regions in Scotland to shift more care towards the community
- With the support of NHS Tayside, the Ninewells team have launched a programme involving half a dozen pharmacies whereby they treat 3-4 batches of patients on-site, using new therapies

What is the role of community pharmacists?

- The community pharmacist screens patients for Hepatitis C through dried blood spot testing (DBST) in the pharmacy
- Following secondary tests and approvals from clinics, the pharmacists begin to treat patients in batches based on viral load
- Pharmacies are paid by NHS Scotland to deliver this service

What is the impact of this approach?

- **Targeting methadone patients:** Sufferers of Hepatitis C are also often on prescriptions for methadone. Since they come into pharmacies regularly to collect these prescriptions (up to 80 patients daily) it is easy to target them for DBST. Posters in the pharmacy also encourage this process. In addition, the pharmacy receives a list of people from Ninewells' chief pharmacist of known methadone users who have not been tested
- **Engaging hard-to-reach patients:** Hepatitis C often affects marginalised groups i.e. homeless populations and IV drug-users. These populations can feel intimidated by hospital staff and may be more comfortable and open in a pharmacy, which they visit more regularly for methadone prescriptions
- **Integrating care:** One of the benefits of the pathway is that it forces pharmacies and hospitals to become more integrated in their patient care, and to collaborate more effectively. This in turn makes pharmacists feel more professionally empowered, further incentivising them to engage in the study

What are the challenges?

- Training of pharmacists to perform DBSTs is required
- The health system cannot afford to treat all patients at once – patients must be treated in batches of three to four based on priority of viral load
- Only half of patients are keen to be tested – the centre needs to find ways to encourage more patients to be tested

What are the future developments?

- The programme may target genotype III patients
- It may also be expanded to include more community pharmacists

> I think community pharmacists should be more involved. Pharmacy in Scotland is changing, we should be doing a lot more than just prescriptions. We could help eradicate Hepatitis C.
>
> ***Pharmacist, Community pharmacy***

CONTINUED…

Source: 1. KPMG Interviews

With local pharmacy care, only one hospital visit is needed for a liver elastography

1

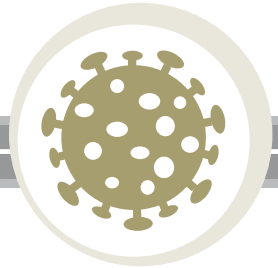
NINEWELLS HOSPITAL, DUNDEE, SCOTLAND

Patients with a history or current activity of drug usage come the their local pharmacy to receive their methadone treatment

The pharmacist asks the patient if they want to get tested for Hepatitis C

If the patient agrees, a DBST is performed and sent to Ninewells

3-4 days



If the test comes back positive, a blood sample is taken from the patient at the pharmacy to run further tests including viral load

7 days

If diagnosis of Hepatitis C is confirmed, the patient is asked to visit Ninewells so that an elastography scan can be performed

Up to 2 weeks

The pharmacist, the patient and the local drug and problems service (DPS) are all sent a letter with the results

The pharmacist then discusses the treatments available to the patient in the hope it will encourage them to be treated

The patient is discussed at the MDT in Ninewells

If the MDT decides the patient is eligible, the local pharmacy initiates treatment and dispenses medication every time the patient visits

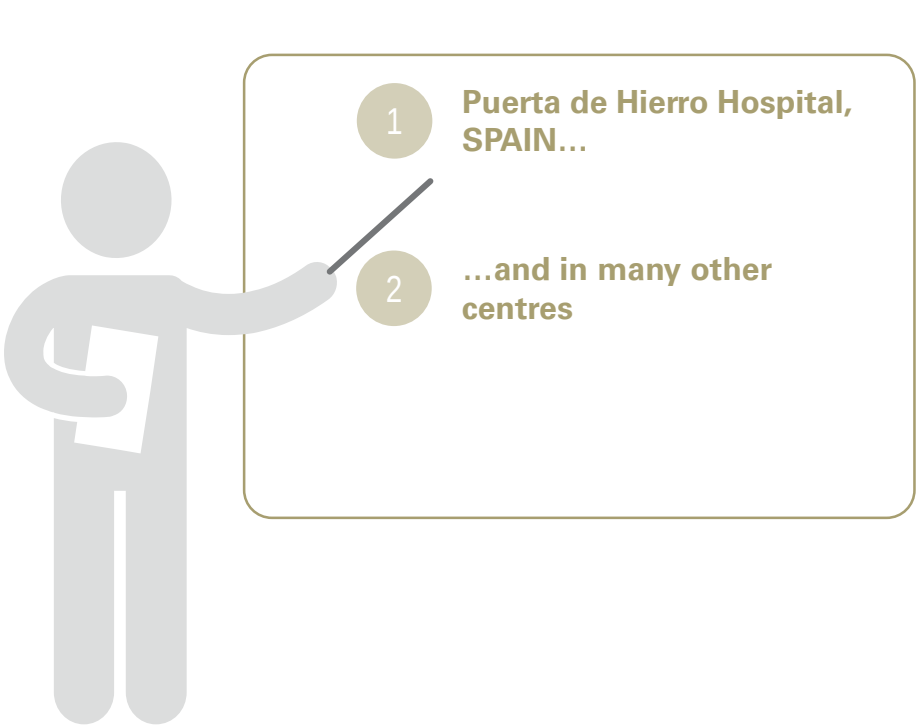
Source: 1. KPMG Interviews

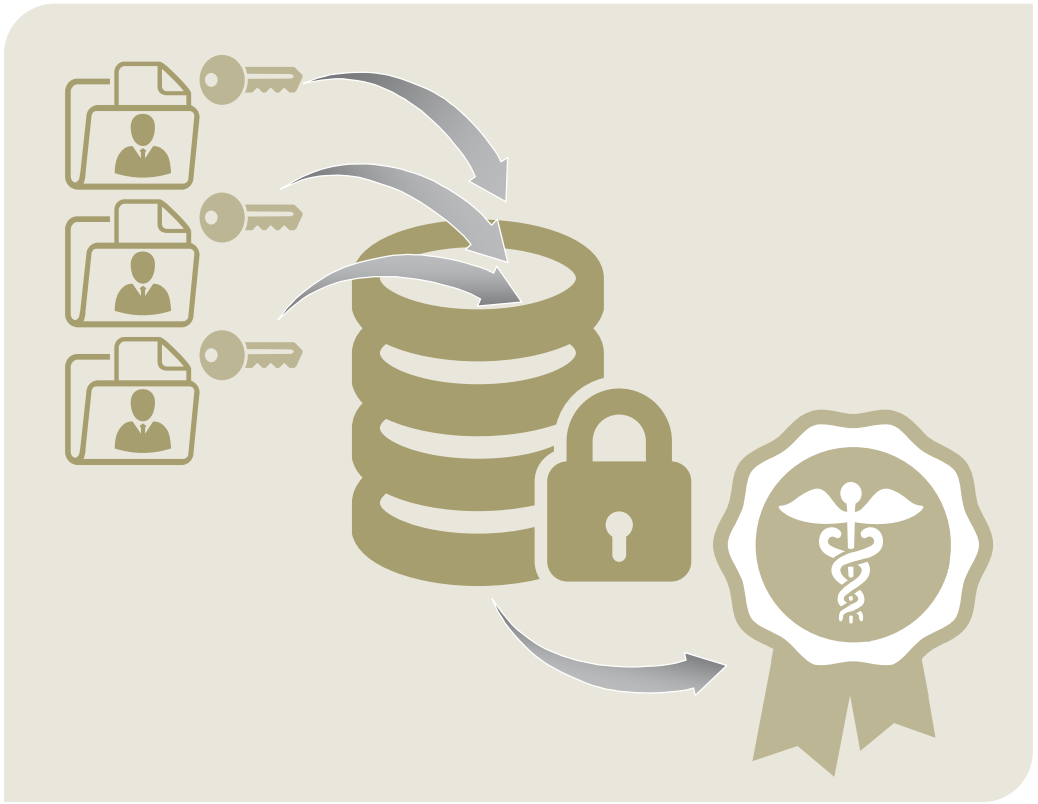
Patient databases track outcomes and identify patients for trials

WHAT IS THE IMPORTANCE OF A PATIENT DATABASE?

- Many of the centres we visited use patient databases for research purposes and clinical trials
- Patient databases are also used to track patient information and outcomes. Having a strong database has enabled centres to identify cohorts of patients that are eligible for trials and prepare them for any new trials and newly approved therapies. Access to patient data enables centres to demonstrate cost-effectiveness of new therapies

WHERE HAVE WE OBSERVED THE USE OF A DATABASE?





Puerta de Hierro led the design of a national database to track DAA outcomes

1

PUERTA DE HIERRO, MADRID, SPAIN

Overview:

- The idea of a national database, Hepa-C, was born in 2012 with the goal of recording all the newly-launched HCV treatments in Spain
- As a site with an important patient pool, the Puerta de Hierro hospital led on the design of this database with the support of the Spanish Association for the Study of Liver (AEEH)

What is the goal of the database?

- Mainly scientific, to advance the understanding of the DAAs

How does the database work?

- The teams in Spanish Hepatitis C centres capture all clinical and analytical data necessary to register patients with HCV chronic infection, with a focus on HCV treatment

What are the must-haves?

- Critical clinical and analytical data for clinical management and clinical studies
- Honest and fluent communication with other important sites in order to ensure coherent policies and selection of high-quality study proposals
- Data gathering according to national regulations regarding data protection (informed consent, anonymisation, encrypted server, security policies...)
- Standardisation and validation of data entry
- Data quality monitoring
- Technical support for sites in order to optimise enrolment
- Continuous upgrading to account for new drugs
- Continuous upgrading to account for bugs, and facilitate the optimisation of initial software development
- Annual reports for transparency reasons
- Friendly, final-user-oriented interface

What are the nice-to-haves?

- Additional clinical parameters which would allow studies to be carried out more quickly; currently, participating centres need to be contacted via email with requests for the relevant data
- Automatic calculation of certain clinical indexes
- Extra personnel which would allow for an increase in sample size
- Automatic reading of analytical values from clinical management programs

> We need to pay attention to the usability of the database. We then need a balance between an exhaustive data collection vs simplicity of use, the latter implying more enrolment and recruitment of patients.
>
> ***Hepatologist, Puerta de Hierro Hospital***

CONTINUED...

Source: 1. KPMG Interviews

The database will further understanding of the new treatments

1

PUERTA DE HIERRO, MADRID, SPAIN

What is the impact of building such a database?

- Easy collaboration with regulatory agencies when necessary to share information
- Opportunity to use the database as a management application tool for HCV-infected patients

What were the challenges?

- Promotion of the Hepa-C database
  - This was first done via a newsletter which was then followed by dedicated meetings during AEEH congresses
  - The Puerta de Hierro hospital team, with the support of other sites, conducted several research projects and issued scientific communications in AEEH, EASL and AASLD congresses to increase the awareness on Hepa-C
- Logistics issues
  - The team faced technical problems with the informatic development and feasibility of their proposals. At times, linking programing with user needs proved to be challenging
  - User-friendly data export was difficult to design and develop

What are the key success factors to replicate this initiative?

- Have a link person/team between the clinical and informatics teams to translate clinical language and needs and vice versa
- Maintain a close collaboration with other important sites and consult with them
- Support personnel with data entry and data monitorisation
- Find highly motivated, trustful people to be involved in such projects
- Be able to prove that a database is useful in attracting funding from companies, demonstrating, for instance, how it can be used to capture rare adverse events which only arise during phase IV drug development
- Engage marketing techniques to maximise the enrolment of sites and present a strong image
- Always be open to criticism and welcome project proposals from the users of the database

What are the next steps?

- Grow the database by maximising sites enrolment, actively fostering patients entering the database and the design of study proposals
- Ideally collaborate with other national databases

> We will follow the patients for a long time. This opens a whole new world of clinical research which is currently unexplored.
>
> ***Hepatologist, Puerta de Hierro Hospital***

> Big happy sites will happily contribute with big volumes of patients and will propose beautiful research projects together with you. Science is a collaboration.
>
> ***Hepatologist, Puerta de Hierro Hospital***

Source: 1. KPMG Interviews

Many other centres also make effective use of databases

2

OTHER CENTRES

What key field categories should be included in a database?

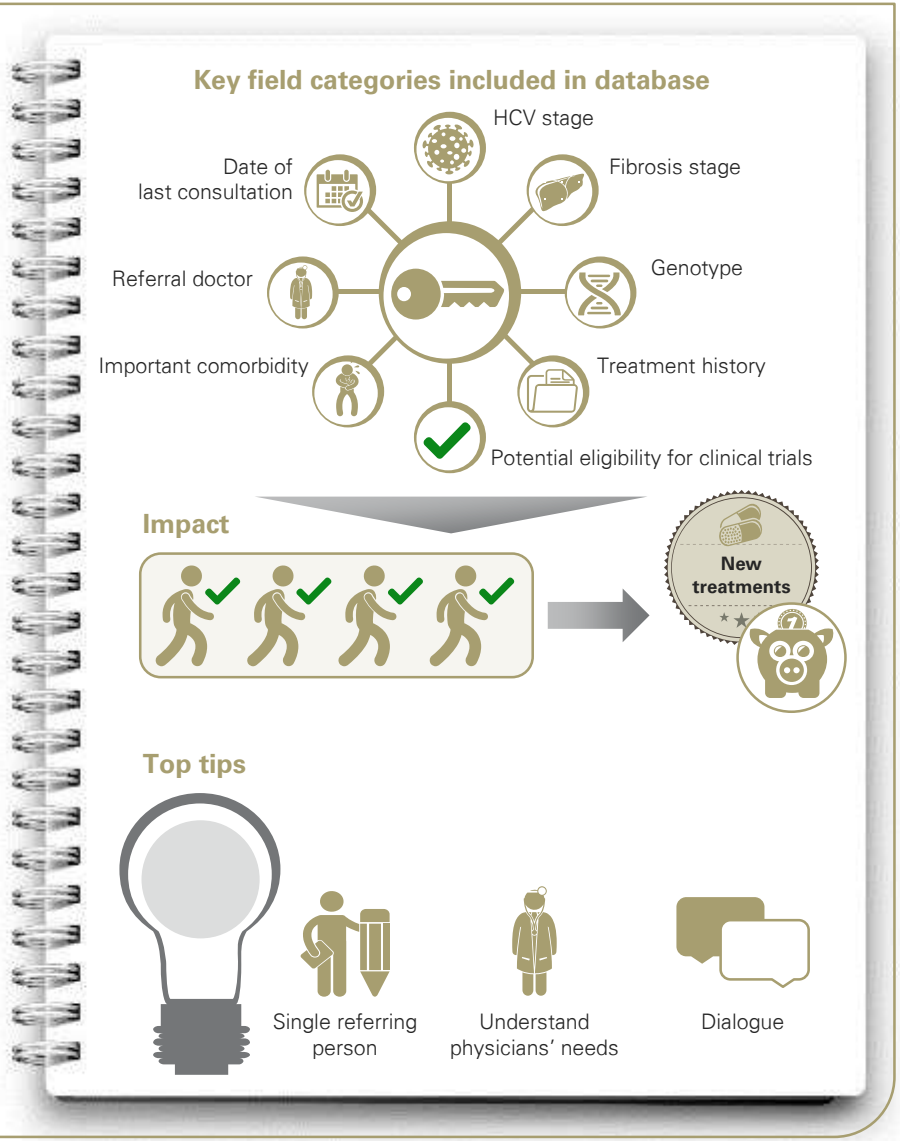
- HCV stage
- Fibrosis stage
- Genotype
- Treatment history
- Potential eligibility for clinical trials
- Important comorbidity
- Referral doctor
- Date of last consultation

What is the impact?

- By tracking fields such as fibrosis stage, genotype and important comorbidities, the centre can build a cohort of patients that are eligible for:
  - **Newly-approved therapies**
  - **Clinical trials:** Having easy access to patient outcomes is key to gaining access to funding for new studies
- Tracking outcomes also enables centres to demonstrate that they are having an impact on patients and that the new treatments are cost-effective

What are the tips for successful data management?

- Have a single referring person for the informatics and the database to ensure ease of use
- Understand the needs of physicians when engaging with the database e.g. there may be a discrepancy between the preferred language of the staff building the database and the medical language required by HCPs
- Ensure physicians are in constant dialogue with the data manager



Source: 1. KPMG Interviews

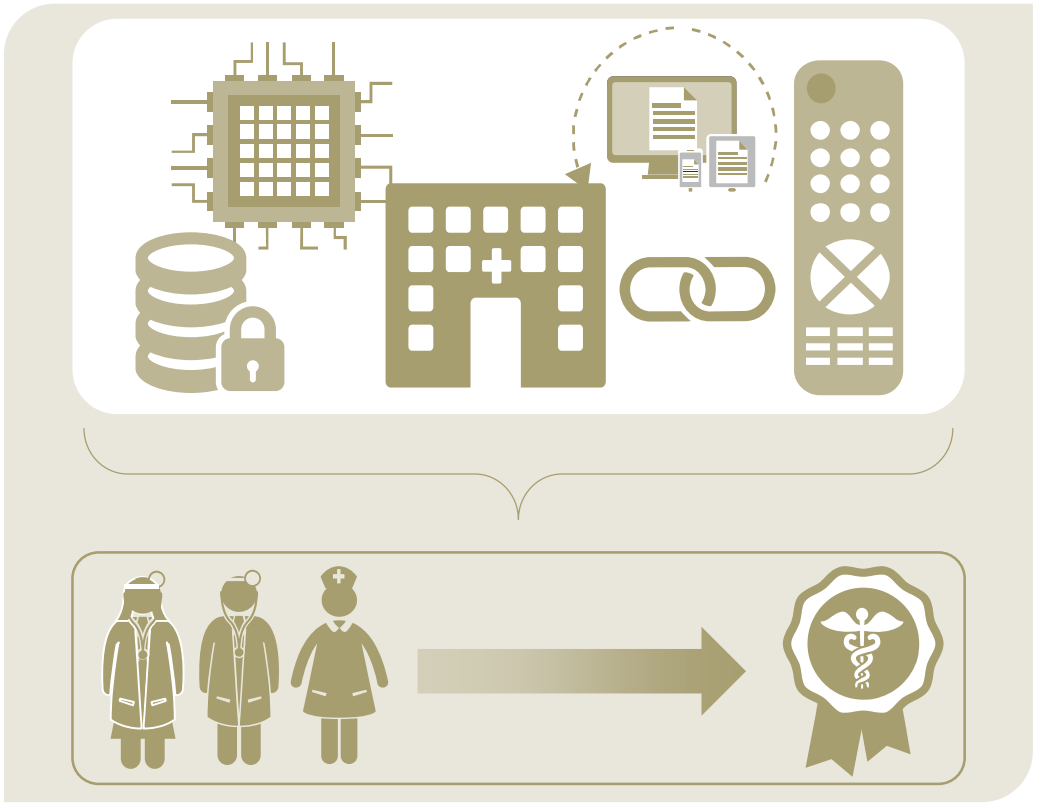
Integrated hospital information systems facilitate quick access of patient information

WHAT IS THE IMPORTANCE OF A HOSPITAL INFORMATION SYSTEM?

- Centres hold a great deal of data that needs to be coordinated in an efficient way for the benefit of all clinicians and patients. A coordinated hospital system enables HCPs from multiple departments and from specialist and primary care to have access to the same patient information

WHERE HAVE WE OBSERVED SUCH A SYSTEM?

1 **National Okayama University Hospital, JAPAN**



The National Okayama University Hospital has introduced an examination reporting system

1

NATIONAL OKAYAMA UNIVERSITY HOSPITAL

What was the rationale for the introduction of the examination reporting system?

- Responses to patients who were diagnosed with HCV positive for preoperational examinations differed among doctors who examined the patients, and the results were not appropriately reported to the patients sometimes
- It was unclear whether the doctors in charge recommended treatment by hepatologists to the patients
- In Japan, if HCV positive patients develop cirrhosis or liver cancer, they may sue their doctors for neglecting the duty of reporting examination results

When was the examination reporting system introduced?

- The system was introduced in April 2013 resulting from decisions by the manager of the Hospital and the head of the department of digestive organs, recognising the above issues
- The operation of the system was started about six months after internal decision-making, and the situation was addressed quickly

Who were the decision makers?

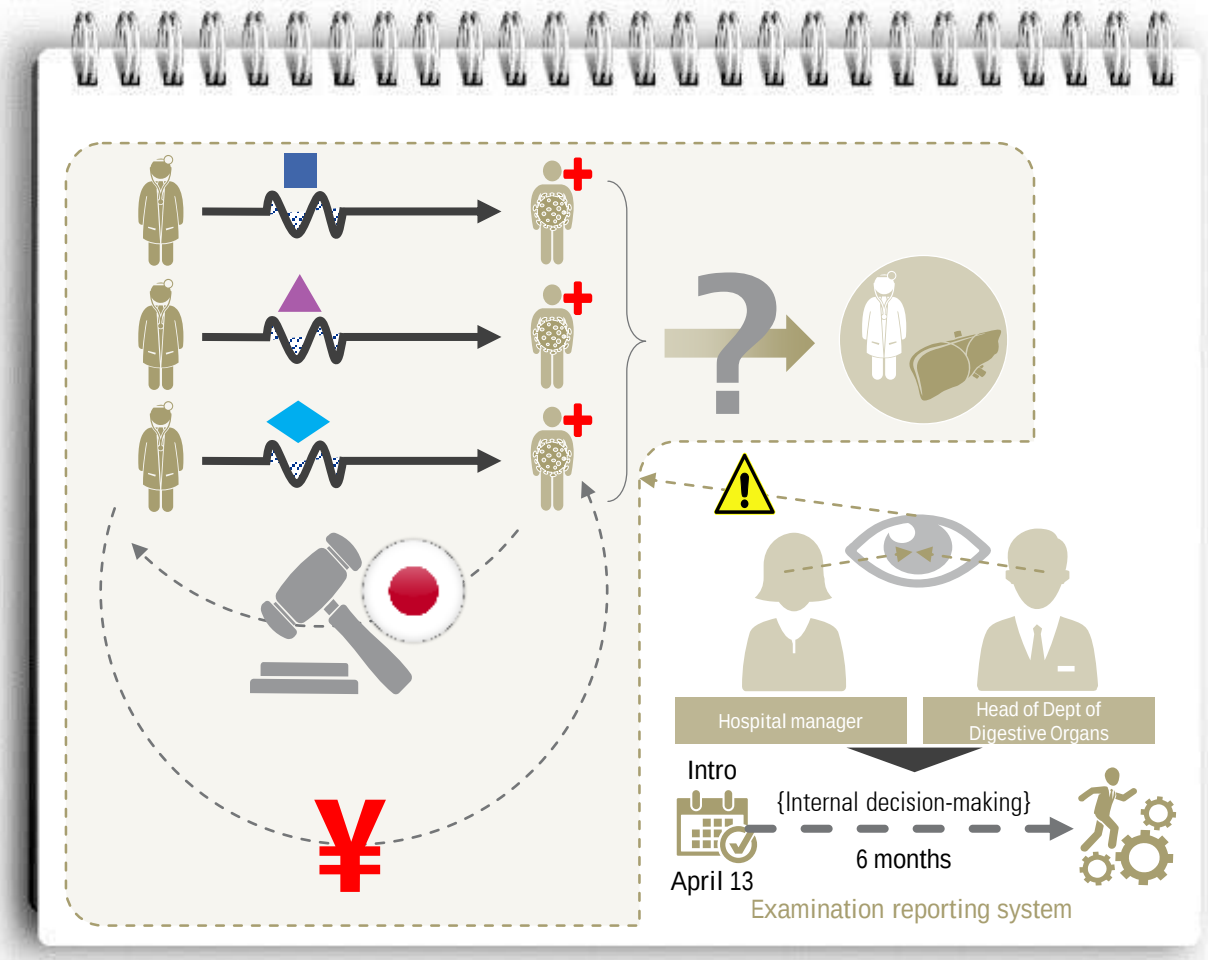
- The Medical Information Department and the doctors of the Liver Department mainly developed the system together with the person in charge at Fujitsu

Who is the vender?

- Fujitsu Systems (HOPEEGMAIN-GX)

What were the costs related to such system change?

- There were no costs incurred for the system change as the change was within the scope of customisation



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Source: 1. KPMG Interviews

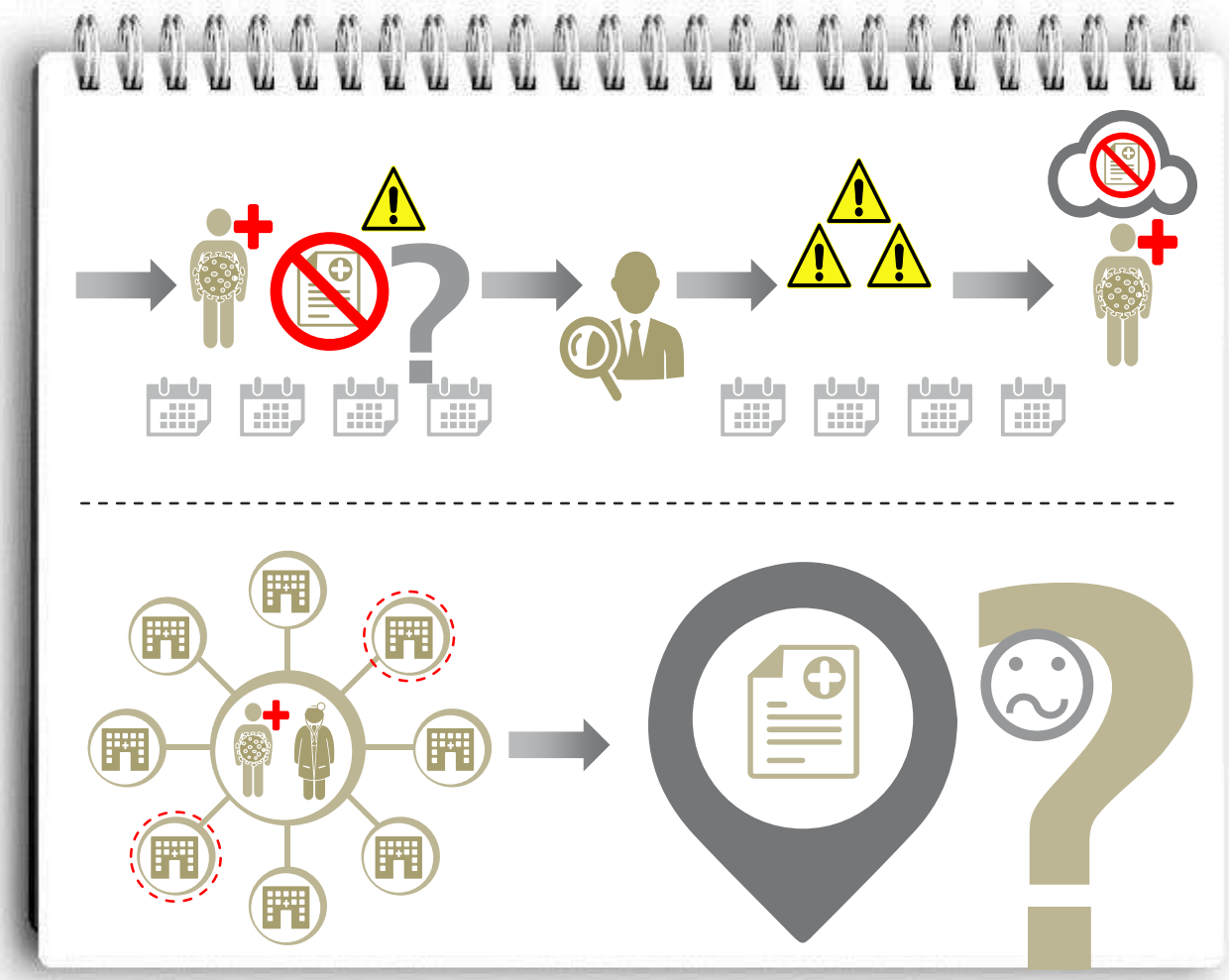
Alerts are generated if patients' medical records have not been updated

1

NATIONAL OKAYAMA UNIVERSITY HOSPITAL

How does the system work?

- The system automatically follows up patients whose examination results have not been reported for a long time
- If the alerts do not disappear for more than a month, then the Hepatitis Support Centre monitors each department and reminds attending doctors of the alerts
- If for some reason the alerts do not disappear even after such reminder, this means the follow-up for those patients is not sufficient
- Patients are also supposed to submit a confirmation regarding whether they have received the results of their examination directly or by mail



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Source: 1. KPMG Interviews

System use has spread and patients now receive their results faster

1

NATIONAL OKAYAMA UNIVERSITY HOSPITAL

What are the impacts?

- **Faster notification to the patients of their examination results**
  Before the introduction of the system, it often took more than three months until attending doctors explained examination results to their patients, but currently it takes no longer than two months
- **Increase in the number of doctors who report examination results/recommend treatment**
  Before, only one out of three doctors reported the examination results to their patients, but more doctors do so now either directly or by mail
- **Introduction of the system to other hospitals**
  Other hospitals including Osaka City University Hospital have followed suit with the system and initiatives of the Hospital

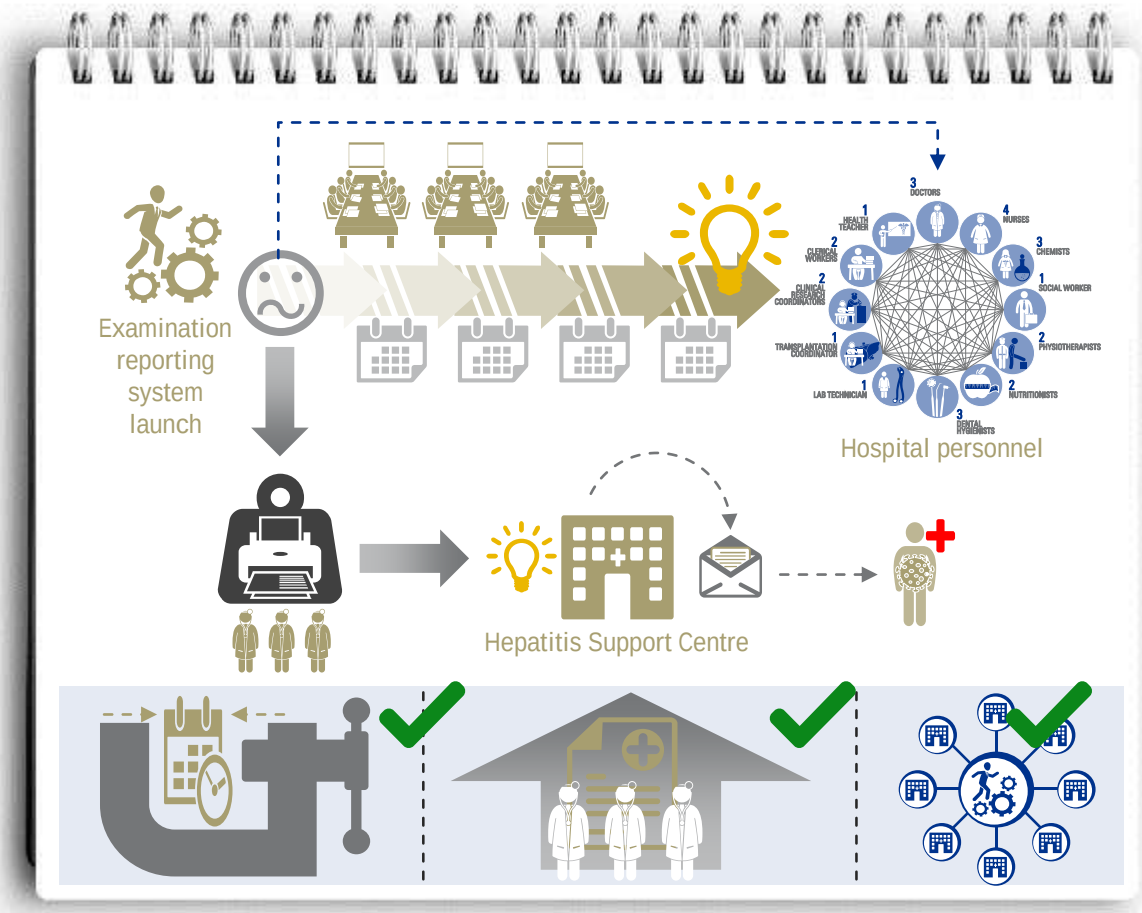
What were the challenges?

At the introduction step

- There was at first insufficient recognition/understanding from the doctors from the other departments
- As the operation started before sufficiently informing other doctors about the system, it took some time until the personnel at the Hospital recognised and understood the system
- Mainly, the doctors of the Liver Department repeatedly explained about the significance of the initiatives and the operation method at internal meetings, committee meetings, etc.

In the running of the system

- If for some reason the examination of the patient was conducting at another hospital, it may be challenging to input the results of this particular examination in the system



Source: 1. KPMG Interviews

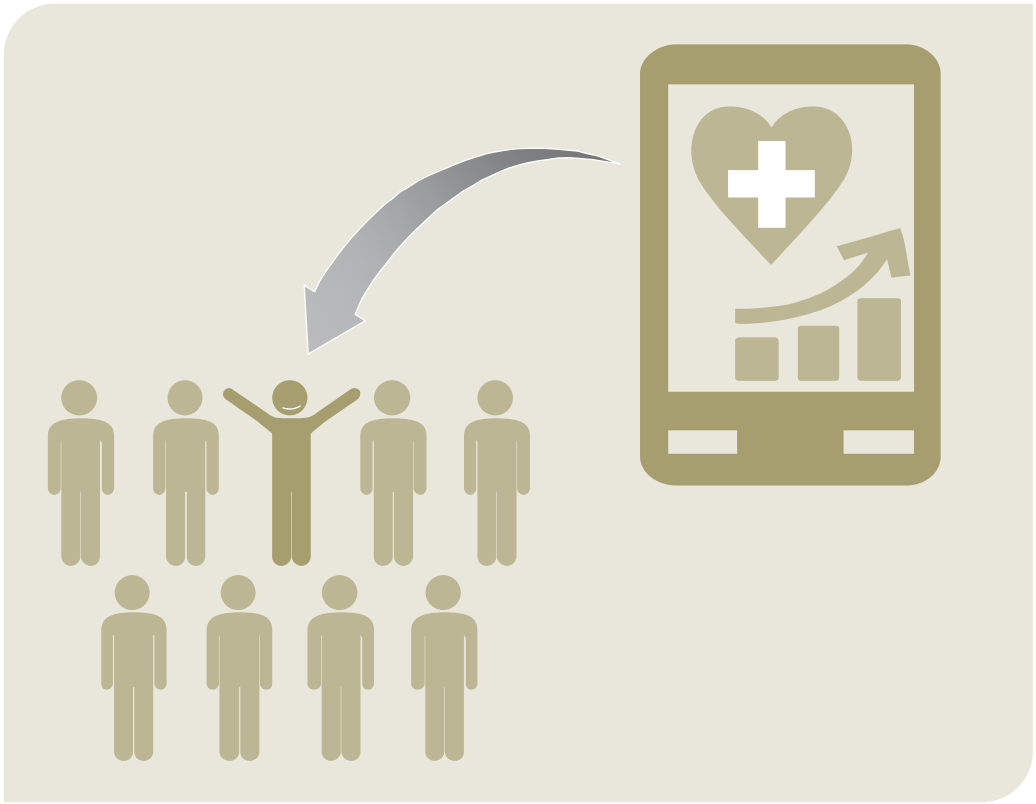
Mobile apps improve adherence and spread HCV information

HOW CAN MOBILE APPLICATIONS IMPROVE CARE?

- Mobile apps offer innovative ways of improving both the HCP's and the patient's experiences of delivering and receiving HCV care

WHERE HAVE WE OBSERVED SUCH APPLICATIONS?

1. **Erasmus MC, Rotterdam, NETHERLANDS**
2. **Queen Elizabeth, Birmingham, ENGLAND**



The Rotterdam team's app helps physicians with DAA prescription decision making

1

ERASMUS MEDICAL CENTRE, ROTTERDAM, NETHERLANDS

Overview:

- Guidance on the use of DAAs –
  - Two specialists from Erasmus MC have developed a mobile application that helps a physician to decide which combination of treatments they should use on patients as it provides them with the likelihood of clearing the infection for all licensed treatment options
  - This app is called LiverDoc® and has been authorised by the Netherlands Associations for the Study of the Liver (NASL)

How does this work?

- The HCV sustained viral response (SVR) predictor is based on four key characteristics:
  - HCV type (mono- versus co-infection)
  - Treatment status (no previous therapy versus previous therapy)
  - Genotype (1-4)
  - Cirrhosis (yes versus no)
- The HCV SVR predictor then presents evidence-based data of treatment outcomes
- The user of the app has then the option of email the result to themselves

Source: 1. KPMG Interviews

The Birmingham team have built an app to remind patients to take their medication

2 QUEEN ELIZABETH, BIRMINGHAM, ENGLAND

Overview:

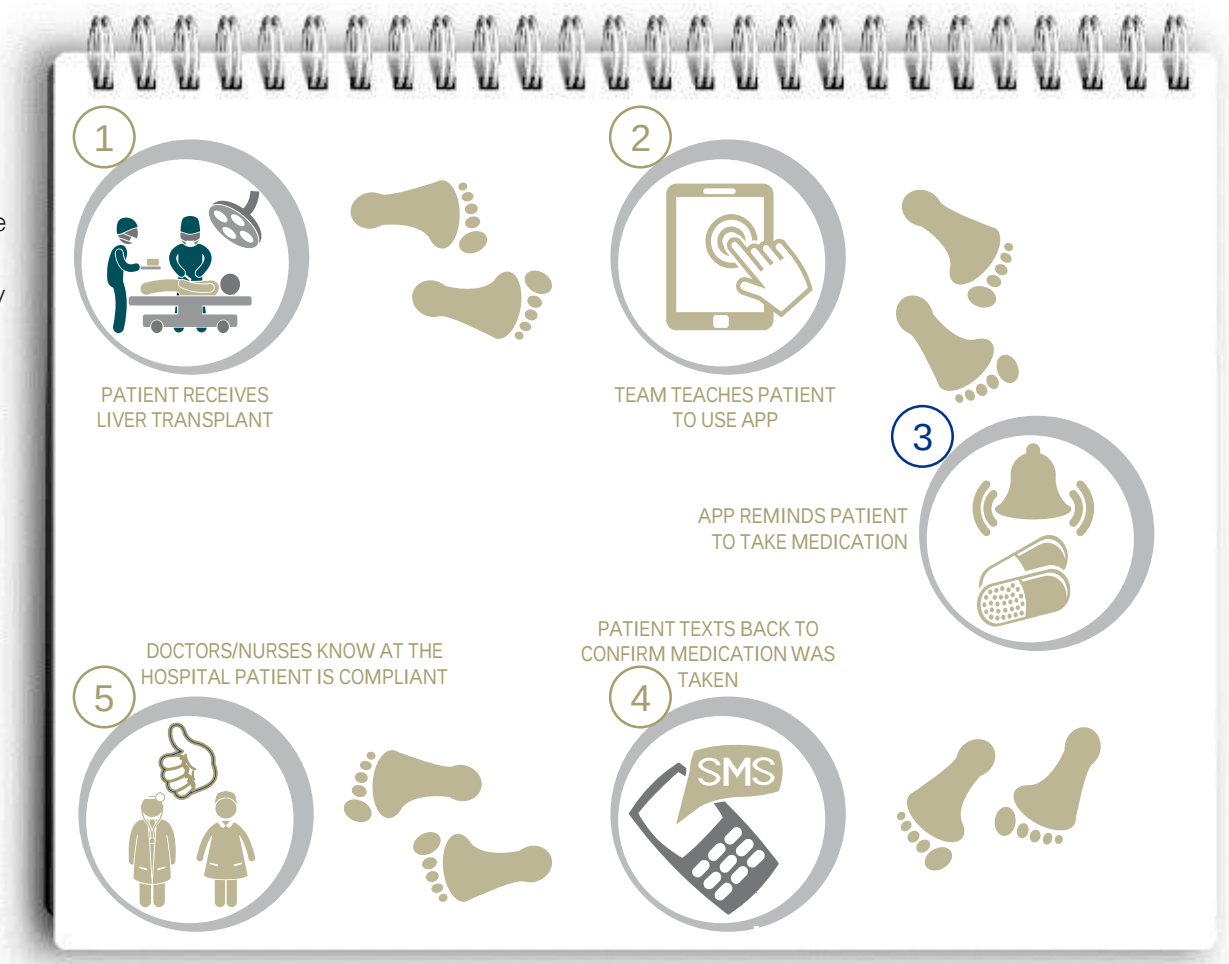
- The team at the QE has built an app, called 'RemindMe' to help patients who received a liver transplant take their medication post-surgery

How does this work?

- The team teaches the patients to use the app which sends them text reminders of when to take their immunosuppressive treatment if they have recently undergone a liver transplant
- The app also requires patients to text back to confirm that they have taken their treatment so it also allows HCPs to monitor patient adherence

What are the next stages?

- While this app is currently being used for liver transplant patients, it could potentially be applied to patients on DAAs as a way of monitoring and improving adherence



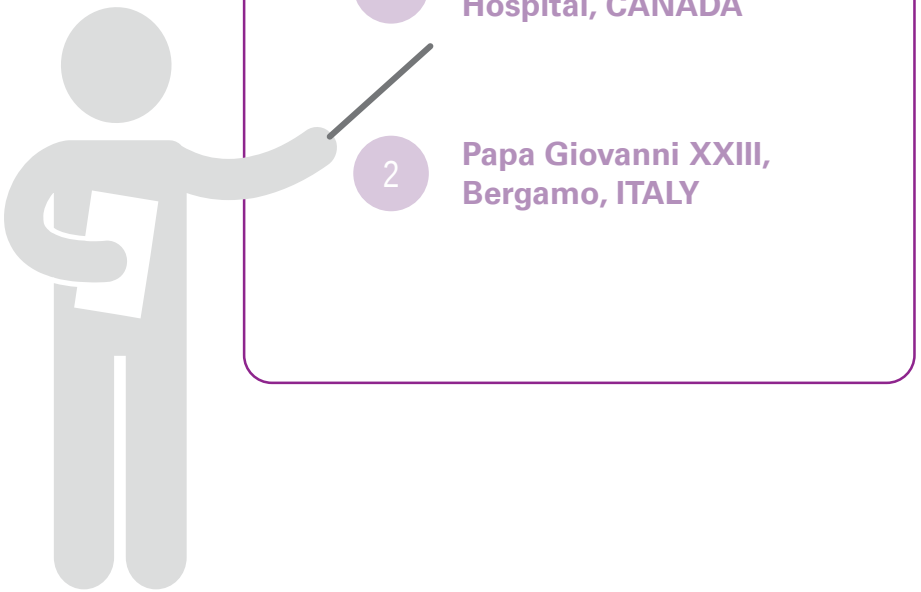
Source: 1. KPMG Interviews

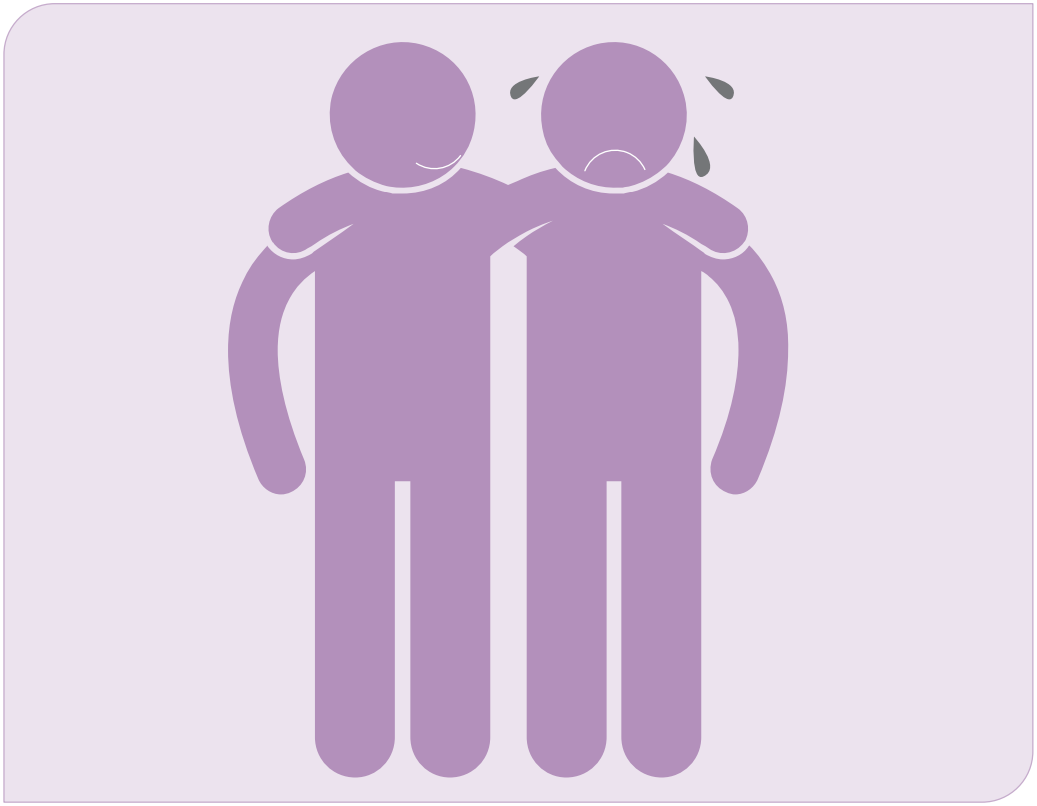
Patient associations provide support to patients and to HCPs

WHAT IS THE ROLE OF PATIENT ASSOCIATIONS?

- Patient associations can play an important role in providing peer-to-peer education between current, former, and soon-to-be patients
- Patient associations can be an extension of the team and act as a liaison between families and medical staff. These linkages help to ease the load of hospital staff by reducing the number of calls from patients on more minor problems
- It is important to include patients who have been cured of Hepatitis C as they can often be the best source of information for newly-diagnosed patients

WHERE HAVE WE OBSERVED SUCH INTERVENTIONS?





In Ottawa, the Canadian Liver Foundation connects former and newly-diagnosed patients

1

OTTAWA UNIVERSITY HOSPITAL, CANADA

Overview:

- The HCV team works with the Canadian Liver Foundation. This patient association is an extension of the team and acts as a liaison between families and medical staff
- The Foundation gets a lot of calls about Hepatitis C, with patients enquiring about new treatments

What are the challenges?

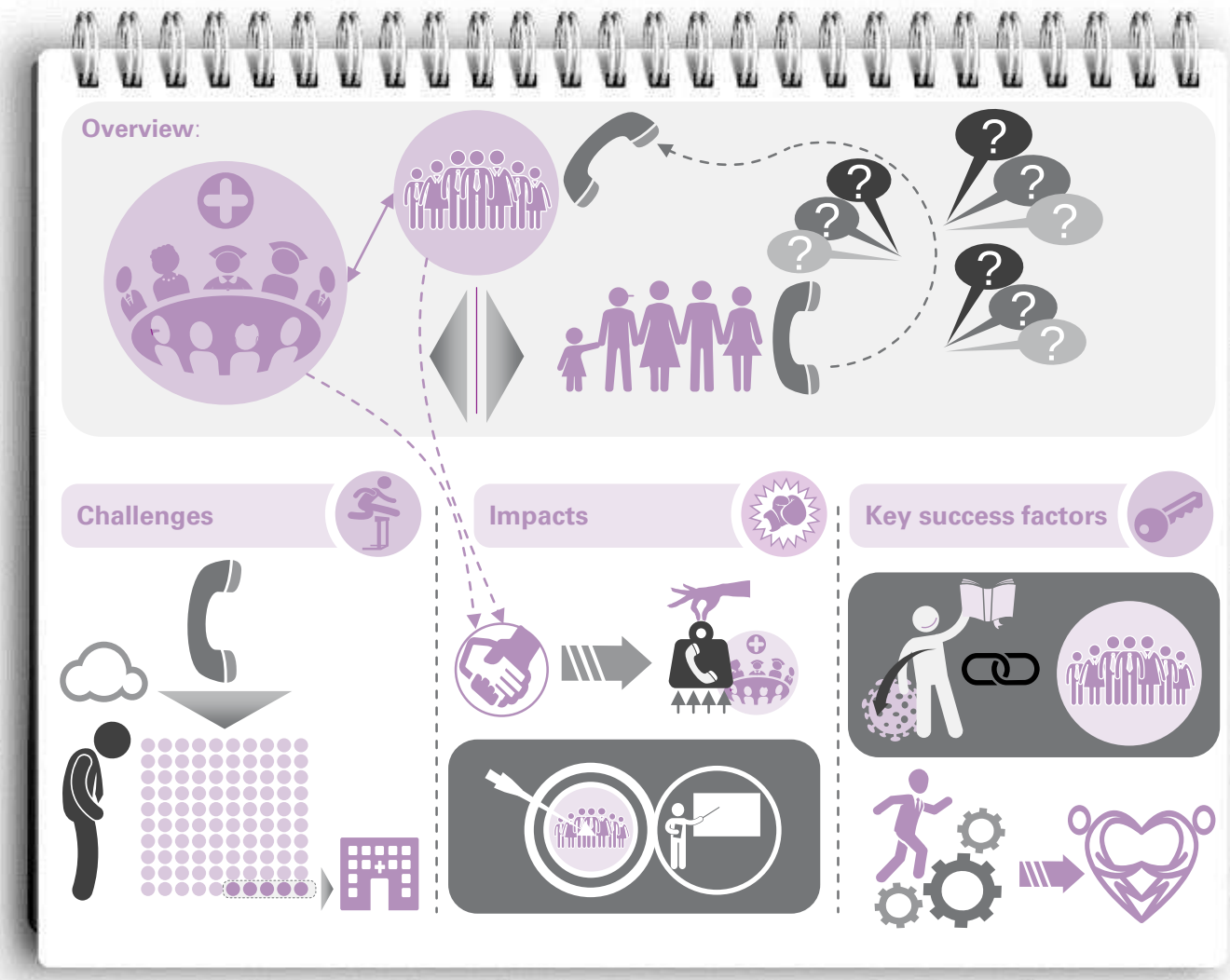
- This is a very difficult population to motivate; one staff member mentioned that he may call 100 HCV patients a day and yet only five will end up being admitted

What is the impact?

- This close relationship to patient associations helps to ease the load on hospital staff by reducing the number of calls from patients on more minor questions, as these are now addressed by peer-to-peer education
- The Foundation is able to support the centre's outreach by targeting certain communities for education sessions on Hepatitis B and Hepatitis C, for example the Chinese community

What are the key success factors for replicating this initiative?

- It is important to include patients who have been cured of Hepatitis C as they can often be the best source of information for newly-diagnosed patients
- Volunteers have to be motivated in order to engage with patients



Source: 1. KPMG Interviews

Large centres like Bergamo use patient associations to provide extra support

2

PAPA GIOVANNI XXIII, BERGAMO, ITALY

Overview:

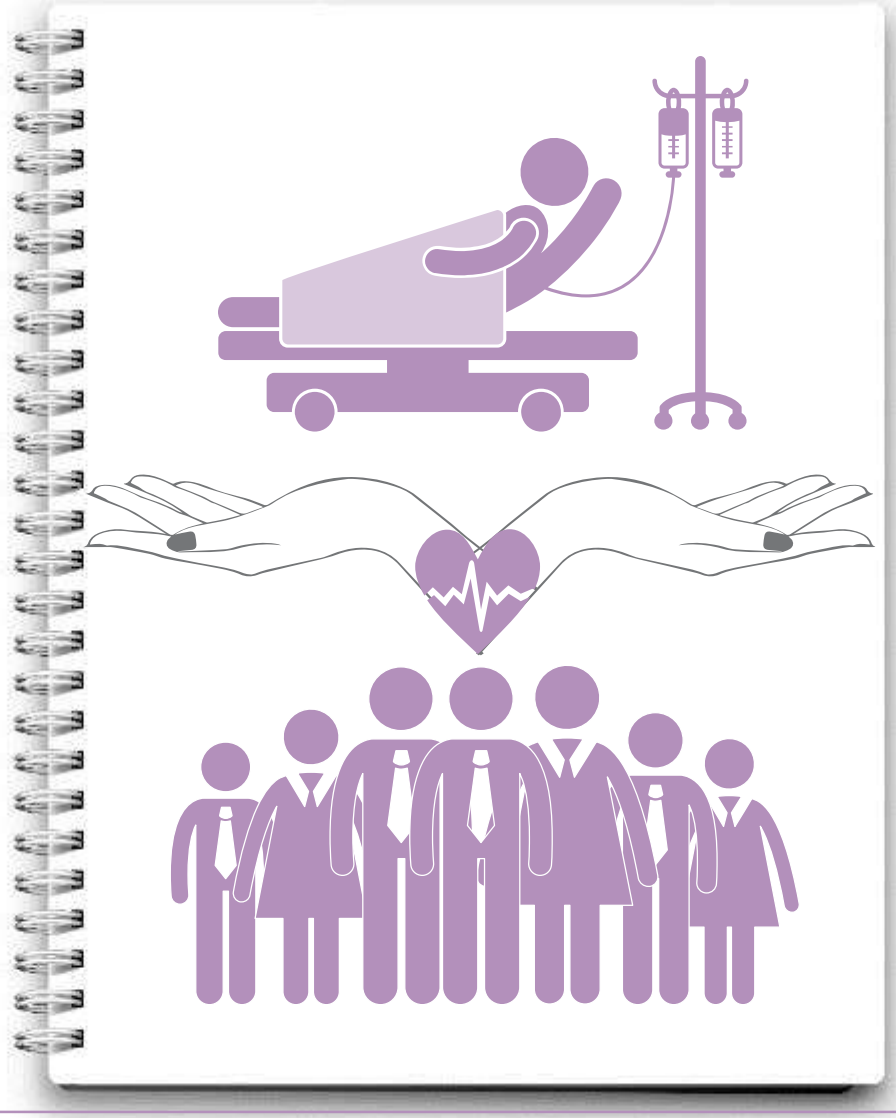
- Patient advocacy groups serve as second opinion service for patients who can ask questions that may not have been answered by physicians
- Physicians also rely on patient associations to offer peer-to-peer education in order to provide better insights into the needs of HCV patients

Which patient associations are involved?

- The centre works with two patient associations: Liver Patient Group (EPAC) and Amici del Trapianto di Fegato Onlus (Friends of Liver Transplant Patients)
- The hospital provides the patient associations with a room in the hospital so that they are easily accessible to physicians and patients

What is the impact?

- Linking to patient advocacy groups provides patients with an extra layer of support
- This is particularly important for large centres such as Bergamo which deal with a large volume of patients
- Physicians can improve their understanding of patient concerns through consultation with patient associations



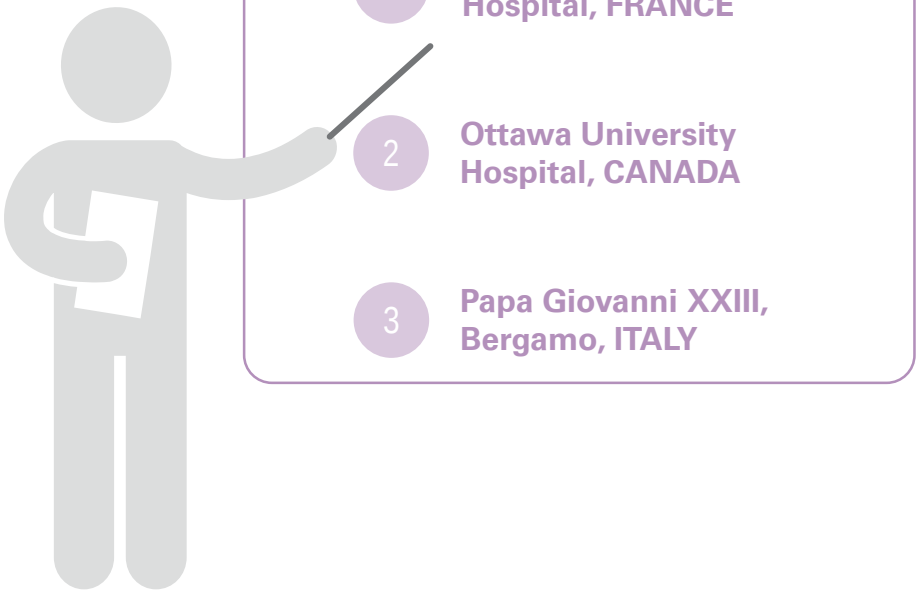
Source: 1. KPMG Interviews

The dynamics of psychosocial support are changing with the new treatments

WHO ARE THE KEY STAKEHOLDERS AND WHAT DO THEY DO?

- Psychiatrists, psychologists and social workers can offer support to the high proportion of patients with mental health challenges. This is particularly important at the patient assessment stage
- The psychiatric team is undergoing a changing role with the move away from interferon treatments that lead to acute mental health side-effects. There will be less evaluation of patients to see if they are ready for treatment but greater focus on supporting patients to adhere to the new, more expensive therapies

WHERE HAVE WE OBSERVED SUCH AN EVOLUTION?



The focus is moving from evaluating patients to ensuring treatment adherence

1

GRENOBLE UNIVERSITY HOSPITAL, FRANCE

Overview:

- The psychologist's role is to offer both consultations at Grenoble University Hospital and at the Prométhée network site
- Psychological support was necessary to support patients during the long course of interferon-based treatment

What was the rationale for having a psychologist on the team?

- Prior to the introduction of the DAAs, interferon-based treatments exacerbated the psychological problems facing an already fragile patient population

How is the role of the psychologist likely to change?

- Patients are now better able to cope with the new treatments as the side effects are less harsh. However, patients now have to adapt to a new way of life without the life-long burden of having Hepatitis C
- Patients may struggle to get back into employment or to adapt to having more spare time

Even though there is a cure for Hepatitis C, it is important not to diminish the importance of the disease.

Psychologist, Grenoble University Hospital

2

OTTAWA UNIVERSITY HOSPITAL, CANADA

Overview:

- The team currently has a psychiatrist, a psychologist and two social workers who can offer support to the high proportion of patients with mental health challenges
- The team is particularly involved at the patient assessment stage
- The team view treatment as an opportunity to treat the body and then address the addiction and mental health problems

What may be the future role of the team?

- The psychiatric team will have a changing role with the move away from interferon treatments that lead to acute mental-health side effects
- There will be less evaluation of patients to see if they are ready for treatment but a greater focus on supporting patients so that they comply with the new therapies
- Due to the newness of the DAAs, it is difficult to say what impact missing a few pills may have on the efficacy of treatment
- However, it is clear that missing pills causes waste of a high-cost treatment

With psychiatry, you're trying to repair the relationship with the patient before you have one. In all of the patient's previous experiences, "care professionals want to control me or take my kids away." We actually have a chance to build engagement.

Psychiatrist, Ottawa University Hospital

3

PAPA GIOVANNI XXIII, BERGAMO, ITALY

Overview:

- Two psychiatrists collaborate to provide 30 hours of support a week to the liver unit. The psychiatrists work with the team psychologist
- There is a strong focus on supporting transplant patients – approximately 25 HCV-related transplants per year

What are the roles and responsibilities of the psychiatric team?

- Evaluation of pre-transplant patients for suitability – the patient need to cope with the transplant impact, and the implications of life-long medication. There is a weekly transplant meeting to discuss candidates for surgery
- Monitoring of post-transplant patients for psychiatric complications of medications, offering continuous support on demand
- Pre-assessment of patients about to be given peginterferon (this number is going down with the new DAAs). Peginterferon can cause depression, so it is important to treat pre-therapy depression before starting treatment)

What is the impact?

- Psychiatry services are crucial as many patients with cirrhosis and other liver conditions have concurrent psychiatric issues, including drug and alcohol addiction and personality disorders

It is very important to have access to psychiatry services as many patients with cirrhosis have concurrent psychiatric issues.

Psychologist, Papa Giovanni XXIII

Source: 1. KPMG Interviews

Research teams supported the development of new treatments and now monitor results

WHAT ROLE DOES THE RESEARCH TEAM PLAY?

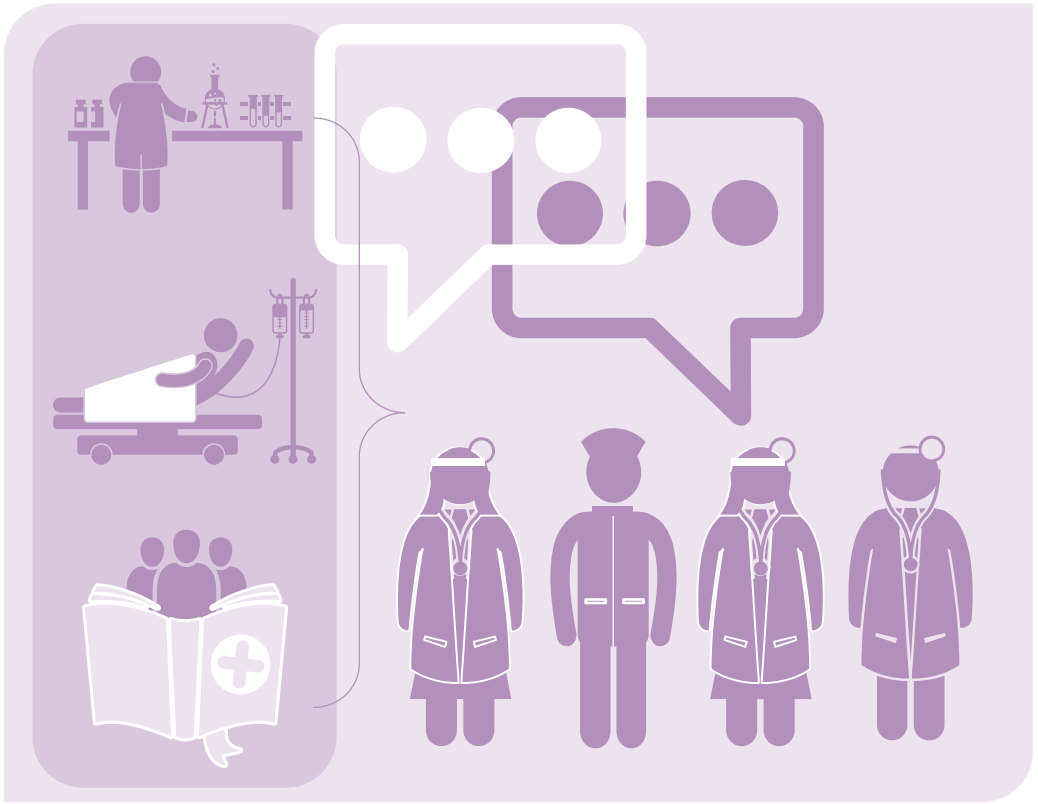
- Having a strong, in-house research team is a characteristic shared by all the centres we visited. Research capability allows centres to gain early access to new, innovative therapies. Having a research team within a hospital also enables the team to get easy access to liver samples and a large patient population to improve the quality of new research studies
- With the advent of DAAs, new research in Hepatitis C is decreasing and other liver diseases are coming to the foreground
- In addition to the general points below, we have built a case study around Beaumont Hospital, Dublin, to demonstrate specifics of good research in HCV care

What are potential features of a strong research team?

- **Strong links between clinicians and researchers** – enables easy access to liver samples and gives researchers visibility on the patient pool
- **Close collaboration with other teams** – enables the team to exchange information/expertise with other departments such as radiology, infectious diseases and surgery
- **Collection of patient data** – ensures the team can quickly identify patients eligible for a new study
- **In-house statistics capability** – helps a team to conduct studies more quickly as they do not have to operate through a centralised biostatistics department
- **Setting up a research foundation** – allows a centre to raise private funds to enhance clinical research. A foundation can support a specific research project or support a specific investigator to deal with a particular project

How will research evolve with the arrival of the new therapies?

- HCPs from several centres pointed to the fact that with the introduction of the new therapies there will be less research in Hepatitis C
- New research is increasingly focussing on Hepatitis B, hepatocellular carcinoma (HCC), non-alcoholic fatty liver disease (NAFLD) and hepatic encephalopathy (HE)
- However, there will still be a need to follow-up the effects of the new therapies through long-term studies



Source: 1. KPMG Interviews

Beaumont Hospital, Dublin, has a strong, well-integrated research department

1

BEAUMONT HOSPITAL, DUBLIN, IRELAND

Overview:

- The research team at Beaumont Hospital collaborates closely with the clinical practice to recruit patients for studies
- There is a mix of patient demographics – ~10% are from state infection, many of the remainder are former drug users

How does the research team work with the clinical practice?

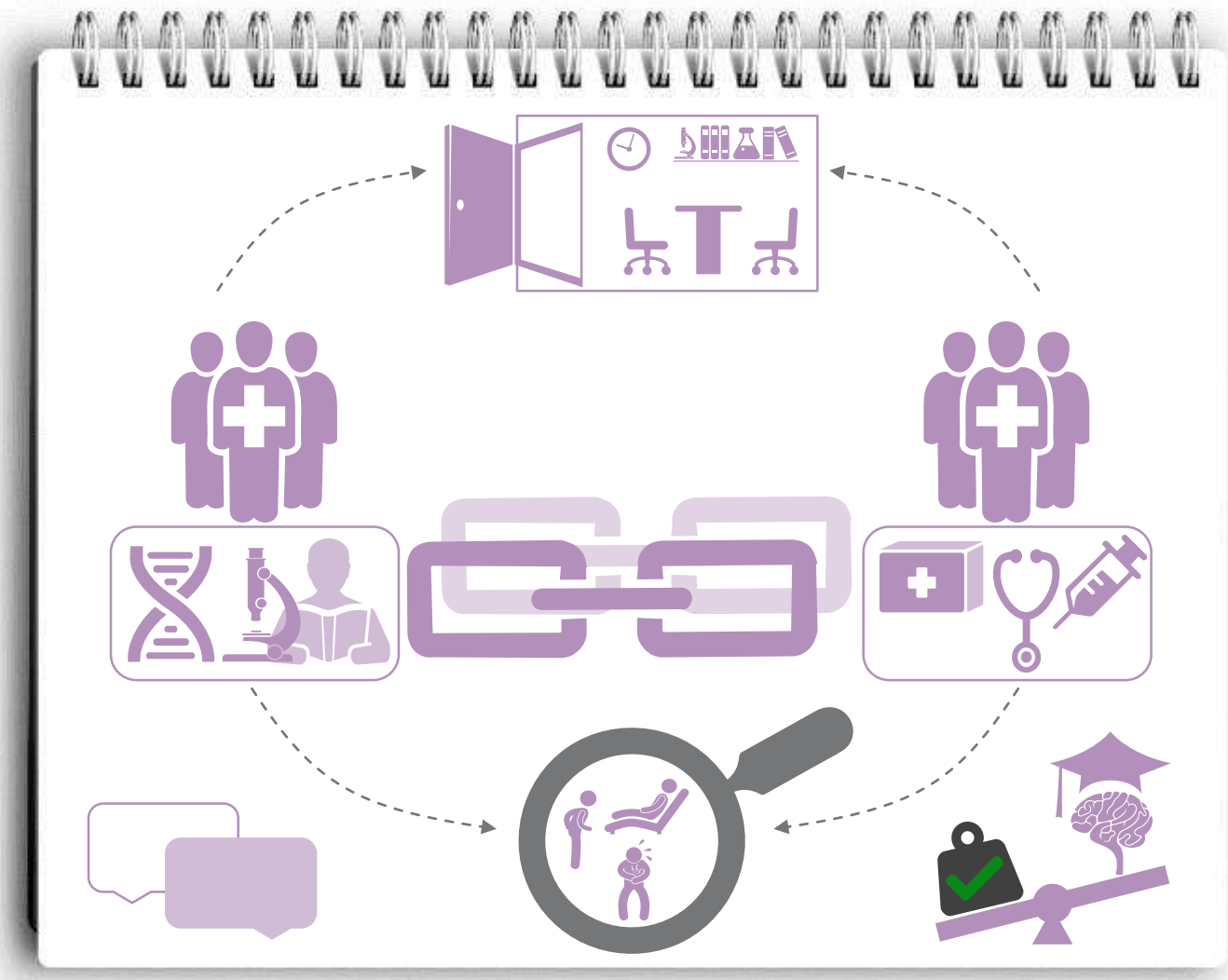
- Research staff collaborate closely with clinical staff and are co-located in the same office space
- Research-specific clinics are held to pre-screen patients to identify any exclusion criteria
- The research nurse acts as the first point of contact with patients during trials, with support from clinical nurses when required

What is the impact?

- Having a small team, co-located with the clinical practice, allows for effective communication
- Research staff can leverage clinical staff's knowledge of patients to source people for studies

Intervention replication tips?

- Embed research teams within clinical practices
- Hire capable, experienced staff, with clearly defined roles and organisational structures, and encourage them to work closely together
- Hire someone with a nursing background to act as clinical trial coordinator



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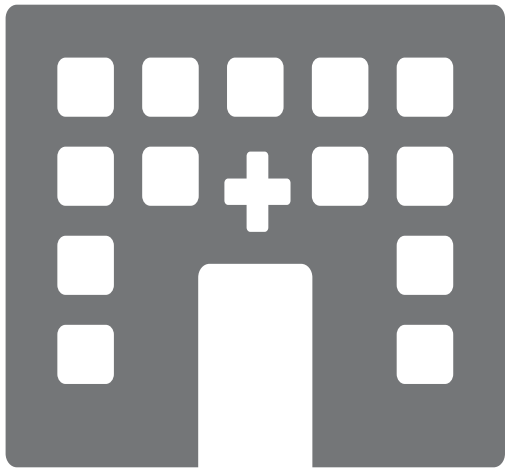
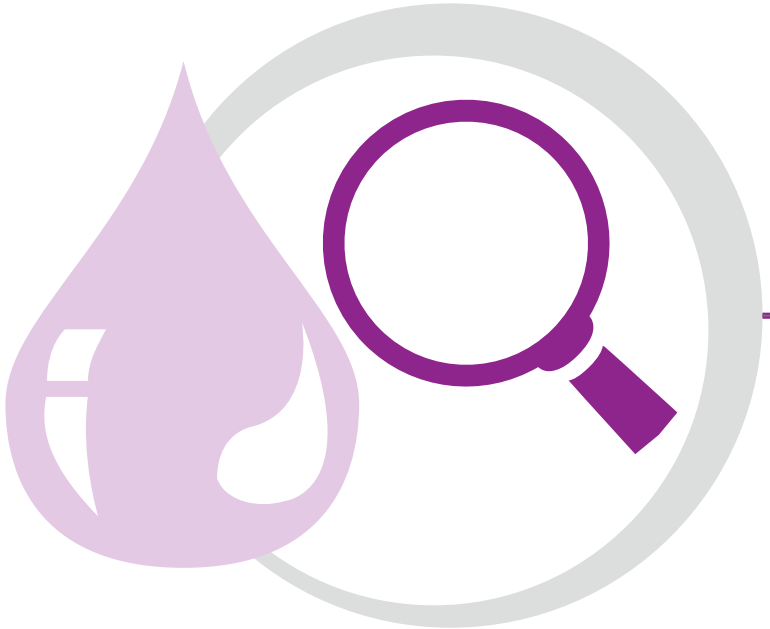


OUR FINDINGS:
Site detailed specifications

Our findings cover the principles of good HCV care, now and in the future



OUR FINDINGS

Principles of good HCV care

- Based on our site visits, we have outlined the universal principles of good care along each stage of the patient pathway

The future of HCV care

- We also investigated the future of HCV care, taking into consideration the evolution of treatments, with the transition from interferon-based to all oral regimens having a significant impact on the way care is delivered

Detailed interventions

- We observed forward-thinking interventions which are already addressing the changing paradigm of care with the introduction of DAAs
- We have aligned these interventions to the different stages of the patient pathway to highlight where they might be most effective

Site detailed specifications

- In addition to the above findings, we have also produced specifications for each centre interviewed during this project

Site detailed specifications: contents

PHYSICAL VISITS

VIRTUAL VISITS

Centres are listed in the order in which they were interviewed

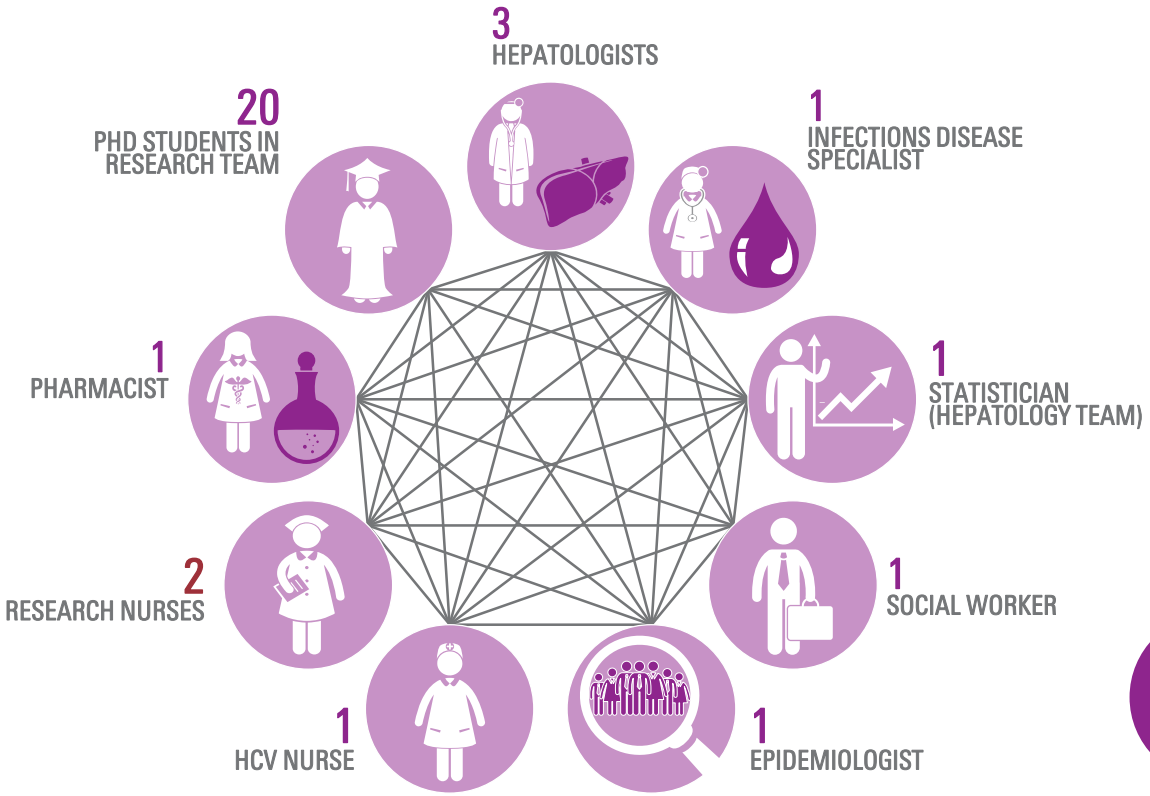
Erasmus Medical Centre, Rotterdam, Netherlands

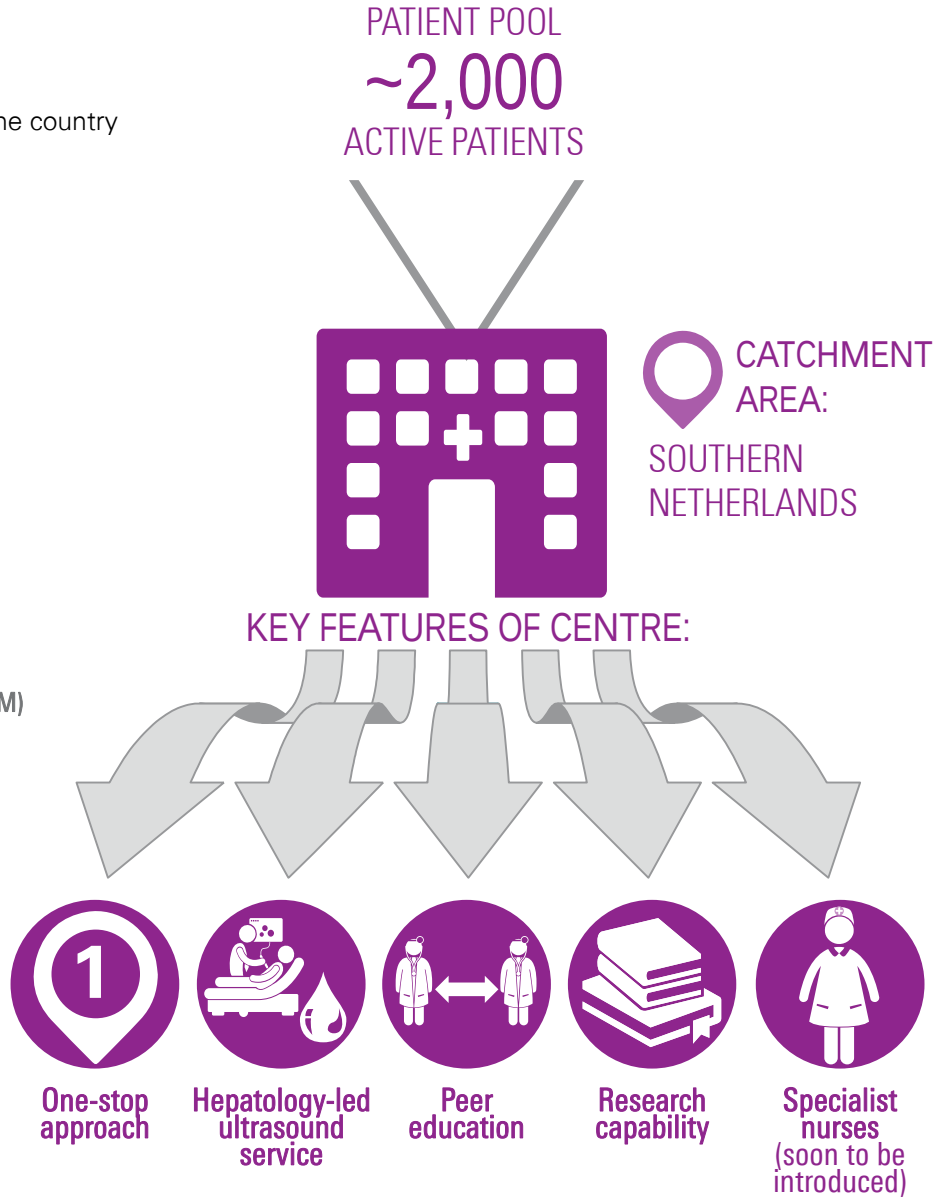
Erasmus Medical Centre, Rotterdam

The Erasmus Medical Centre (MC) team is led by Dr. Rob de Knegt

Erasmus MC has a specialist centre for Hepatitis C which is the largest hepatology centre in the country

HCV team





Erasmus Medical Centre, Rotterdam

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

A SPECIALISED TEAM WITH ...

- **A dedicated Hepatitis C lead –** Dr. Rob de Knegt is a Dutch opinion leader and Hepatitis C lead for Erasmus MC. He is involved in different research projects on Hepatitis C, non-invasive measurement of liver damage, and abdominal sonography. Dr. de Knegt also takes an active role in mentoring more junior colleagues
- **Research capability –** There is a well-developed unit with a lot of experience, advanced laboratory capabilities and an in-house statistician. They run research programmes, including phase III trials and the strong links with the clinical team ensure access to liver samples
- **HCV nurse** (to be in place by August 2015) **–** the specialist nurse will be acting as a case manager, setting up new appointments for the patient

1 ONE-STOP APPROACH

Why?

The aim is to improve efficiency of care and reduce outpatient visits. With this approach the centre can see a third more patients

How?

All blood tests and sonography are carried out in the same day so that diagnosis can be confirmed quickly. The patients receive the results the following week, which can be discussed over the phone or in person with the specialist

PEER EDUCATION

Why?

The team are conducting research and peer education to show that they are 'at the frontline' of the field. Less experienced physicians can also be frightened by delivering new treatments with which they are less familiar

How?

The team holds six education evenings a year to discuss the introduction of new treatments. This model is not just focussed on Rotterdam as the team asks for collaboration from local centres when they hold education evenings

WHAT MAKES A GOOD HCV CENTRE?

MUST HAVES

- **Specialist input from both Infectious disease specialists and hepatologists**
- **HCV nurse**
- **Outpatient clinic**
- **Infrastructure: elastography and ultrasound machines**
- **Strong virology:** diagnostics, viral loading, genotyping

NICE TO HAVES

- **Strong research base**
- **Transplant centre**
- **Scientific infrastructure:** enables team to improve basic and translational research but not essential in day-to-day management of patients

Erasmus Medical Centre, Rotterdam

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

WHY?

HOW?

PATIENT EDUCATION

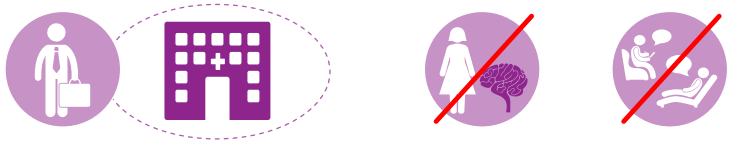
Pharmaceutical companies currently provide brochures on side effects and genotypes. However, it is not clear whether patients understand this educational material and they may prefer face-to-face explanation

Dr de Knegt is leading a committee to investigate how the team can improve patient education. The team could also be more pro-active in collecting patient feedback

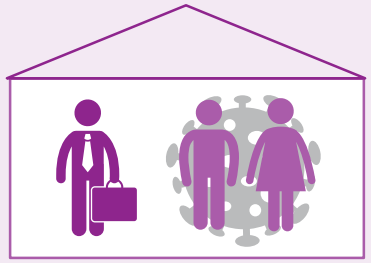
Patient feedback

PSYCHOSOCIAL SUPPORT

The team currently only has access to a social worker that works for the entire hospital and not just the Hepatitis C clinic. In addition, they currently have no psychologist or psychiatrist working as part of the team



The team could include an in-house social worker that works specifically with Hepatitis C patients



INCREASED RESOURCES

Due to a heavy patient load, Dr. de Knegt is unable to supervise junior colleagues when they are dealing with challenging patients

There could be additional physicians in the team to share Dr. de Knegt's workload in the outpatient clinic. This would enable Dr. de Knegt to spend more time answering on-the-spot questions from junior colleagues, addressing complex patient problems earlier rather than later

Erasmus Medical Centre, Rotterdam

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

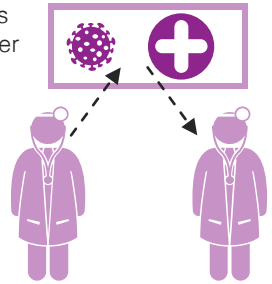
WHY?

IMPROVE ACCESS TO SPECIALIST CARE IN THE COMMUNITY

Vulnerable patient groups such as IV drug users may struggle to cope with hospital appointments in a central hospital setting

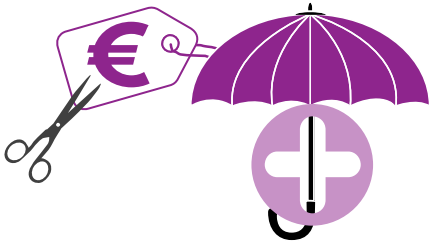
PEER EDUCATION

Education on Hepatitis C enables GPs to spot early signs of disease and refer patients for tests



REDUCED HEALTH INSURANCE COSTS

The Dutch healthcare system is publically funded; however, patients have a co-payment for treatments falling within the 300-euro price bracket. The HCV test falls within this price range and therefore patients have few financial incentives to be tested for Hepatitis C. If patients go to the GP and the serology test is negative, they are still charged for the cost of the test

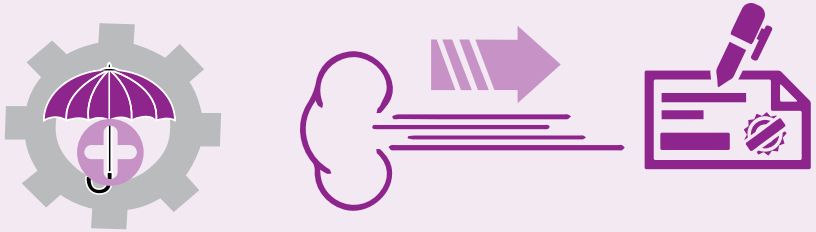


HOW?

Drug and addiction services should be able to refer directly to specialist centres without requiring a GP referral. There should also be more outreach into the community

In 2010, there was a national Hepatitis C campaign aimed at GPs. However, it ultimately had mixed results. The campaign was also some time ago and now with the introduction of new treatments there is a need for increased GP education

The co-payment could be removed from the insurance system to make preventive measures such as screening more attractive



Erasmus Medical Centre, Rotterdam

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

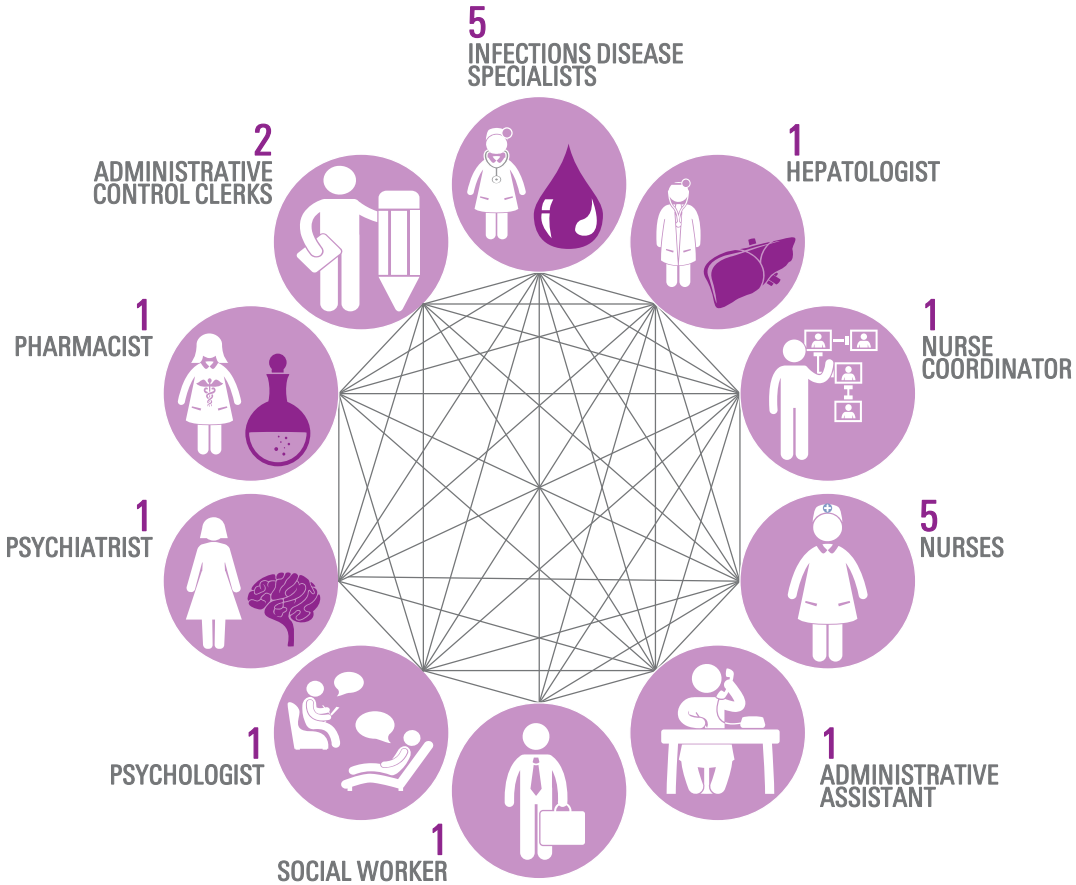
What is the status quo?	How will/could this change?
PATIENT ASSESSMENT	
The pharmacist needs to evaluate patients for any potential drug-drug interactions with the new DAAs	It is likely that new therapies will lead to increased contact between patients and the pharmacist. The pharmacist hopes to take a more direct role in patient care. In the future, the pharmacist may conduct the 'intake' process on the phone, making it even easier for the patient
CLINICAL MANAGEMENT	
In the Netherlands, patients have to be more severe sufferers at F3/F4 level of fibrosis or those who have already had a liver transplant to qualify for DAAs. Physicians who are less experienced may not be very familiar with new treatments which may slow down the delivery of curative therapies. Patients who come from hard-to-reach communities may also struggle to keep to hospital appointments	The main change with new therapies is the improved quality of life for patients compared to the psychiatric side effects on peginterferon As patients have to be F3/F4 level of fibrosis to qualify for DAAs, new treatments will mean that the most severe patients will be treated first. This may enable less specialised doctors to take the lead with the next tier of patients. Clinicians hope that in the future the price of DAAs will decrease so that they will be able to treat more patients at the moderate end of the disease spectrum Improved peer education will also be key to improving the speed of diagnosis and access to new treatments Community out-reach, for example in drug addiction centres, is one way in which unstable patient populations can also be targeted
FOLLOW-UP CARE	
When a patient has cirrhosis of the liver, continuous surveillance of the patient is needed due to the risk of cancer	Patients with fibrosis still have to be monitored with the new therapies. In the case of re-infection, there is no refund for patients on DAAs which is particularly significant considering the high costs involved with these treatments

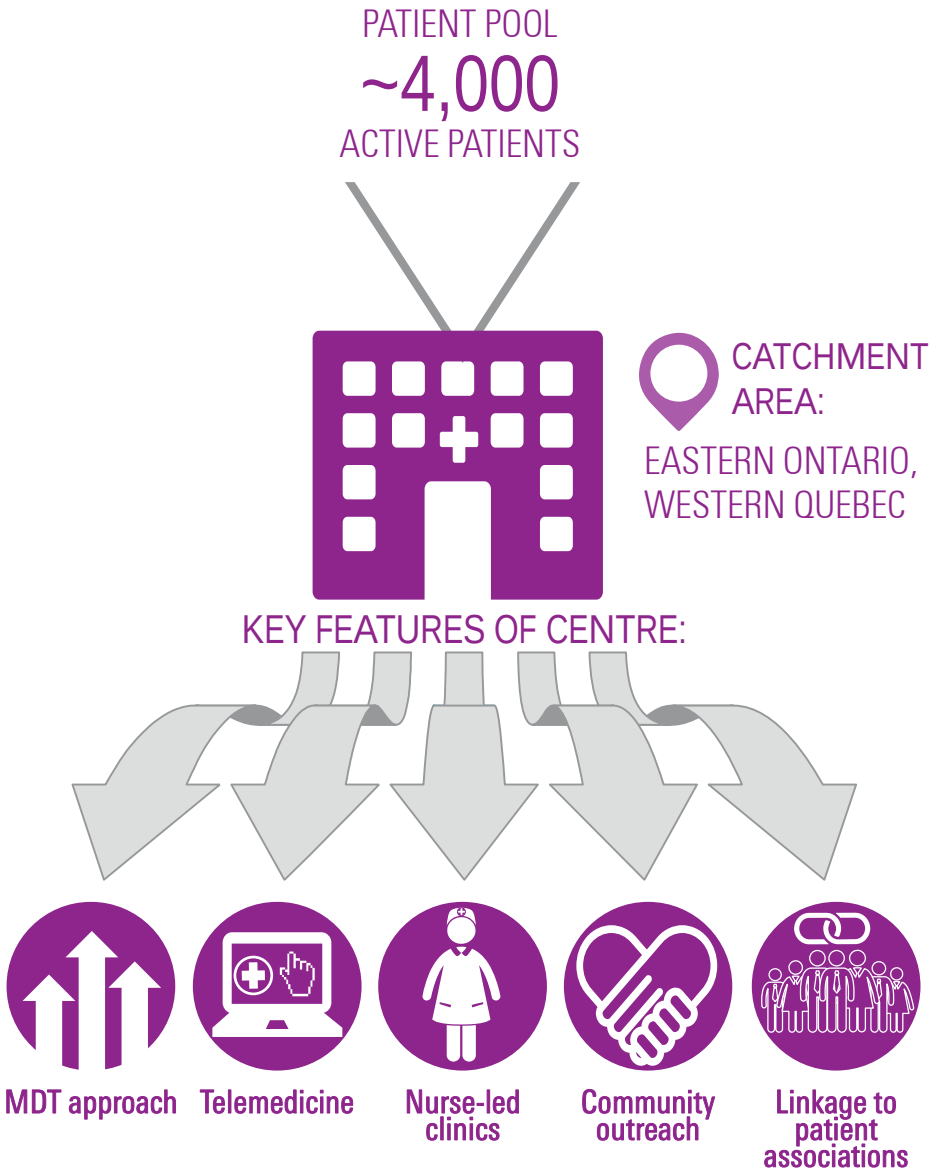
Ottawa University Hospital

Ottawa General Hospital

The Ottawa team is led by Dr. Curtis Cooper

The centre includes community outreach, telemedicine and research programmes for HCV





Ottawa General Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

A SPECIALISED TEAM WITH ...

- **A dedicated Hepatitis C lead –** Dr. Curtis Cooper is the Hepatitis C lead for the Ottawa General Hospital. A team member referred to Dr. Cooper as 'one of the best' due to the breadth of his experience and research. He demonstrates strong leadership and a willingness to educate more junior team members
- **Pyschosocial capability –** The psychiatric team provide support to HCV patients who often have mental health problems.
  They play an important role in all stages of the disease: pre-treatment, during (adherence) and follow-up care to prevent re-infection. The social work team is also involved at all stages of care. There is a dedicated outreach social worker who visits patients in the community, particularly when they are newly diagnosed
- **Nurse-led clinics –** The team have been running nurse-led clinics for approximately two years. Nurses carry out initial patient work up including elastography and blood tests. This enables physicians to have a more efficient and informed discussion with patients and increases throughput in the clinic so more patients are seen

MDT APPROACH

Why?

HCV patients tend to come from marginalised groups with mental health and substance abuse problems. Therefore, the HCV team needs to use a holistic approach that goes beyond the disease in the liver and targets the psychosocial challenges that patients face. This ensures that patients are in the best possible position to receive antiretroviral treatment

How?

There is a large team that aims to target the psychosocial dimension of the disease. The team includes a psychologist, psychiatrist and two social workers. The psychiatric and social work team members are heavily involved in evaluating and preparing patients in the pre-treatment phase. The team also aim to deliver treatment plans that are tailor-made to each patient

TELEMEDICINE

Why?

Many HCV patients live in remote, hard-to-reach areas and so it is difficult for these patients to access care and treatment in a central, hospital setting. The socioeconomic background of many HCV patients may mean that they do not have the financial means to travel to a hospital. Patients may also fear a formal hospital setting due to the stigma attached to Hepatitis C and/or substance abuse

How?

The team includes a full-time outreach nurse, an outreach social worker (also part of Community Liaison Programme) and a physician who provide care and treatment once a week. The outreach nurse provides local access to elastography scans to assess patient so that they do not have to travel to Ottawa for care. The telemedicine programme is run through the Ontario Telemedicine Network (OTN) so for follow-ups a nurse from the OTN site will coordinate the patient visits. Patients go to the OTN site nearest to their community and see their care provider through a video monitor

COMMUNITY LIAISON PROGRAMME

Why?

It can be challenging to reach HCV patients that live in hard-to-reach areas and who may be wary of the hospital setting. HCV centres have to try to engage with this patient population and reduce barriers to care

How?

The programme is coordinated through an outreach social worker who acts as a liaison between the HCV centre and community-based clinics. The social worker is able to engage with patients in the community and clinics provide referrals to the HCV centre so patients are able to receive the care they need. Sometimes all the visits are conducted locally and the elastography machine is taken into the community

Ottawa General Hospital

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

WHY?	HOW?
PATIENT EDUCATION Patients are not well-informed on treatment options before the start of any treatment plans. Patients may also get their hopes up too early about getting access to DAAs	There should be improved communication with patients between the GP diagnosis/referral phase and the first visit to the specialist. Better GP education would also improve the quality of information being passed onto patients
INDEPENDENT CLINIC In operating as part of the main hospital, making changes can be a slow process as all administration goes through the main hospital. The HCV centre also has to rely on central clerks who already have time pressures	An independent clinic for viral Hepatitis C would allow the team to have a greater say in when and how the team members use their time
INCREASED RESOURCES Particularly in the telemedicine programme, the staff are quite stretched and struggle to meet the growing demand from patients	Additional physicians for the telemedicine programme would enable the centre to reach more people in what is a vast area of coverage
SATELLITE STRUCTURE HCV patients can be unstable due to mental health problems, drug addiction and alcohol abuse. This makes the population particularly hard to engage in care and treatment	A satellite structure that would move around downtown areas would enable the team to carry out bloodwork and elastography scans within these communities. If patients feel that they can not be treated immediately they may fall through the cracks as their mental preparedness for treatment fluctuates

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

WHY?	HOW?
INCREASED ACCESS TO TREATMENT Current pricing is limiting the treatment of patient populations that are most in need i.e. drug users and prisoners. There is a great deal of waiting for new therapies. In Canada, the government has mandated that only patients with F2+ level of fibrosis have access to DAAs. If patients can be treated on a larger scale there is the potential to have a more significant impact in this disease area	Reduced prices would allow greater access to new therapies and these new, simpler treatments could eventually be moved into primary care. It would also be an improvement if F0/F1 patients also had access to DAAs because in not targeting these patients the country is not targeting the root of the problem

Ottawa General Hospital

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What is the status quo?	How will/could this change?
REFERRAL FROM PRIMARY CARE	
The most common scenario for diagnosis is that the primary care giver does a Hepatitis C serology test that comes back as positive. However, for many GPs the Hepatitis C test is seen as a low-priority test so many patients may go for years without realising that they have the disease. For example, IV drug users from the 1950s and 1960s are being diagnosed only now	Increased screening is a key way of improving diagnosis of patients so that they can have earlier access to new therapies. There are also physicians and nurse practitioners in the network that are able to screen patients in the community setting and refer them directly to secondary care
MOVING INTO SPECIALIST CARE	
Up until now, nurse practitioners played the role of gathering patients who knew that they were Hepatitis C positive. They tried to support those patients who could not get access to treatment. Dr. Cooper also arranged a day in the community where patients can get their elastography onsite which accelerates the patient's access to specialist care	It is changing a great deal. There are more people coming to the team as they have heard about the new treatments and are willing to take them as they are very different from the interferon-based therapies. As these therapies are still very new the team are waiting to see how their role will evolve. As family doctors get more comfortable with new treatments, they will also be able to take a more active role in managing Hepatitis C patients
PATIENT ASSESSMENT	
Before giving the approval for treatment, the pharmacist needs to analyse the patient's dossier and focus on the pharmacotherapeutics of the patient. It is currently not an ideal situation as the pharmacist is involved at the end of the patient assessment process	The role of the pharmacist could evolve with new treatments. Before, the nurse was administering the injections, however now as the new treatments are oral the pharmacist's role could become more important. Drug-drug interactions will also remain so pharmacovigilance is extremely important. The team still needs to understand the resistance profile of patients. If the pharmacist had more time with the HCV centre, they could be involved earlier in the intake process

Ottawa General Hospital

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What is the status quo?	How will/could this change?
CLINICAL MANAGEMENT	
In Canada, patients have to be F2+ to qualify for the new therapies. Many of the patients know very little about the disease before receiving treatment	Now with the new DAAs, even patients with poorly managed mental problems or difficulties with substance abuse have treatment options. However, the volume of paperwork has gone up with the demands from private and public sector insurers. In the future, staff hope that DAAs will be fully funded and that F0/F1 patients can also be treated with new therapies. Patients should also receive more education and communication before they start a course of treatment
FOLLOW-UP CARE	
If a patient is cured, the team will bring them back a year afterwards for a follow-up. If non-cirrhotic then the HCV team returns the patient to their GP. If cirrhotic then the team will continue to see the patient every six months indefinitely, unless they identify a physician close to the patient who can do the scans to check that there is no liver cancer. Patients' associations also have a role in assisting in follow-up care	The Canadian Liver Foundation gets many calls on Hepatitis C as patients know that there are treatments available but are uncertain of whether or not they can afford them. In the case of re-infection there is no refund for patients which is particularly important when new therapies are high-cost

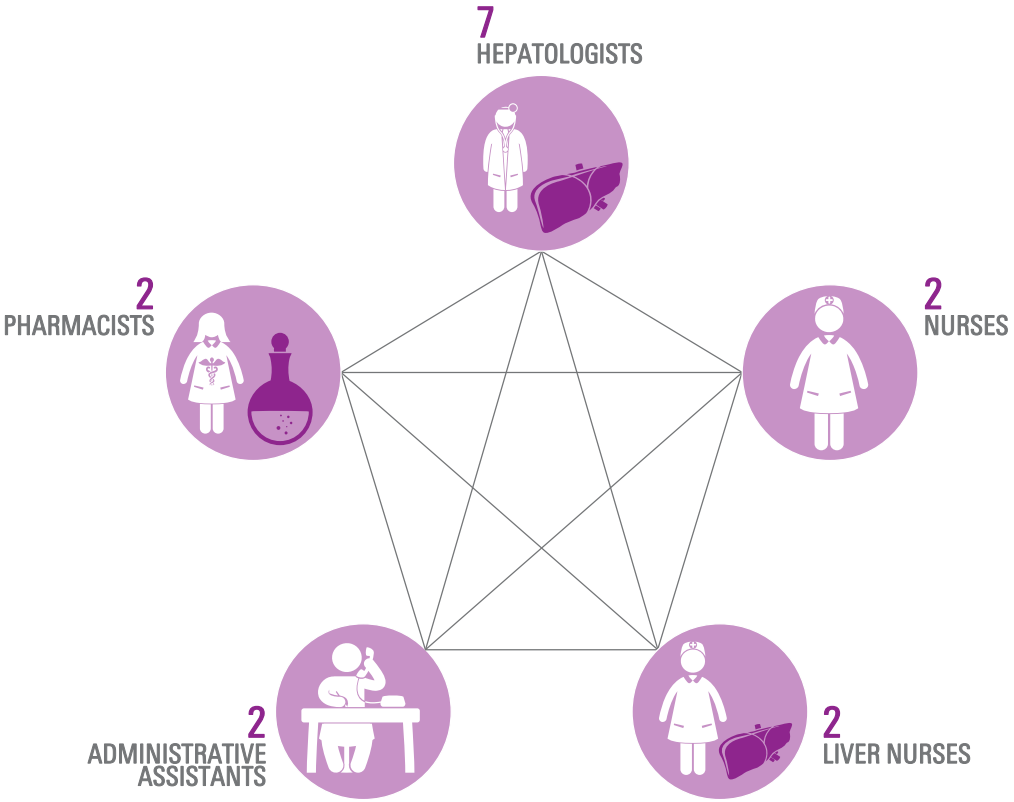
Monash Health, Melbourne, Australia

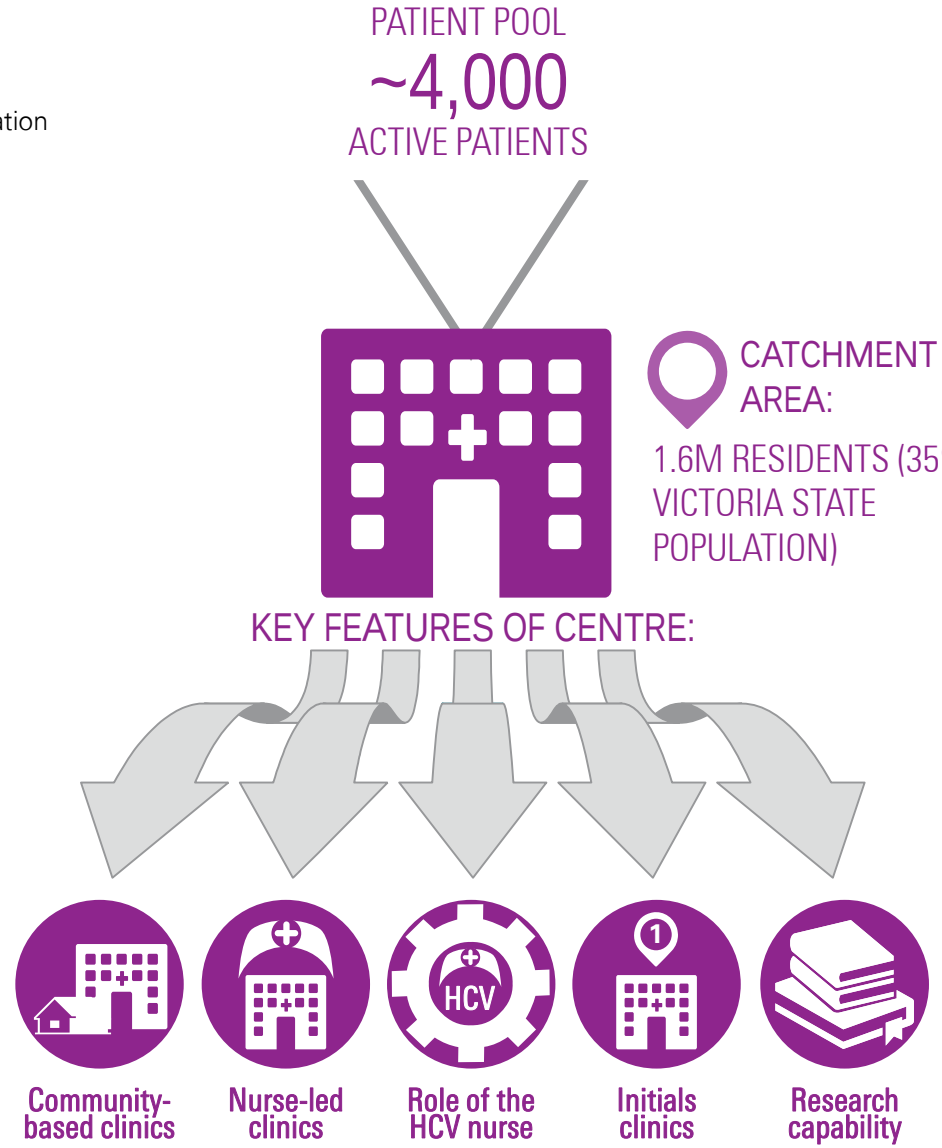
Monash Health, Melbourne

The Monash Health team is led by Prof. William Sievert

Monash Health is the largest healthcare network in Victoria and the HCV team serves a population with a high prevalence of Hepatitis C compared to the rest of the country

HCV team





Monash Health, Melbourne

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

A COOPERATIVE AND COHESIVE TEAM WITH…

- **A high number of hepatologists** who are able to see many patients
- **Dedicated** nurses who became specialists in the management of Hepatitis C patients thanks to their involvement in clinical trials
- **Engaged pharmacists** who support the team in not only dispensing the medicine to the patients but also in educating them and checking any possible drug-to-drug interaction with their existing treatments

RESEARCH CAPABILITIES

Why?

By participating in numerous clinical trials, patients have access to new treatment options which they may not have elsewhere

How?

The nurses collect patient data from the moment they first get admitted. This ensures the team can quickly identify patients eligible for a new study

COMMUNITY-BASED CLINICS

Why?

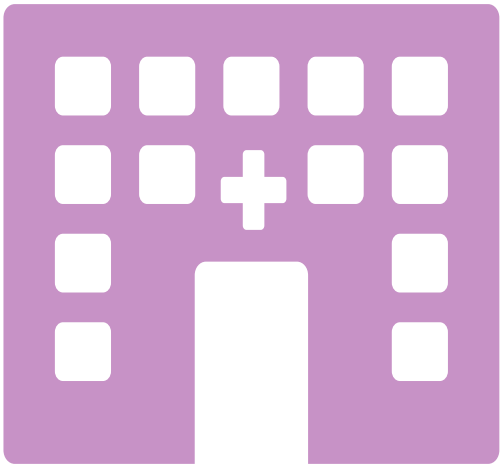
The team at Monash set up clinics in the community to bring specialist care locally to patients who may not be able or willing to travel to the hospital

How?

Monash Health possesses premises (medical centres) throughout the region which the team occupies on a weekly or fortnight basis. The physicians, nurses and pharmacists travel altogether to these centres and operate as if they were at the hospital

Monash Health, Melbourne

WHAT MAKES A GOOD HCV CENTRE?



ACCESS TO ELASTOGRAPHY SCANS

Why?

Access to elastography is critical to assess the liver of the patient. This enables the team to stratify the patients and prioritise those who need to be treated first

How?

Elastography machines can be purchased. Acquiring portable elastography machines can provide centres with additional flexibility as they can treat patients in their homes or at other centres

EDUCATION OF HCPs

Why?

HCPs such as gastroenterologists and infectious diseases specialists in the community need help to recognise advanced fibrosis and cirrhosis. This can lead to a prompt referral to a specialist team which will be able to manage the patients going forward

How?

Courses and events can be organised

Monash Health, Melbourne

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

WHY?	HOW?
PROCESSING REFERRALS MORE QUICKLY	
Patients currently have to wait between 18 months to two years before they can be seen by one of the hepatologists of the team	The team believes this issue can only be addressed by increasing the number of staff (i.e. physicians and nurses) and by creating more space to welcome patients on their premises
LOWERING THE NO-SHOW RATE	
The team has to over-book each out-patient clinic run at the hospital, in which approximately 70 patients are seen, by 10-15 patients. It is very common for 15-20 patients not to show up	The team recently started using SMS reminders for patients and at least initially this seems to be lowering the no-show rate. It would be ideal to have a team member remind patients of their next appointment a few days in advance, however at the moment, the team does not have the capacity to do this

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

WHY?	HOW?
EDUCATION OF COMMUNITY-BASED HCPS	
Although the new treatments will be administered orally and over a much shorter period than the current ones, specialist input will still be needed in the event side effects are experienced. As a result, GPs and community-based specialists will need to become aware of the treatment chain. GPs also need to identify patients with cirrhosis as these patients require ongoing specialist care	Courses and events could be set up in areas where the prevalence of Hepatitis C is high
MANAGEMENT OF ADHERENCE	
HCPs will have to ensure that treatments are delivered effectively and that patients have the best possible chance of being compliant. Due to the high cost of the drugs, patients may only be offered one course of treatment	Patients should be helped in various ways to remember to take their medication and to visit their treating physician/nurse at agreed times. An application could be used on a mobile phone as all patients possess such a device
COMMUNITY-BASED CLINICS	
In order to treat more people, care could be brought to those who may be unable or reluctant to visit a specialist centre	Clinics could be set up in a similar way to those the team at Monash is running. These clinics include physicians, nurses and a pharmacist, which allows patients to receive the same care as those visiting the main hospital

Monash Health, Melbourne

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What is the status quo?

How will/could this change?

INCREASED DEMAND FOR TREATMENT

Patients with mental health conditions cannot tolerate current treatment with interferon. Monash also has a lot of patients holding off on treatment until they can gain access to the new treatments

DAAs can be administered orally over a short period of time. As a result, more patients will be eligible for treatment including those with mental health conditions who were prevented from undertaking treatment with interferon in the past

In addition, the latest discussions between Australian HCV experts and the national authorities suggest that DAAs will be approved for all patients, regardless of the condition of their liver. The team is expecting a steep increase in the demand for treatment in the immediate to near future. This is already noticed at Monash as many newly diagnosed patients eligible for treatment prefer to wait for the release of the DAAs

The existing infrastructure is good at Monash but they may need more clinic space and a better booking system to accommodate the increased demand for treatment

SHIFT TOWARDS COMMUNITY-BASED CARE

Until now, the nurses have been spending a lot of time teaching patients how to inject the interferon-based treatments. The nurses also had to closely manage the side effects of the interferon regimes

Some of the pressure will have to shift onto community specialists. A shared care model between the specialists at the hospital and those in the community is likely to be set up. Hospital-based physicians would still perform the first assessment of the patient and depending on their condition (physical and psychological), either manage them on-site or send them to a specialist in the community

Monash Health, Melbourne

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What is the status quo?

How will/could this change?

CHANGE IN THE ROLE OF THE HCV NURSE

If a patient is cured, the team will bring them back a year afterwards for a follow-up. If non-cirrhotic then the HCV team returns the patient to their GP. If cirrhotic then the team will continue to see the patient every six months indefinitely, unless they identify a physician close to the patient who can do the scans to check that there is no liver cancer. Patients' associations also have a role in assisting in follow-up care

Once the new oral DAA treatments become available, nurses will no longer need to spend time on these tasks as patients will only be required to swallow pills

The team at Monash has already considered the challenge of new treatments and the nurses in charge of Hepatitis C patients will model their role on the nurses who have run the DAA clinical trials. Beyond following up with the patients, they will also act as case managers and set up appointments with the various HCPs involved in the care of the patients

The team also wants to let the HCV nurses run their own clinics where patients who are doing well (i.e. no complications with their liver) do not necessarily need the input of a specialist unless the treatment needs to be changed

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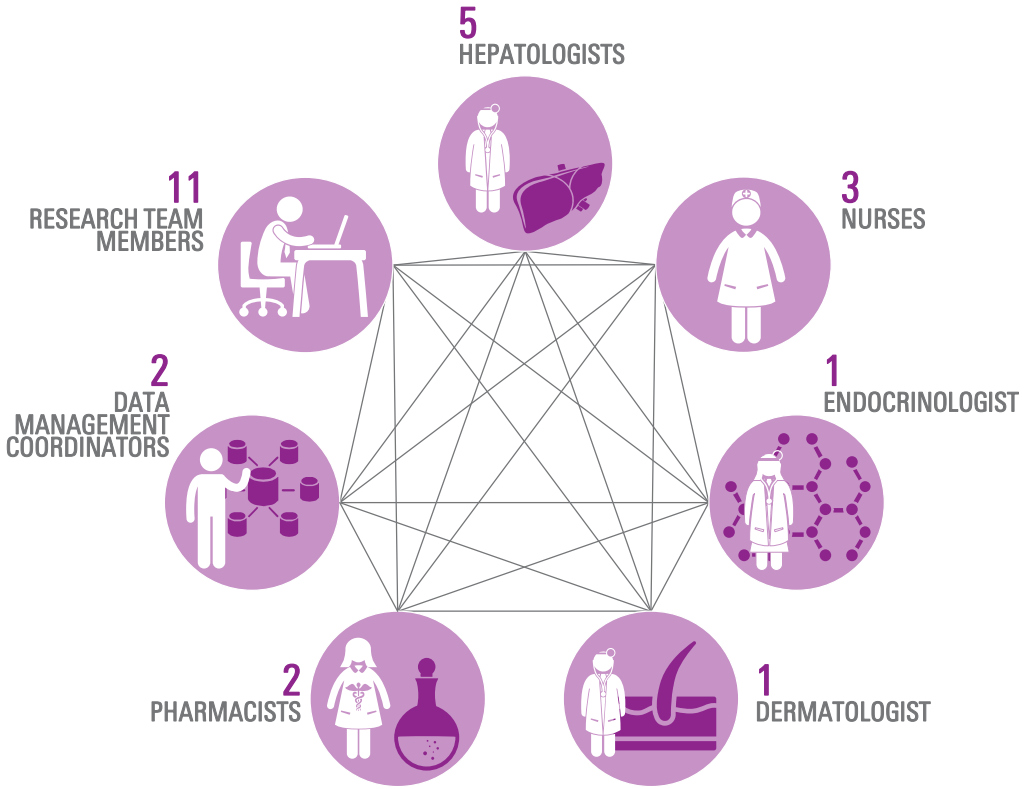
Puerta de Hierro University Hospital, Madrid, Spain

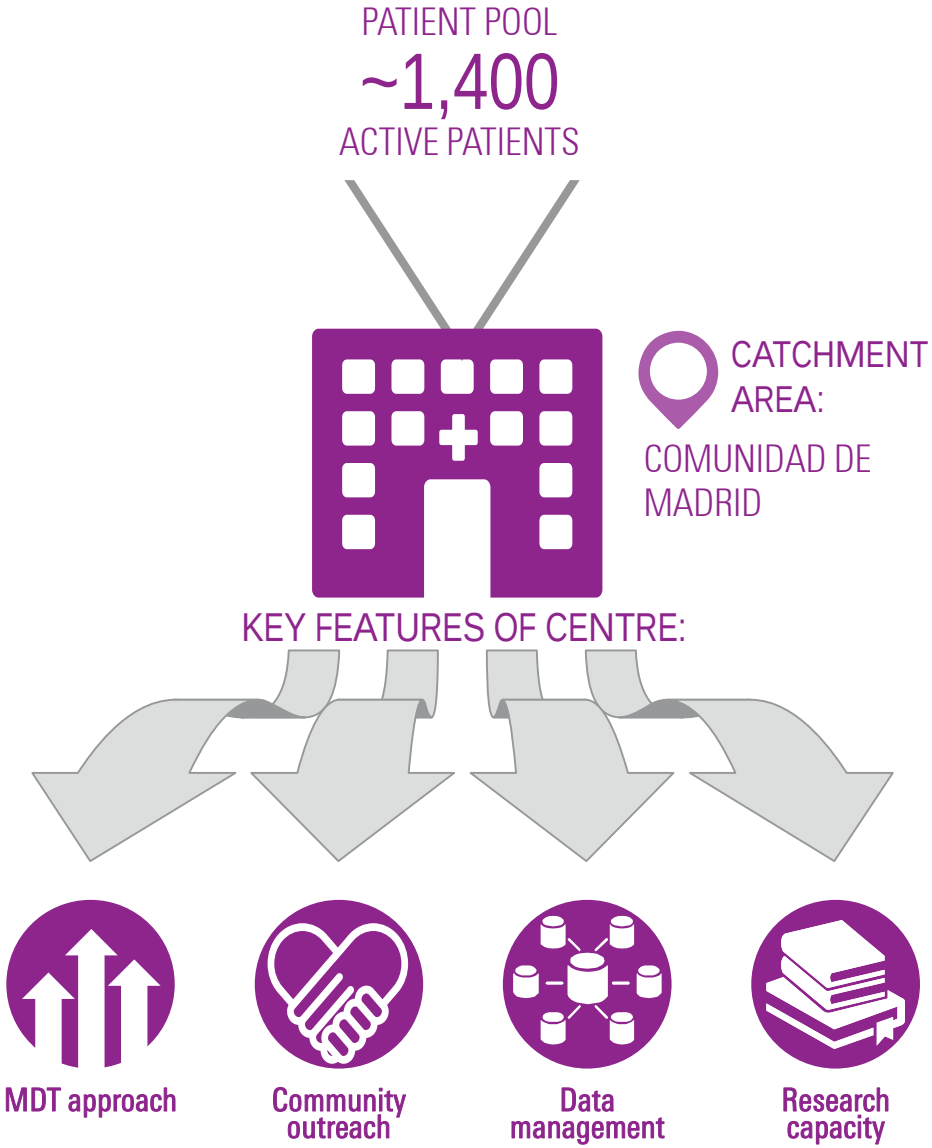
Puerta de Hierro University Hospital, Madrid

The Madrid team is led by Prof. Jose Luis Calleja

The centre includes a MDT approach, community outreach and research programmes for HCV

HCV team





Puerta de Hierro University Hospital, Madrid

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

MDT APPROACH

Why?

The MDT approach allows the team to deal with patient throughput more efficiently because they can constantly share information about patients, appointments and prescriptions

How?

A dedicated Hepatitis C lead – Dr Calleja has a strong research background and has led many clinical trials in Hepatitis C

Close collaboration between hepatologists, nurses, pharmacists and research staff. There is also strong interaction between the liver unit and other hospital departments such as radiology, infectious diseases, surgery and primary care physicians

Strong communication – The team members are in regular contact with each other via email or phone. There is also a mobile phone for the team that allows patients direct access to the team should they have questions or problems

DATA CAPTURE AND INFORMATION MANAGEMENT

Why?

The HCV centre holds a great deal of data on patients that needs to be coordinated in an efficient way for the benefit of clinicians and patients

How?

The hospital information system (Selene) allows the centre's staff as well as patients access to relevant information on upcoming tests. The internal patient database on Excel, which records patient information such as treatment duration and adverse reactions, feeds into the programme's strength in research

WHAT MAKES A GOOD HCV CENTRE?

INVOLVEMENT IN CLINICAL TRIALS

It is very difficult to have a strong HCV unit without being involved in clinical trials. According to Professor Calleja, this gives patients the opportunity to access new treatments and is particularly important for more advanced patients

STRONG, PERSONAL RELATIONSHIP WITH PATIENTS

The patient is not made to feel anonymous and feels part of the friendly, 'family atmosphere' as mentioned by one nurse

Patients feel that they receive optimal support from the team and therefore do not feel the need to contact patient associations

Puerta de Hierro University Hospital, Madrid

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

WHY?	HOW?
INCREASED RESOURCES	
The arrival of new DAAs has led to an increased demand for treatment. While Spain was waiting to get approval for new therapies, many Hepatitis C patients delayed treatment and so now there is an increased level of throughput	The team may need more clinician time to deal with the high number of patients waiting for treatment

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

WHY?	HOW?
INCREASED ACCESS TO TREATMENT	
Current pricing means that only patients with fibrosis (F2+) are being treated with the new treatments. There are also more restrictions over treatments in other hospitals where senior management will limit the use of certain newer therapies	The physicians hope that in the future politicians will increase access to DAAs to all patients with HCV and not just those with fibrosis of the liver
IMPROVED SCREENING	
Improved screening is key to improving diagnosis of the disease with less than 50% of patients with HCV in Spain being diagnosed, compared to over 80% in France according to one of the specialist of the team	In Spain's national plan for Hepatitis C there is a screening programme in place but the team does not expect it to be active for at least another year. This is primarily because there is a considerable backlog of patients who are already waiting to be treated. These existing patients need to be dealt with first before hospitals will have the capacity to treat a new influx of patients

BETTER LINKS WITH PRIMARY CARE

There are **three key steps** to ensuring strong collaboration with primary care:

Friendly approach to primary care physicians/centres – in Spain, there can be competition between specialists and primary care physicians so it is important to start off by trying to build a good relationship with GPs

Communication – ease of communication is key, either through mobile phone or email

Strong leader – you need a strong head of the unit who can help lead the collaboration with primary care physicians

Puerta de Hierro University Hospital, Madrid

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was/is the status quo?	How will/could this change?
INCREASED DEMAND FOR TREATMENT	
With interferon-based treatments the team used to see four new patients per week and 12 patients in total	Patient throughput has more than doubled with the introduction of the new treatments. The team now sees 15 new HCV patients per week with roughly five seen in each of the three weekly outpatient clinics dedicated to Hepatitis C. In addition, there are roughly 15 follow-ups per week It is clear that there has been a surge in demand for DAAs since their approval in Spain. However, it is also important to note that the promise of fully-funded new treatments created a backlog of patients delaying treatment so they could access DAAs
CLINICAL MANAGEMENT	
Patients used to be managed primarily on interferon-based treatments. According to patients we spoke to, these therapies induced side-effects such as weight loss, dizziness and cataracts	The main change with new therapies is the high SVR rate. We spoke to one patient who had lived with Hepatitis C for 30 years and it was only through the DAAs that she was able to be cured Patients have to be F3/F4 level of fibrosis (currently 45% of patients) to qualify for DAAs, with some special cases of F2 fibrosis such as pregnant women and HCPs, also gaining access to the treatments Clinicians hope that in the near future the price of DAAs will decrease and all patients will gain access to treatment Improved education of GPs was highlighted as a key way of improving the speed of diagnosis and access to new treatments
SHIFTING CARE TO PRIMARY CARE	
The all oral treatments could lead to a shift towards primary care where primary physicians are eventually in a position to prescribe DAAs	There were mixed opinions about the feasibility of shifting the prescription of DAAs to primary care due to the high cost of the treatments. If the cost were to decrease substantially it could be possible that non-cirrhotic Hepatitis C patients at F0/F1 could be treated solely within primary care, within the next 10-20 years

Puerta de Hierro University Hospital, Madrid

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What was/is the status quo?	How will/could this change?
PRESCRIPTION/DISPENSATION OF TREATMENT	
Interferon and new DAAs are all prescribed within the secondary care setting and are dispensed at the hospital pharmacy	There were mixed opinions about whether in the future primary care physicians may be able to prescribe DAAs and local pharmacies may be able to dispense the drugs. One GP stated that simply the high cost of DAAs would make it highly unlikely for them to be prescribed in primary care. A pharmacist suggested that it would take longer than five years
RESEARCH	
Up until now the centre has devoted a great deal of resources to research in Hepatitis C	With the high efficacy of DAAs there has been a shift towards research on other liver diseases such as Hepatitis B, Non-Alcoholic Fatty Liver Disease and Hepatic Encephalopathy. However, one researcher also highlighted the importance of studying the side effects of DAAs as the community knows much less about this area than it knows about the side effects of peginterferon

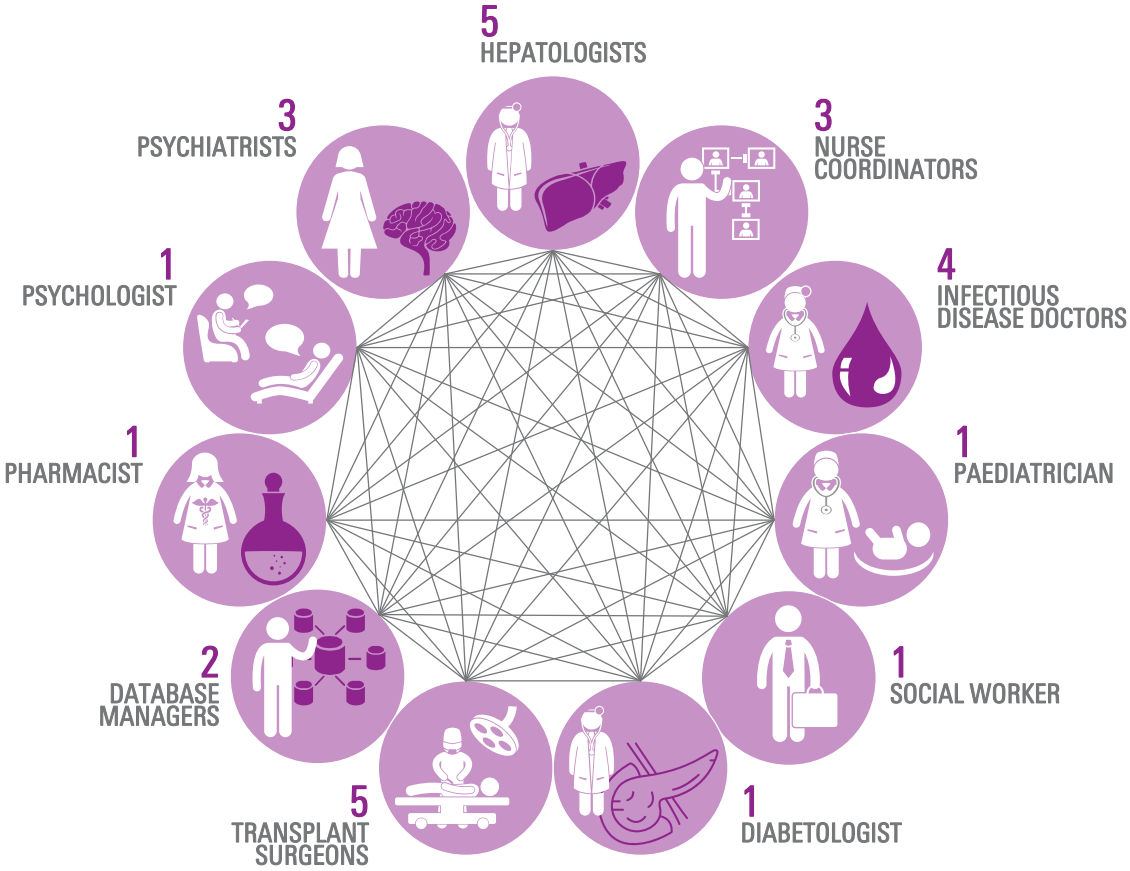
Ospedale Papa Giovanni XXIII, Bergamo, Italy

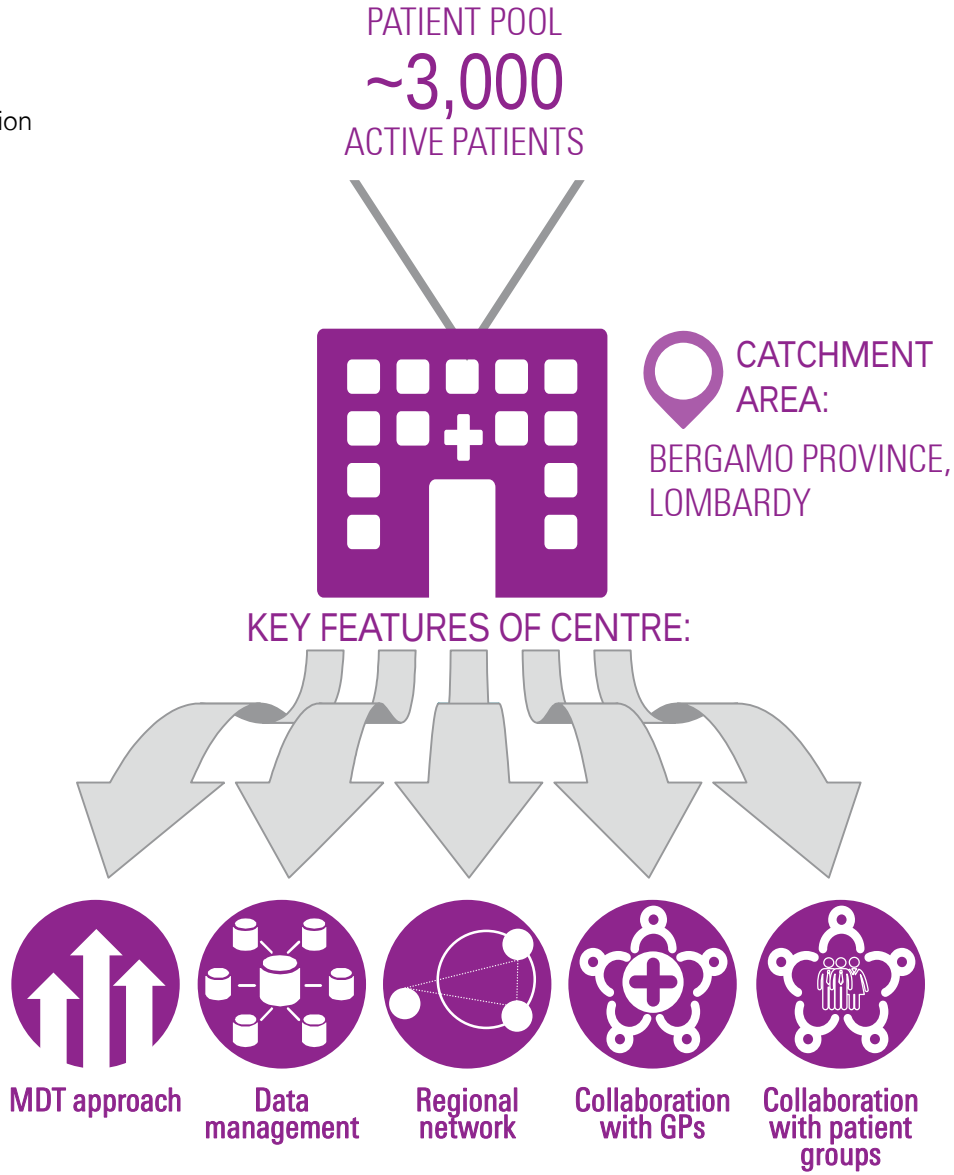
Ospedale Papa Giovanni XXIII, Bergamo

The Bergamo team is led by Professor Stefano Fagiuoli

The centre features a MDT approach, a regional care network and cross-stakeholder collaboration

HCV team





Ospedale Papa Giovanni XXIII, Bergamo

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

GOOD COLLABORATION THROUGH THE MULTIDISCIPLINARY APPROACH…

- **…between all HCPs at the centre –** A diverse range of HCPs including hepatologists, ID specialists, surgeons, gastroenterologists, nutritionists, psychologists etc. manage patients suffering from liver disease, including Hepatitis C. All these professionals, although not officially belonging to the same team, consult each other on their areas of expertise both on a formal basis with weekly MDT meetings but also on an ad hoc basis
- **…with GPs –** The team believes they are key to increasing early diagnosis and thereby early treatment of Hepatitis C. The centre has set up a training programme for GPs that increased the diagnosis of cirrhotic patients, thereby speeding up the referral process. There are also annual meetings and a protocol to give GPs support in managing hepatology conditions, including Hepatitis C
- **… with patients –** constant attempt at personalisation of the cure-process for each patient. Moreover, working with patient associations allows the centre to offer patients another layer of support outside of the HCP capacity. In particular, the centre works with two patient associations – EPAC (Liver Patient Group) and Amici del Trapianto di Fegato Onlus (Friends of Liver Transplant Patients)

EXPERTISE

Why?

Wide field experience of both nurses and physicians is pivotal for such a large volume and high complexity-cases centre

How?

Specific training programs for the different HCPs are available both in and outside the Centre (i.e. nurse master classes, a 1-year post-graduated physician Master course in liver and transplant medicine). Every field procedure is defined and specific process algorithms are implemented

DATA CAPTURE AND INFORMATION MANAGEMENT

Why?

Having a database with information on patients was crucial for the planning process around the new treatments

How?

There is a liver transplant database which interlinks with other databases, such as the HCV database. Through the database the team was able to select 150 patients with advanced disease so that from the day the new treatments became available, eligible patients were ready. Focussing on research outcomes is crucial to improving the level of HCV care

Tips for successful data management:

- ✓ Have a single referring person responsible for the informatics and the database
- ✓ Understand the needs of physicians when engaging with the database e.g. there may be a discrepancy between the preferred language of the staff building the database and the medical language required by HCPs
- ✓ Ensure physicians are in dialogue with the database manager

RESEARCH FOUNDATION

Why?

Having a research foundation allows the centre to raise private funds to enhance clinical research

How?

The Foundation was started in 2008 and has its own scientific committee to judge the quality of research presented and that needs to be supported. The Foundation can support a specific research project or can support a specific investigator to deal with a particular project. It is currently sponsoring the expansion of a database to capture regional-level data on HCV patients

Ospedale Papa Giovanni XXIII, Bergamo

WHAT ARE THE STRENGTHS OF YOUR CENTRE? (cont.)

PSYCHOLOGICAL AND PSYCHIATRY SUPPORT

Why?

Patients, especially those undergoing liver transplant need support not only to live with a transplanted liver but also during the journey preceding the surgery

How?

Two psychiatrists and one psychologist closely manage patients both pre- and post-transplant. Prior to receiving a new liver, the patients are assessed to gauge their readiness for surgery. Post-transplant, patients are helped to cope with their new lifestyle

ON-SITE NUTRITIONIST

Why?

Nutritional advice plays an important role for patients who have had liver transplants

How?

The nutritionist carries out an assessment of the patient that includes weight, abdominal circumference, calculation of body mass and changes in body weight with respect to the ideal/usual weight of the patient

The patient's dietary intake is evaluated through a food questionnaire. Food and calorific requirements are determined based on the ASPEN and ESPEN guidelines on parenteral and enteral nutrition. This patient data is then integrated into the database

Ospedale Papa Giovanni XXIII, Bergamo

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

BETTER COMMUNICATION BETWEEN GPS AND SPECIALISTS

Why?

A widespread more standardised and consolidated communication needs to be implemented between GPs and specialists

How?

Initiatives to train GPs and Specialists in co-management of patients (particularly for chronic liver conditions). Reinforcing training courses for GPs for early identification of signs of Hepatitis C and cirrhosis. All this process should be extended to other regions in the country

CONTINUITY OF CARE

Why?

Continuity of care can help make decision faster and give patients stability when they come to the hospital

How?

With an integrated systems in which the various departments collaborate closely, information will be shared smoothly. This is important when a patient navigates between in-patient and out-patient care. In addition, having patients see the same physicians throughout their care helps when difficult decisions need to be made

WIDER ACCESS TO DAAS

Why?

Currently, only F3+ patient have access to DAAs because the focus is on treating the most severe patients

How?

In the future, a larger number of patients should gain access to DAAs. The paperwork for requesting new treatments constitutes a high administrative burden. In the future, physicians hope that there will be less bureaucracy to access DAAs

Ospedale Papa Giovanni XXIII, Bergamo

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was/is the status quo?	How will/could this change?
MANAGEMENT OF HCV PATIENTS	
Before the introduction of DAAs, hepatologists active in multiple liver disease areas	With the introduction of DAAs, two of the hepatologist now dedicates most of her time to the treatment of HCV, therefore having less time to focus on other liver conditions. Patients need to seen several times during the 'learning curve' of the new HCV treatment course, which represents a significant time burden for physicians and nurses Demand for DAAs is still currently high due to the amount of patients that have previously deferred the treatment to wait for the access to the new curative therapies. This continued high demand is likely to lead to a maintained focus on HCV by the hepatology team for a few years in the near future
MANAGEMENT OF TRANSPLANT PATIENTS	
Currently, approximately 45% of liver transplants for adult patients are HCV related	As more HCV patients are treated with the DAAs, changes in the criteria for liver transplantation should be expected in the mid-term future. With fewer HCV patients needing transplants due to the eradication of the virus, more patients with hepatocellular carcinoma (HCC), alcohol and metabolic disease shall become eligible for liver transplant
SHIFT IN HEPATOLOGY	
The treatment of Hepatitis C is a significant component of the activities of the hepatology team	On a macro-level hepatology may begin to focus more on metabolic- and alcohol- related pathologies as more and more HCV patients are cured

Ospedale Papa Giovanni XXIII, Bergamo

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What was/is the status quo?

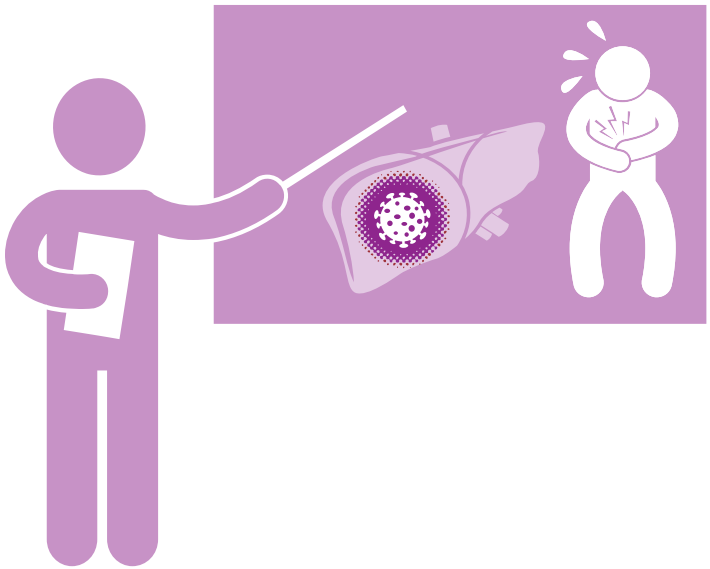
How will/could this change?

ROLE OF GPS

GPs currently act as a point of referral for patients identified as cirrhotic. These patients are forwarded to specialists

There are mixed opinions on whether the ease of DAA administration will lead to a greater role for GPs or whether there will be still be a need for specialist involvement

The centre's training programme for GPs on how to identify cirrhotic patients illustrates that going forward there is a need for GPs to be better educated on liver diseases such as HCV and HCC. This improved level of education will hopefully increase diagnosis and ultimately treatment of patients



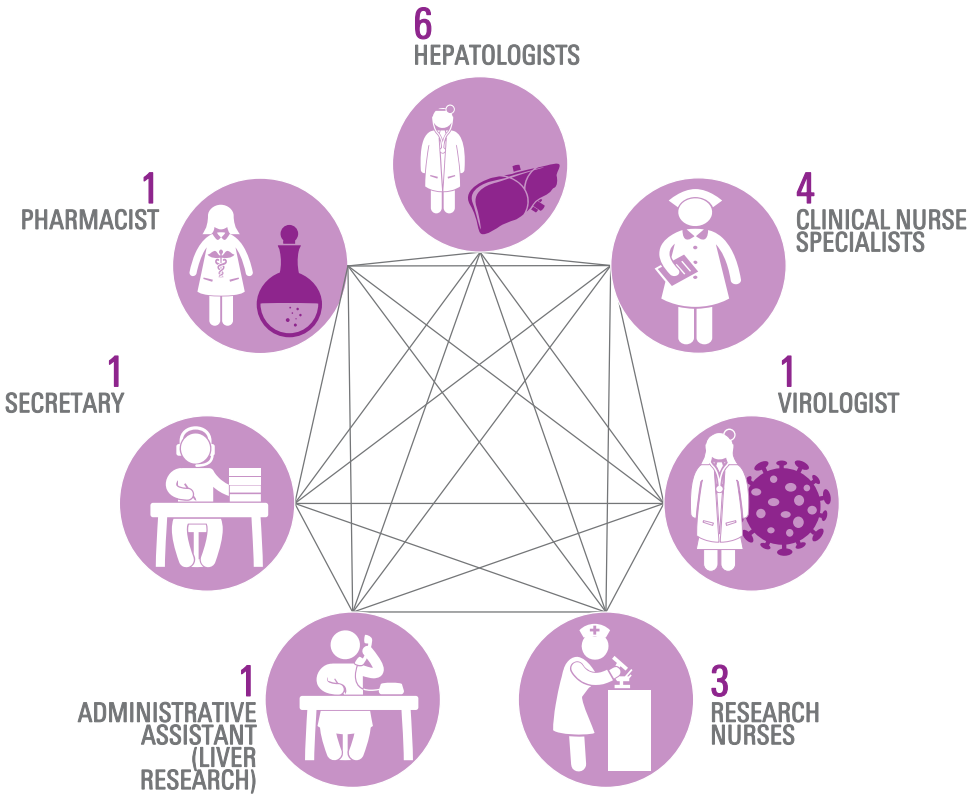
Queen Elizabeth, Birmingham, England

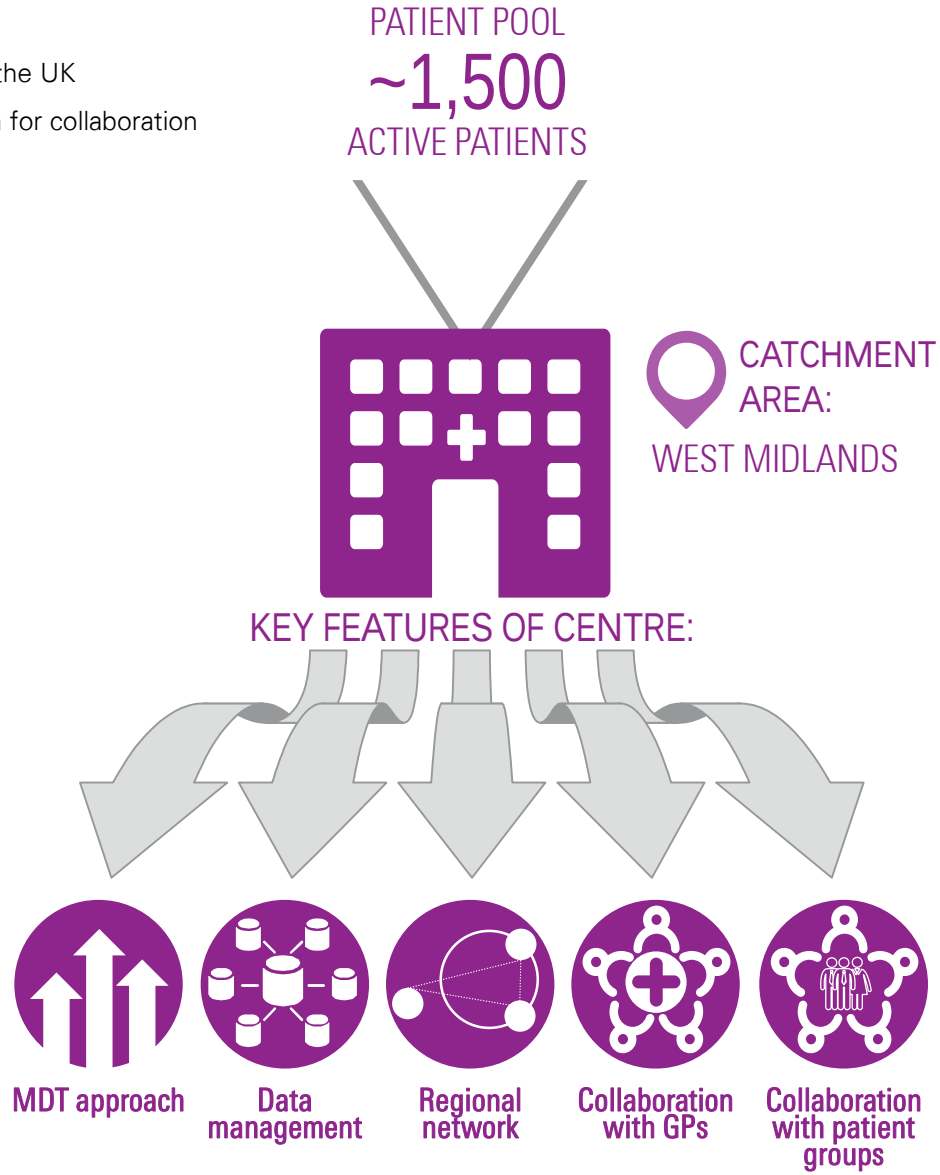
Queen Elizabeth, Birmingham

The Birmingham team is led by Professor David Mutimer and is 1 of 7 liver transplant units in the UK

The centre leads the West Midlands Operational Delivery Network and has a strong reputation for collaboration with other HCPs and patients

CORE HCV TEAM AT THE QE





Queen Elizabeth, Birmingham

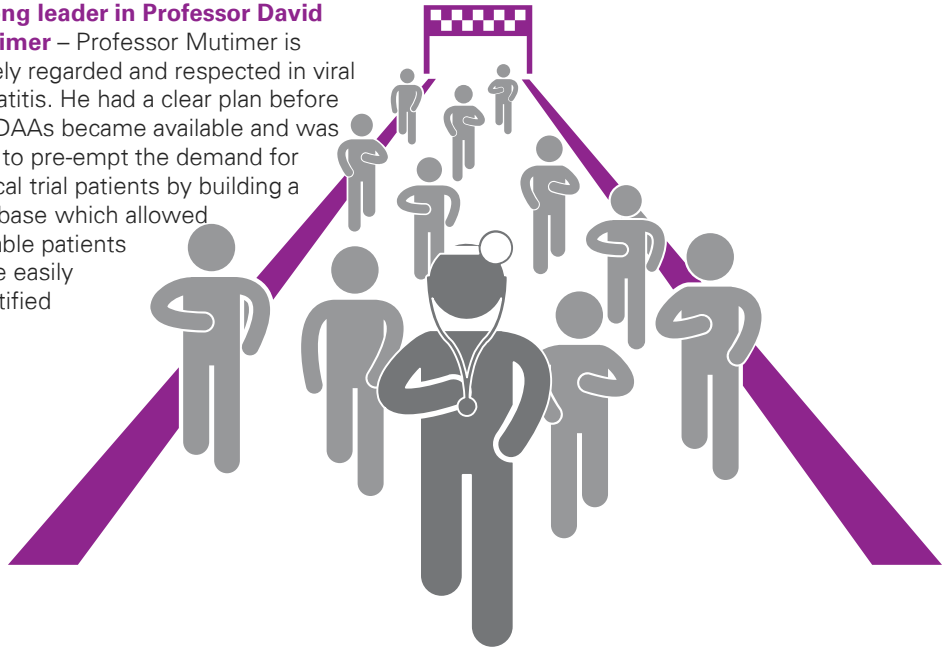
WHAT ARE THE STRENGTHS OF YOUR CENTRE?

COLLABORATION…

- **…between centres in the region** – There is a hub and spoke model with QE hospital forming the hub and 12 other Hospital Trusts in the network. The weekly MDT enables HCPs from peripheral centres to share challenges and benefit from the expertise at QE that has had more experience with the new treatments
- **…between the research and clinical teams** – There is integration of the clinical trials team with clinicians to build a body of experience in using the new drugs
- **…through the Midlands Hepatitis Nurses' Forum** – All the local Hepatitis C nurses (15 in total) meet regularly in what serves as an educational forum. These forums are funded by pharmaceutical companies and allow the nurses to share information and good practices
- **…with local GPs** – The centre is also in the process of starting an outreach clinic in a local GP practice. The nurses will go to the GP clinic weekly and one of the specialists will go monthly to treat the non-cirrhotic patients that are more chaotic and unstable in their lifestyle e.g. IV drug users
- **…with local drug and alcohol services** – Local drug and alcohol services refer patients directly to QE or through the GP

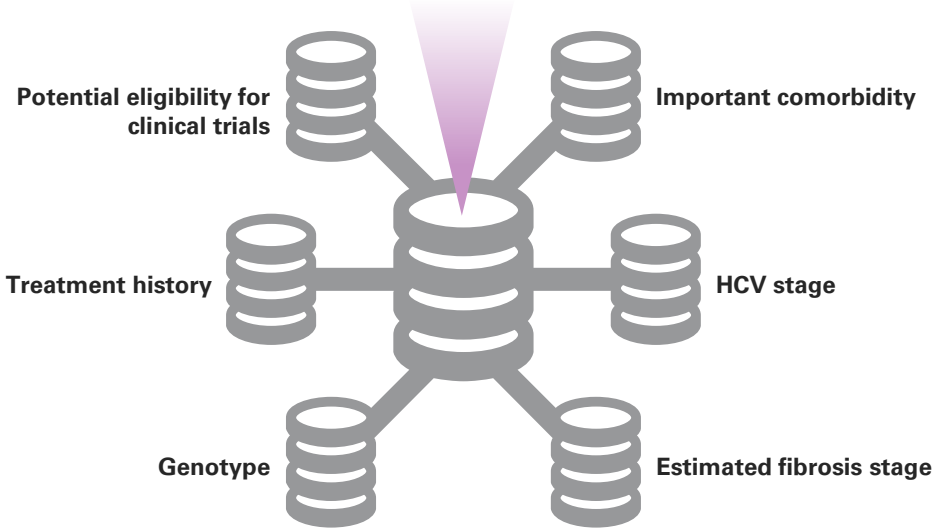
STRONG LEADERSHIP…

- **Strong leader in Professor David Mutimer** – Professor Mutimer is widely regarded and respected in viral Hepatitis. He had a clear plan before the DAAs became available and was able to pre-empt the demand for clinical trial patients by building a database which allowed suitable patients to be easily identified



PATIENT DATABASE

- The database was set up by Professor Mutimer and enabled patients to be readily identified and targeted for early access to the DAAs through compassionate access programmes
  - **Information collated** – The database includes the following key field categories:



Queen Elizabeth, Birmingham

HOW CAN YOUR CENTRE BE IMPROVED?

INCREASED NURSING CAPACITY

Why?

With the approval of the DAAs, there is currently a very high demand for treatment that will mean that there will still be a great deal of pressure on the capacity of the nurse-led clinics

Furthermore, in the West Midlands Network catchment area, there is a high population of genotype 3 patients who will still need to be treated with peginterferon

How?

Increased specialist nursing time would be key to improving HCV care, particularly as the demand for treatment continues to increase and care shifts away from specialist clinicians and more towards specialist nurses

INCREASED PHARMACIST CAPACITY

Why?

The introduction of DAAs is associated with potential drug-drug interactions, and the centre currently has limited pharmacist capacity

How?

Increased funding would be needed to increase the number of specialist pharmacists at the QE and available for other prescribers of antivirals in the Network

MORE COMMUNITY OUTREACH

Why?

There is a large undiagnosed population that exists, particularly among certain ethnic minority groups such as the South Asian community

How?

The centre has already attempted to target the Indian community by testing at local cultural festival – the Mela. However, the mode of testing – oral swabs – proved to be unreliable as it led to many false positive results. In the future, targeted screening has to be refined to increase diagnosis

Queen Elizabeth, Birmingham

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

IMPROVED SCREENING

Why?

Screening is generally weak in England with a high level of undiagnosed patients. However, up until recently, the value of screening was uncertain because of the lack of treatment options

How?

Now that DAAs have been approved by NHS England, the new treatments should become more widely accessible which will increase the need for screening. The screening service could also be improved in prisons as it is currently suboptimal among a population that has a high prevalence of HCV

IMPROVED LITERATURE FOR PATIENTS

Why?

It has been difficult to manage post-transplant patients and potential drug-drug interactions

How?

There could be more brochures for post-transplant patients documenting what will happen during their treatment. It is particularly difficult for patients under the DAAs to get used to the change in routine of taking their immunosuppressive treatments

WIDER ACCESS TO DAAS

Why?

Currently, NHS England has granted approval for only F3+ patient to access to DAAs because the focus is on treating the most severe patients

How?

In the future, a larger number of patients, including asymptomatic patients, should gain access to DAAs. Centres such as QE currently have limited capacity to process existing patients so increasing access to treatments would probably have to be accompanied by an increase in the capacity of centres

LEARNING FROM HIV CARE

Why?

HIV specialists have a great deal of experience in managing drug-drug interactions. The new treatments for HCV are very similar to the oral therapies offered for HIV

How?

Hepatologists and gastroenterologists should embrace the expertise of HIV specialists because they have already been through a lot of similar experiences in dealing with HIV treatments. If a hospital has existing specialists in HIV, particularly pharmacists, it is fairly straightforward for these specialists to step into a Hepatitis role

Queen Elizabeth, Birmingham

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL? (cont.)

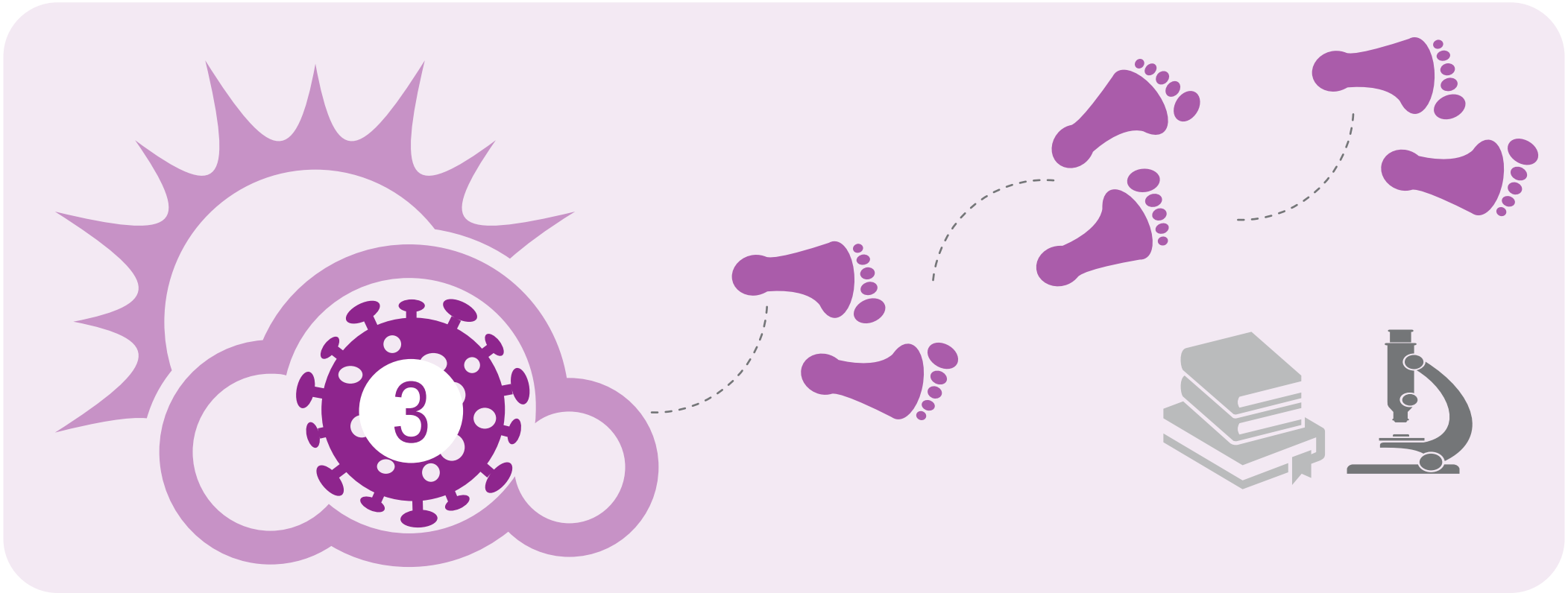
BETTER TREATMENT FOR TARGETED PATIENT GROUPS

Why?

Genotype 3 patients, particularly those who are cirrhotic and have failed previous therapies, and post-transplant patients were previously problematic but SVR is improving on new treatments[a]

How?

Better treatment for cirrhotic genotype 3 could be the next step forward in research in this disease area



(a) Source: 1. KPMG Interviews 2. Hepatitis C Trust 'Genotype 3: One of the Remaining Challenges for Hepatitis C' http://www.hepctrust.org.uk/news/may-2015/genotype-3-one-remaining-challenges-hepatitis-c

Queen Elizabeth, Birmingham

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was/is the status quo?	How will/could this change?
MANAGEMENT OF HCV PATIENTS	
NHS England has established a requirement to have a regional MDT in order to oversee treatment with DAAs. Only one centre in each region was allowed to prescribe DAAs through the early access scheme. QE is one of 16 centres in the UK that gained approval for that programme	Specialists at the QE would like to devolve care of patients to local hospitals that currently have less expertise in managing DAA treatment of HCV. However, it may take some time for doctors and nurses in those hospitals to become confident with the new treatments Eventually, selected HCV patients might be managed by GPs in Primary Care. However, there could be significant barriers to this as few GPs currently have sufficient understanding or expertise in HCV, and there no incentives to take on these patients
SCREENING	
There are currently limited screening programmes for Hepatitis C. QE has attempted to target at-risk ethnic communities, such as South Asians, but with limited success	The curative nature of the new treatments may drive an increased need for screening amongst certain ethnic minority communities, in prisons or in drug/alcohol services
TRACKING PATIENTS	
The QE has a bespoke database to track Hepatitis C patients that includes field types such as patient genotype, disease stage and potential for trial involvement. This database was key to QE's success in recruiting patients for Hepatitis C trials, and in identifying patients for early access and compassionate use schemes	Short and long-term outcomes need to be measured accurately and should demonstrate that the treatments are cost-effective and worth the high upfront cost. A doctor from one of the smaller, regional hospitals highlighted that the high cost of treatments has increased the need for auditing patient treatment and outcomes

Queen Elizabeth, Birmingham

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What was/is the status quo?

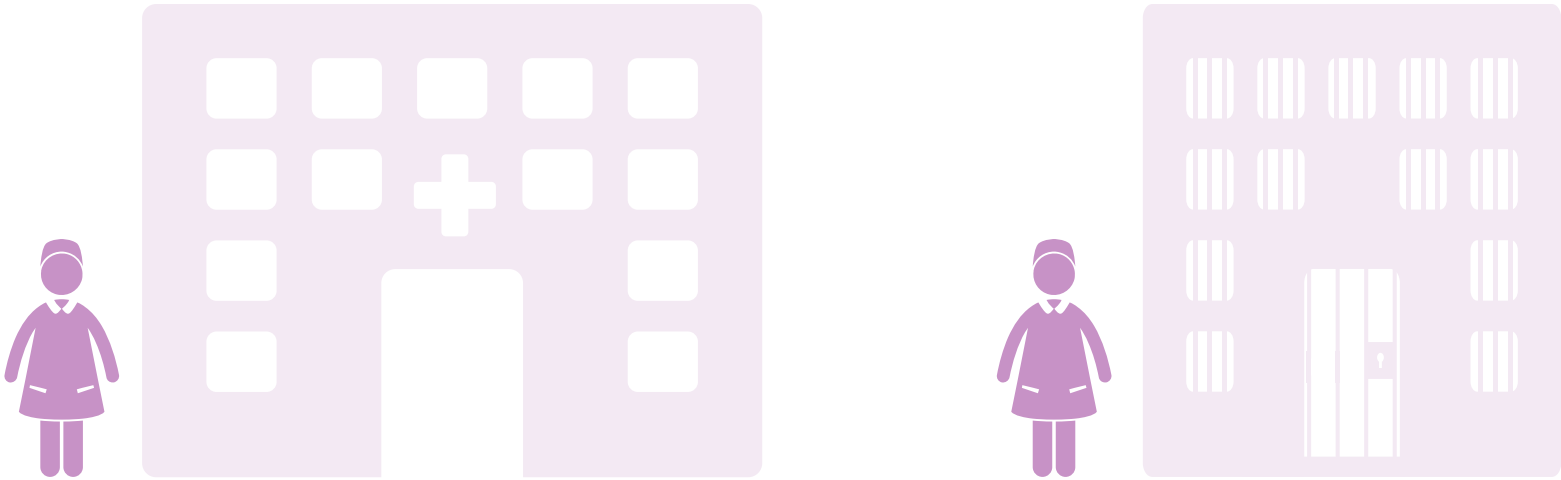
How will/could this change?

ROLE OF NURSES

The specialist nurses currently run the nurse-led clinics for routine care of HCV patients. The research nurses were involved in a large number of Hepatitis C trials

The specialist nurses will have to deal with a higher throughput of patients due to the high demand for DAAs. With the new treatments, the nurses have been seeing more patients with advanced liver disease as the other less severe patients may now be easier to manage. For the trials patients, there may be a few more Hepatitis C studies but attention will eventually shift towards Hepatitis B research

If the nurses had greater capacity, they could have an important future role in community outreach, for example visiting prisons and centres with drug-exchange programmes



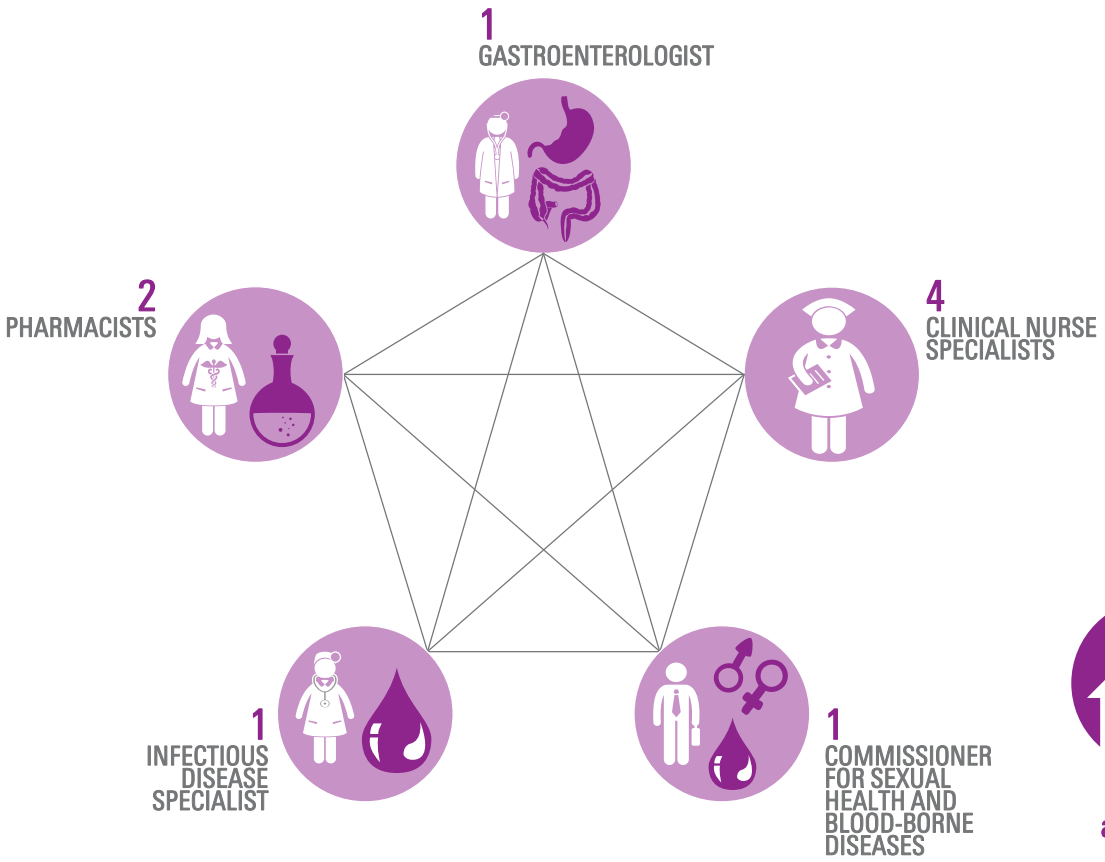
Ninewells Hospital, Dundee, Scotland

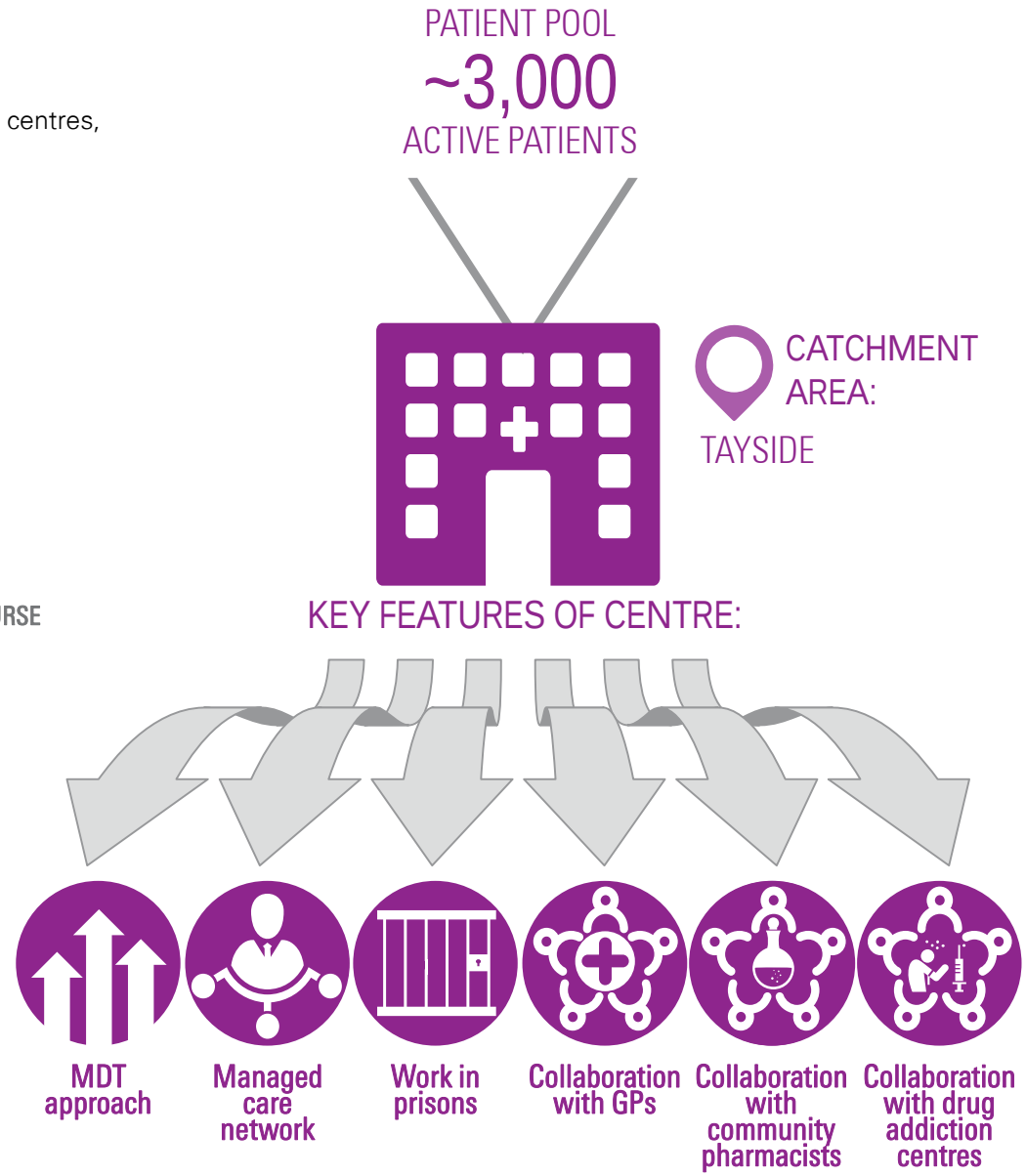
Ninewells Hospital, Dundee

The Dundee centre is led by Professor John Dillon – clinical lead for blood borne viruses

The team leads a local Hepatitis C Managed Care Network which involves drug addiction centres, local pharmacies as well as prison

Core HCV team



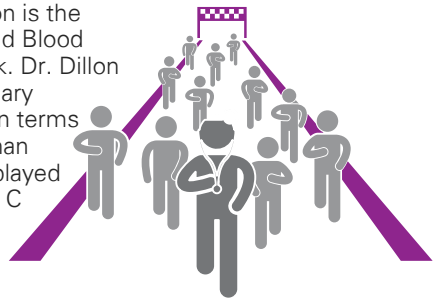


Ninewells Hospital, Dundee

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

STRONG LEADERSHIP

- **Strong leader in Dr. John Dillon** – Dr. Dillon is the clinical lead for the Tayside Sexual Health and Blood Borne Viruses (BBV) Managed Care Network. Dr. Dillon is described by management as being visionary because he is very collaborative and thinks in terms of the whole healthcare ecosystem rather than simply the specialist centre. In addition, he played a key role in developing Scotland's Hepatitis C action plan



The Scottish Government launched the Hepatitis C Action Plan in 2006, which aims to:

- Prevent the spread of HCV, particularly in the drug-injecting population
- Diagnose HCV infected people, particularly those who would benefit from treatment
- Ensure that those treated receive optimal treatment, care and support

COLLABORATION…

Specialists at Ninewells lead a collaborative managed care network that relies on strong relationships

- **…between agencies in the Tayside region –** The centre is part of the Tayside Sexual Health & Blood Borne Virus Managed Care Network. The network has guidelines for the management of Hepatitis C that recommend that multiple HCPs be involved in HCV testing, including GPs, nurses, drug workers and prison workers
- **…with GPs –** 90% of GPs in Dundee were involved in a project to reconcile and update data on patients with blood borne viruses. The project also examined the way in which GPs were screening patients from high-risk communities
- **…with community pharmacists –** The centre is participating in a study with community pharmacists where the pharmacists identify patients for testing without the patient having to be seen by a nurse or a doctor. The study focuses on asymptomatic patients that can be treated through eight weeks contact with the pharmacist. These patients tend to be former IV drug users who regularly visit the pharmacist to pick up methadone prescriptions
- **…with prisons –** In November 2011 the responsibility for healthcare transferred from the Scottish Prison Service (SPS) to NHS Scotland. The centre has one specialist nurse that is responsible for running clinics in two local prisons. The nurse carries out blood tests and will take a patient's case to the MDT if he is eligible for treatment. A specialist nurse and a specialist from Ninewells provide some back-up support
- **…with Tayside Drugs Problems Service (DPS) –** Ninewells has two specialist nurses that are embedded in the Drug Problems Service. The centre has initiated the Eradicate study in partnership with the DPS to engage and treat active drug users. The patients are incentivised to participate through food vouchers, protein drinks and methadone prescriptions.
This programme has allowed the centre to reach out to a highly stigmatised population

PATIENT DATABASE

- The centre always collects data on patient outcomes for all aspects of care in the managed care network. Having easy access to this data is key, particularly when funding for studies is liable to change
- Pharmacists also have access to the Neo system used by the those working in the DPS. However, this database is not updated as often as it could be by the pharmacists

Ninewells Hospital, Dundee

HOW CAN YOUR CENTRE BE IMPROVED?

IMPROVED SCREENING AND DIAGNOSIS

Why?

With the approval of the DAAs, there is currently a very high demand for treatment that will mean that there will still be a great deal of pressure on the capacity of the nurse-led clinics

Furthermore, in the West Midlands Network catchment area, there is a high population of genotype 3 patients who will still need to be treated with peginterferon

How?

Increased specialist nursing time would be key to improving HCV care, particularly as the demand for treatment continues to increase and care shifts away from specialist clinicians and more towards specialist nurses

IMPROVED TRANSITION BETWEEN PRISON CARE AND EXTERNAL CARE

Why?

The introduction of DAAs is associated with potential drug-drug interactions, and the centre currently has limited pharmacist capacity

How?

Increased funding would be needed to increase the number of specialist pharmacists at the QE and available for other prescribers of antivirals in the Network

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

INCREASED ACCESS TO DAAS

Why?

Due to the high cost of treatments there is currently limited access to treatment, only for those patients with severe fibrosis of F3+

How?

In the future, with decreased costs access to DAAs should increase. Care delivery could also be shifted further towards the community i.e. through GP practices and drug addiction services

However, funding structures would also have to reflect these changes. One GP mentioned that the high cost of DAAs would be a problem for initiating care in the primary care context. The drugs currently come out of the specialist service's budget and it would be a significant burden on primary care if treatment delivery was moved to GP practices

Ninewells Hospital, Dundee

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was/is the status quo?

How will/could this change?

SHIFTING CARE TOWARDS THE COMMUNITY

With peginterferon treatment was predominantly delivered through specialist centres because of the side effects. Less patients were also eligible for treatment due to the mental health side effects that made the treatments unsuitable for many prisoners and IV drug users

The new DAAs have increased community-based care. Community pharmacists are becoming involved in diagnosing IV drug users and delivering treatment simultaneously with the delivery of methadone prescriptions. Those working in drug addiction centres are also playing a role in testing and referring IV drug users that test positive for HCV

GPs are being encouraged to improve screening of high-risk communities. GPs are able to prescribe drugs that have more side effects than DAAs, such as methotrexate for arthritis. However, GPs may be reluctant to take more responsibility for treatment delivery due to potential budget impacts with the high cost of DAAs

Drug services are also becoming more involved in the identification, referral and treatment of patients

SCREENING

There is an under-diagnosis among the population aged 35 and above as 75% of positive tests coming from the population aged 35 or under. There are also high-risk communities such as men-who-have-sex-with-men, IV drug users and communities from endemic regions (sub-Saharan Africa, southeast Asia and China) that are under-diagnosed

There may be more of an incentive to increase screening as the treatments are now curative and also more unstable patients are now eligible for treatment, such as more IV drug users and prisoners. Decreasing the cost of DAAs would also increase the incentives to screen more patients

INCREASE IN PRISONERS ELIGIBLE FOR TREATMENT

Among the high rate of infection within the prison population, only 60% of patients were eligible for treatment with peginterferon. This is because lots of these prisoners also had mental health problems that may have been exacerbated by peginterferon

The specialist nurse in prisons suggested that many more prisoners would now become eligible for treatment under the DAAs. This may increase the pressure to treat the prison population

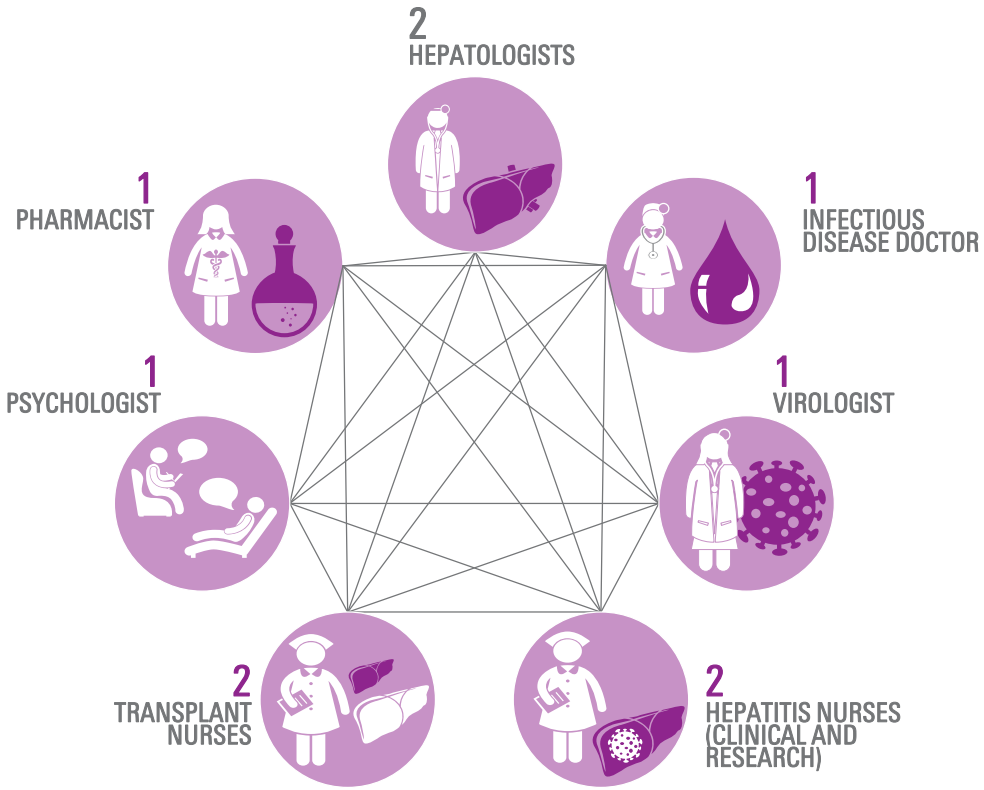
Grenoble University Hospital, France

Grenoble University Hospital

The Grenoble team is led by Professor Jean-Pierre Zarski

The centre features a MDT approach, a regional care network and links with prisons

CORE HCV TEAM



PATIENT POOL

~700-800

ACTIVE PATIENTS

CATCHMENT AREA:

SOUTHERN ISÈRE

KEY FEATURES OF CENTRE:

MDT approach

Regional care network (Prométhée)

Work in prisons

Grenoble University Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

1 ONE-STOP APPROACH TO CARE

Why?

By ensuring that all tests are carried out in the same place, patients can be seen quickly and efficiently

How?

The centre offers the spectrum of HCV care in one place. Medical support, the new treatments and educational material on the disease are all available in the same place. When a patient arrives at the centre, he or she can have all of his/her medical tests, including elastography scans on the same site and on the same day

This approach works through increasing the responsibilities of the nurses who do blood tests which are then followed by the elastography scans performed by the hepatologists. In other centres in France, nurses may also have the responsibility of carrying out elastography scans

INVOLVEMENT IN RESEARCH ACTIVITIES

Why?

Learnings from studies can be directly applied to the care of patients in the clinics. Patients with more severe Hepatitis C gained early access to new treatments through participating in the trials

How?

The Hepatitis nurses have a dual role: research and clinical care. They see patients from research studies as well as the patients outside research studies. The nurses were able to pre-select patients for the trials by prioritising those with more advanced Hepatitis C

The team was involved in studies at an early stage and were therefore aware of the new treatments before they could be prescribed to patients

Grenoble has a large number of patients which allows the team to recruit enough patients to participate in studies. The large catchment area (southern Isère) of the hospital facilitates patient recruitment

The centre receives support from the Agence Nationale de Recerches sur le Sida et les hépatites virales (ANRS) which funds research doctors and technicians

Grenoble University Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE? (cont.)

THERAPEUTIC EDUCATION

Why?

Therapeutic education is an approach that is particularly used in the French healthcare system that empowers patients by placing them at the centre of care. This approach aims to help patients to autonomously develop the skills to manage their life with a chronic illness and comply with treatment

How?

The basis of this approach is to provide psychosocial support to the patient so that they are able to stay informed about their illness, clinical care, hospital procedures and the different behaviours or side effects that are linked to the disease. Personalised care is also key to this approach.[1,2] Therapeutic education goes beyond simply offering advice on prevention by ensuring that the patient is brought into the decision-making process as soon as the diagnosis is confirmed

The Haute Autorité de Santé (Ministry of Health) has the following guidelines for the delivery of therapeutic education:

1. Develop a personalised therapeutic education programme with key learning points for the patient

2. Organise individual or group sessions to discuss the disease

3. Complete an evaluation of the skills/knowledge that the patient has acquired and how their individual programme has developed[3]

Sources: 1. Agence Regionale de Santé (ARS) 2. Grenoble University Hospital 'Prevention selon le patient: le traitement de l'hépatite C' http://www.infectiologie.com/site/medias/JNI/JNI09/IDE/HILLERET-hcv-JNI09.pdf 3. Haute Autorité de Santé, 'Recommandations: Éducation thérapeutique du patient' http://www.has-sante.fr/portail/upload/docs/application/pdf/etp_-_definition_finalites_-_recommandations_juin_2007.pdf

Grenoble University Hospital

HOW CAN HCV CARE BE IMPROVED AT YOUR CENTRE?

MORE EFFICIENT DATA MANAGEMENT

Why?

The centre does a lot of work on paper rather than having all files digitised. The centre currently has electronic medical records (EMR) but the staff feel that the system is outdated, making it time-consuming and difficult to use

How?

Having a more efficient online database for patients would improve the ease of access to patient data for all HCPs on the team

INCREASED DIAGNOSIS IN PRIMARY CARE

Why?

GPs in primary care are not testing often enough for HCV. This contributes to the under-diagnosis of the disease

How?

GPs may be uncomfortable with Hepatitis C and often confuse it for Hepatitis B. They may see it solely as a sexually transmitted disease and many do not understand the new treatments

There needs to be more education for GPs to better understand Hepatitis C and the new therapies

CARE HARMONISATION

Why?

Although the team does its best to give patients great care, they recognise there may be some variation within the centre

How?

Through documenting procedures and designing clear protocols the centre could make care more coherent throughout the centre

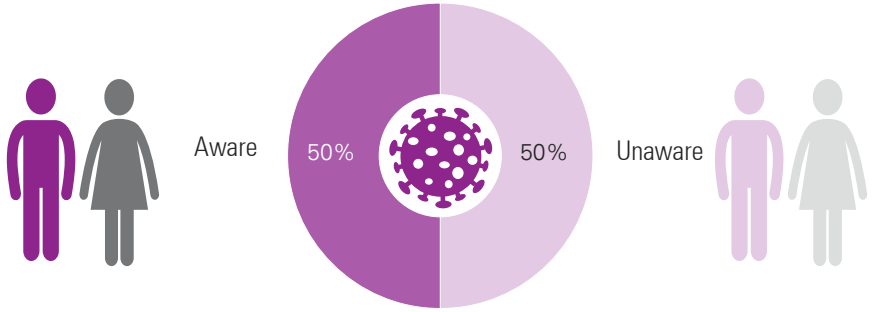
Grenoble University Hospital

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

BETTER SCREENING

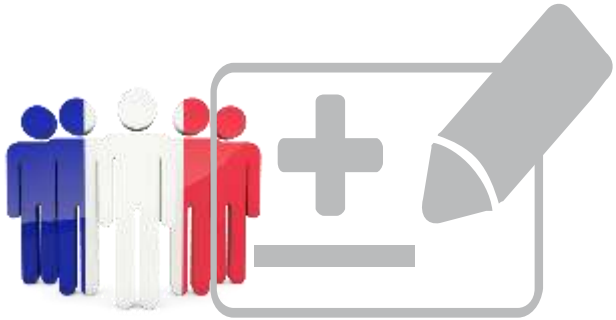
Why?

In France, only approximately 50% of the infected population know about their condition



How?

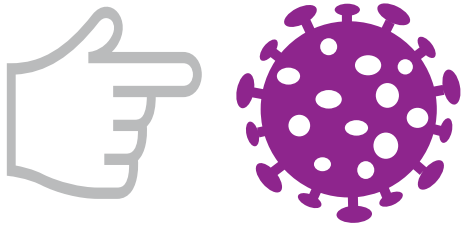
The team believes that the French population should get tested for HCV at least once in their lifetime, especially when patients reach 50 years of age. There are also certain populations that could be targeted for screening, for example those doing seasonal work at ski resorts



MORE PORTABLE ELASTOGRAPHY/IMPROVED POINT-OF-CARE DIAGNOSTIC TOOLS

Why?

There is a need to improve diagnosis of Hepatitis C, particularly within the community setting



How?

Elastography machines should be made more widely available. Increasing the number of portable elastography machines would help to improve diagnosis in the community and would specifically speed up diagnosis in prisons. Currently, the start of treatment for prisoners at Varces remand centre is delayed by having to go to the hospital for elastography scans

There is also a lack of accurate, point-of-care tests to improve diagnosis in the community, for example oral swabs often lead to false positive results

Grenoble University Hospital

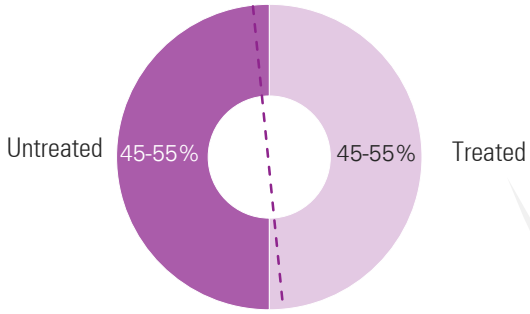
WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

How has this changed?

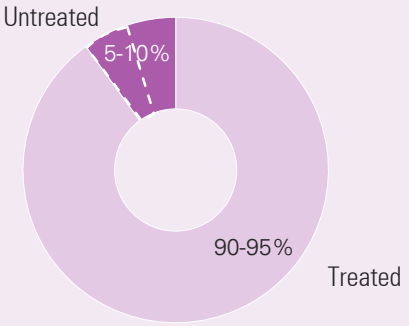
A GREATER NUMBER OF PATIENTS TO TREAT

Before the centre treated between 45-55% of its Hepatitis C patients



Currently, the centre is able to treat 90-95% of Hepatitis C patients. One of the hepatologists dedicates most of her time to the treatment of HCV patients and so has less time to dedicate to other liver conditions. Patients have to be seen seven times during their treatment course which is a significant time burden for physicians

Demand for DAAs is currently high due to the amount of patients that delayed treatment to gain access to all oral DAA therapies



MORE RESPONSIBILITIES FOR THE NURSES

Before nurses spent a great deal of time on therapeutic education and on teaching patients how to inject interferon

Nurses now continue to play a key role in the education and follow-up of patients. The nurses could take on more of a clinical role like the 'clinician nurses' in Switzerland. Nurses could be trained to use elastography machines as they are in a few other centres within France, such as Bordeaux

Grenoble University Hospital

WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

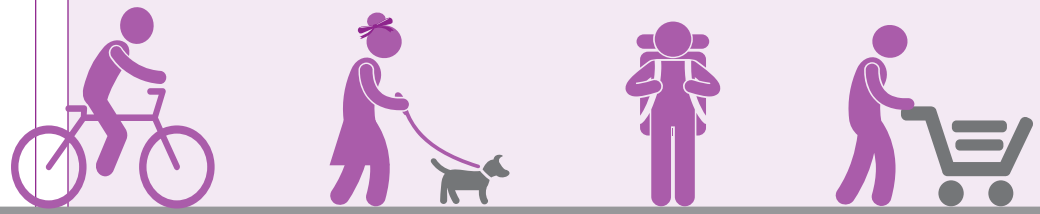
What was the status quo?

How has this changed?

CHANGE IN THERAPEUTIC EDUCATION

There was always a minimum of four sessions of therapeutic education prior to the introduction of DAAs

Due to the shorter timeframe of the treatments, the four sessions may have to be redefined and decreased. However, as one HCP highlighted, the centre has not yet had enough experience with the new treatments to understand fully what long-term support patients will need



CHANGE IN PSYCHOLOGICAL SUPPORT

The psychologist traditionally had to give a lot of support to patients on interferon due to the fact that interferon exacerbated the frailties of many Hepatitis C patients through the severe psychological adverse effects

Under DAAs, the patients need a very different type of psychological support. Some patients have lived for most of their life with this disease and so have been out of work or have become used to long interferon treatment cycles

However, under the new treatments many of the patients have been treated and so now have to adapt to a new life with the possibility of work. Although this is a positive change, patients still need the support of psychologists to negotiate this transition

Grenoble University Hospital

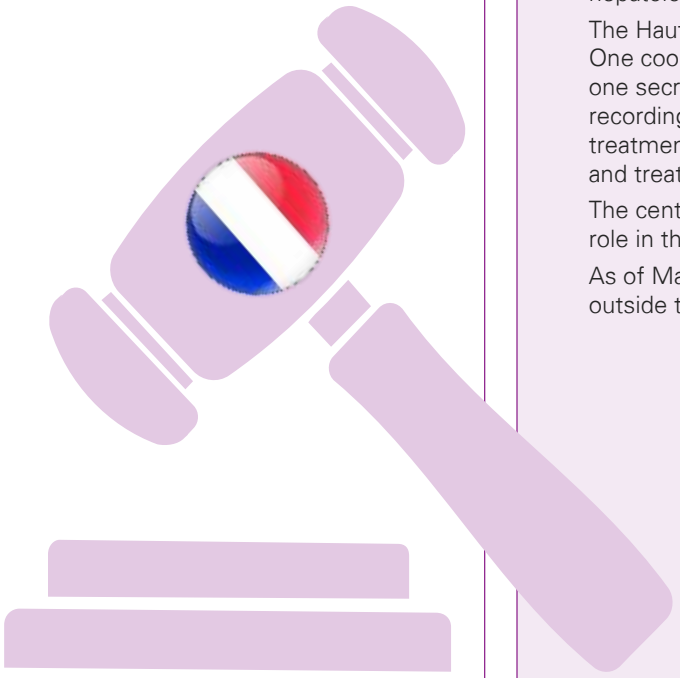
WHAT IMPACT HAS/WILL THE ARRIVAL OF THE NEW THERAPIES HAD/HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What was the status quo?

How has this changed?

CHANGE IN THE MDT DECISION PROCESS

Before the introduction of the new treatments there was a less coordinated approach to approving and initiating Hepatitis C treatment



In June 2014, the French government outlined that with the introduction of DAAs, treatment decisions should be approved through a réunion de concertation pluridisciplinaire (RCP) or MDT meeting with at a minimum a virologist and a hepatologist in attendance[1]

The Haute Autorité de Santé (HAS) has outlined that every RCP should include: One coordinator to organise the list of patients to discuss at the following meeting, one secretary, a clear way of recording all decisions through a paper or online recording system, a clear indication of what evidence has been used to agree on treatment and the name of the doctor that will be responsible for the patient's care and treatment delivery

The centre's MDT includes the participation of the pharmacist who plays a strong role in the decision-making process, advising on drug-drug interactions

As of May 2015, MDTs for the distribution of DAAs can take place in hospitals outside the existing 35 Hepatitis reference centres and even in private hospitals[2]

Sources: 1. http://www.has-sante.fr/portail/upload/docs/application/pdf/2014-07/hepatite_c_prise_en_charge_anti_viraux_aad.pdf 2. HAS, 'Réunion de concertation pluridisciplinaire' (May 2014) http://www.has-sante.fr/portail/upload/docs/application/pdf/2013-02/reunion_de_concertation_pluridisciplinaire_fiche_technique_2013_01_31.pdf

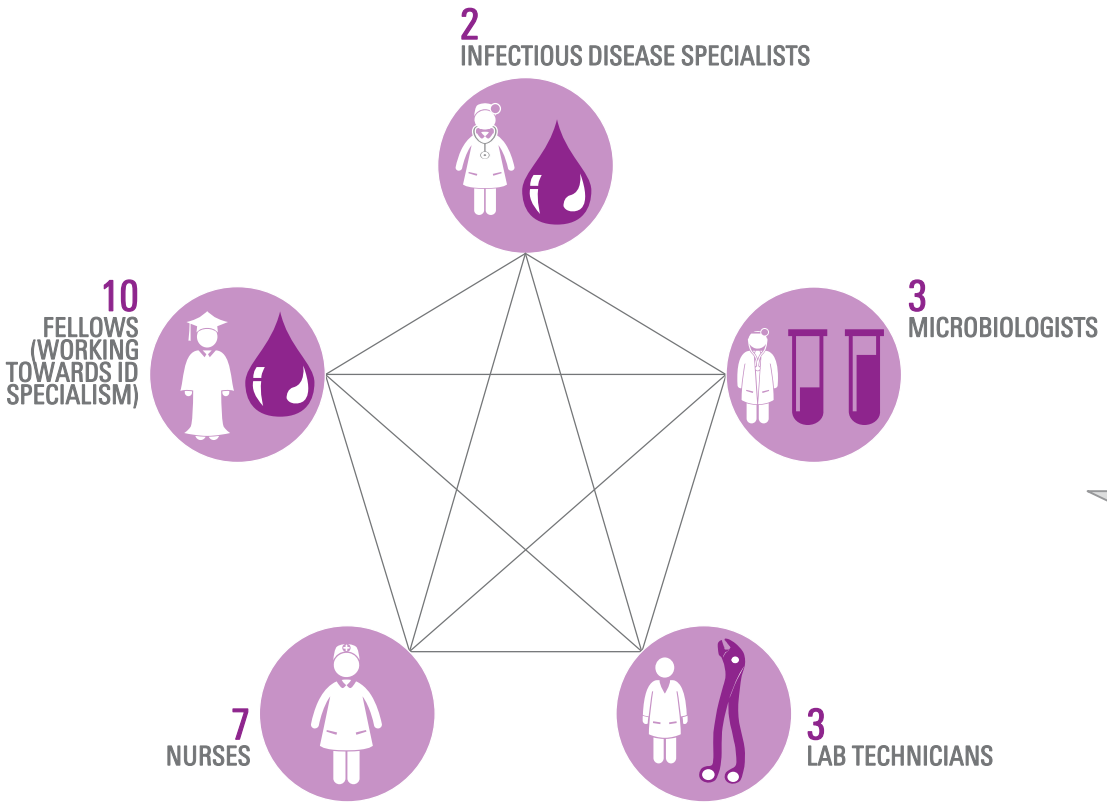
Izmir Tepecik, Izmir, Turkey

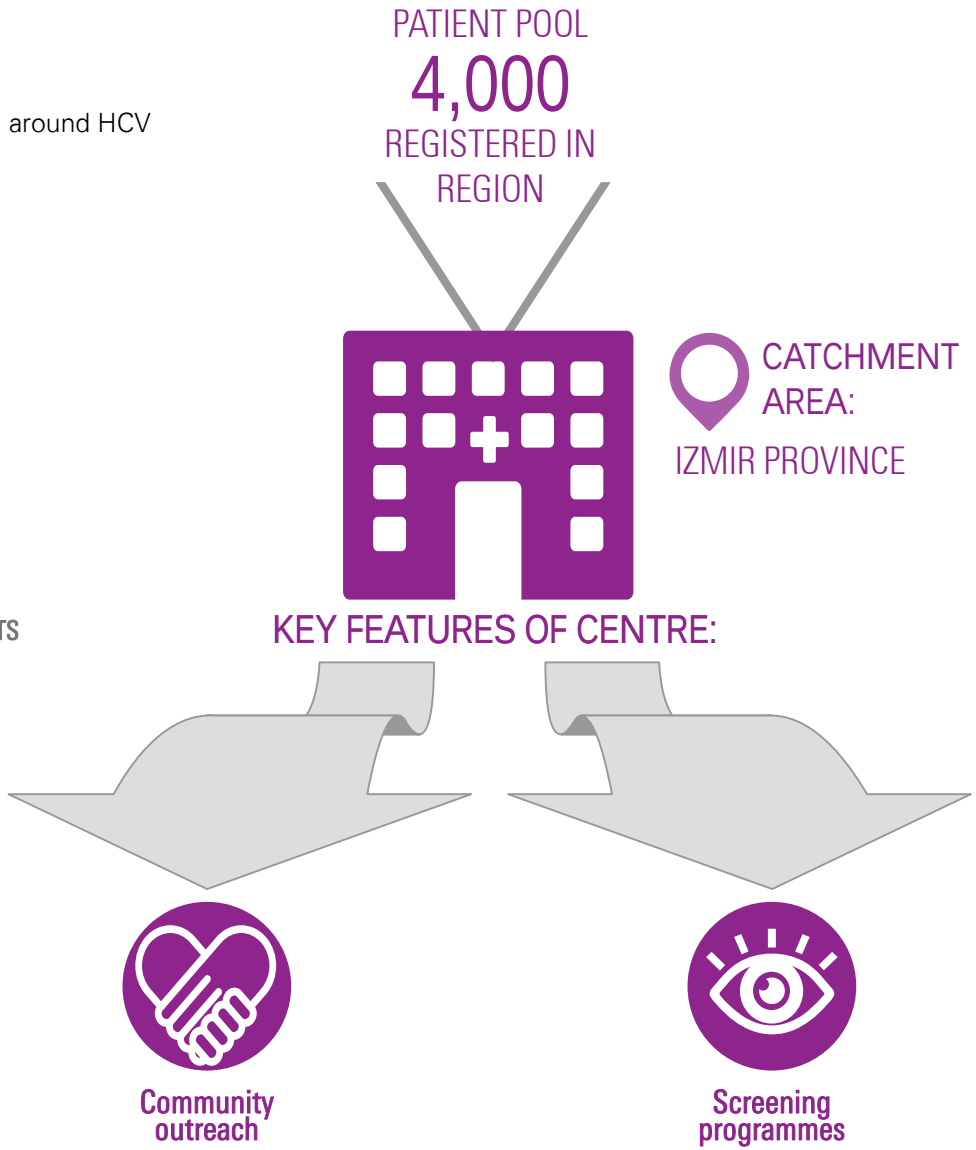
Izmir Tepecik Education and Research Hospital

The Tepecik team is led by Associate Professor Dr. Şükran Köse

The centre's strong links with the community makes it easier to screen and raise awareness around HCV

HCV team





Izmir Tepecik Education and Research Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

STRONG COLLABORATION BOTH INTERNALLY AND EXTERNALLY

INTERNALLY

- **Gastroenterology –** If patients are cirrhotic they are referred to the gastroenterology department
- **Kidney transplant department –** Hepatitis C infections should be cleared in patients preparing to receive a renal transplant and therefore collaboration between the two departments is key. Many of the dialysis patients are co-infected with Hepatitis C and other diseases. Historically in Turkey, blood transfusions were not heavily monitored and therefore it is important that now there is closer monitoring of patients who are eligible for transfusions and organ transplantation.
  Organ transplantations may need to be accompanied by blood transfusions to supplement blood loss or to improve the likelihood that the donor organ will be accepted by the recipient and this is why patients infected with a blood borne virus such as HCV would not be eligible for an organ transplant

EXTERNALLY

- **Haemodialysis –** Some dialysis patients are co-infected with Hepatitis B and/or C. Assoc. Prof. Kose communicates with all 34 haemodialysis centres in Izmir. In 2005, Dr. Kose invited all the haemodialysis doctors to Tepecik to get trained on the prevention of Hepatitis C and good hygiene practices, such as sterilisation of tools and preventive strategies
- Currently, haemodialysis centres are inspected every six months to check that preventative measures are being implemented. These inspections help to ensure the prevention of the spread of the virus
- **National/local authorities –** The team collaborates with the Ministry of Health, Ministry of National Education, and municipal councils. This enables the team to find more solutions to problems and additional resources/funding if needed to implement screening or education programmes with certain communities

Note: *See case study for full explanation of state-controlled brothels

SCREENING

Why?

Different parts of the local community, including **brothels, prisons** and **barber shops**, are associated with a particularly high risk of undiagnosed Hepatitis or HIV

How?

The centre is involved in several initiatives to go directly to high-risk groups and screen them directly within the community

State-regulated brothel*

- The brothel is regulated by the Ministry of Health and there is a health clinic within the brothel house zone. The healthcare staff include two doctors, two nurses and one lab technician
- The staff screen each sex worker for Hepatitis and HIV on a monthly basis. Some sex workers voluntarily give blood samples but others are more reluctant
- The gynaecologist also carries out vaginal smear tests and tests for sexually-transmitted infections (STIs), such as chlamydia and gonorrhoea. The sex workers are also given human papilloma virus (HPV) vaccines to protect against cervical cancer
- The physicians responsible for screening are in regular contact with Dr. Kose and she provides training and educational support to them

Barber shops

- The team collects blood samples from people at the barber shops to screen for Hepatitis C
- Certificates are provided to barber shops to state that their establishment has been screened for Hepatitis B and C and that they have received hygiene training

Prisons

- Hepatitis B and C screening is also conducted in maximum security prisons
- However, it can be quite difficult to get into these environments as the initiative relies on individual relationships with local authorities

Izmir Tepecik Education and Research Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE? (cont.)

EDUCATION

Why?

Education plays a key role in the prevention of Hepatitis, as well as in increasing awareness

How?

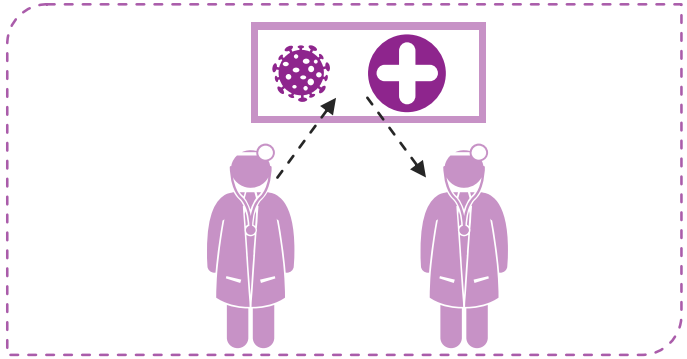
The team provides education programmes to both peers and vulnerable members of the community

SCHOOLS

- Weekly education is provided to students in the area, particularly in disadvantaged neighbourhoods. The pupils/students who are infected are usually immigrants from the Eastern region of Turkey
- The team will also work to educate the families of these schoolchildren. When the team visit schools they give short trainings and organise conferences. They also use theatre to strengthen messaging. The actors in the team are HCPs and the leader is a drama coach who voluntarily gives up his time to be involved. The team focusses on hygiene and ways to prevent the spread of infectious diseases

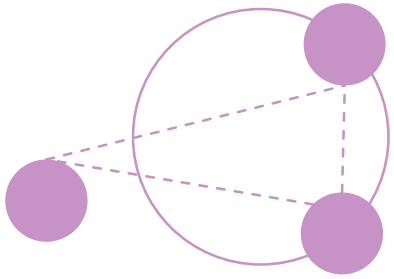
ROMA COMMUNITIES

- There is a concentrated Romano community in Izmir. The Tepecik team runs education programmes in schools, men's cafes, public houses and with housewives to get them trained on hygiene practices to avoid contracting Hepatitis B and C



PEER EDUCATION

- The team provides training to family physicians, dentists and doctors working in other hospitals
- Many of the GPs are some of Dr. Kose's former students so peer education operates through this network



Izmir Tepecik Education and Research Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE? (cont.)

RESEARCH

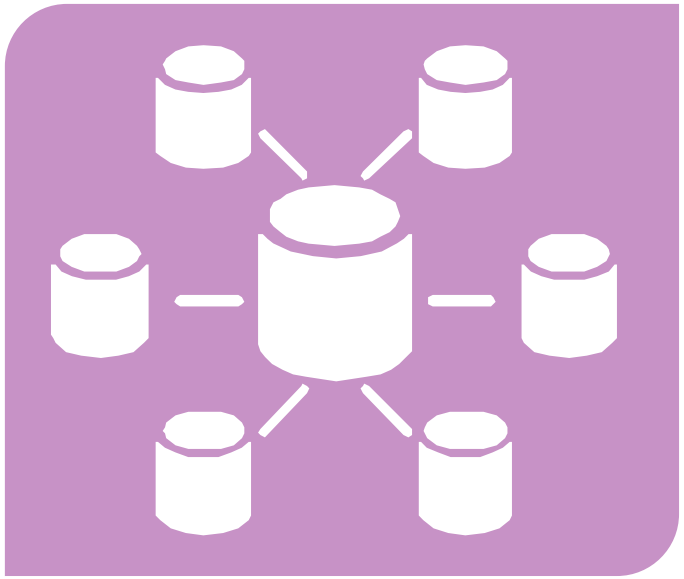
Why?

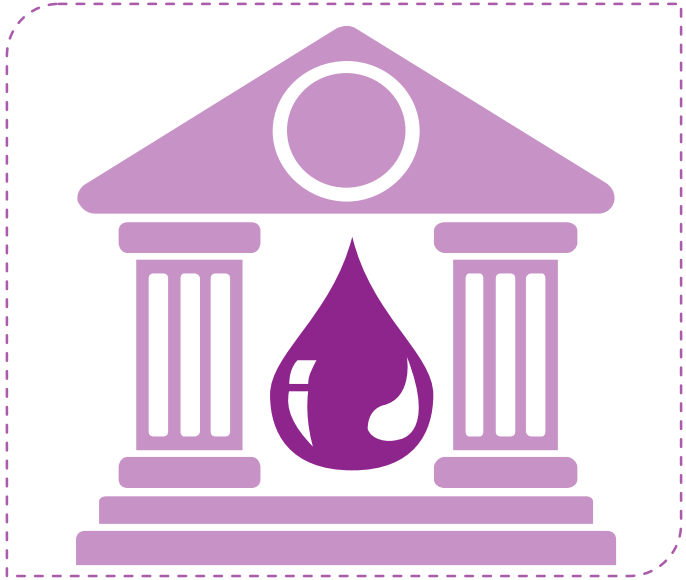
Research into Hepatitis C contributes to the development of new therapies, and also improves the quality of care that the team can provide to patients

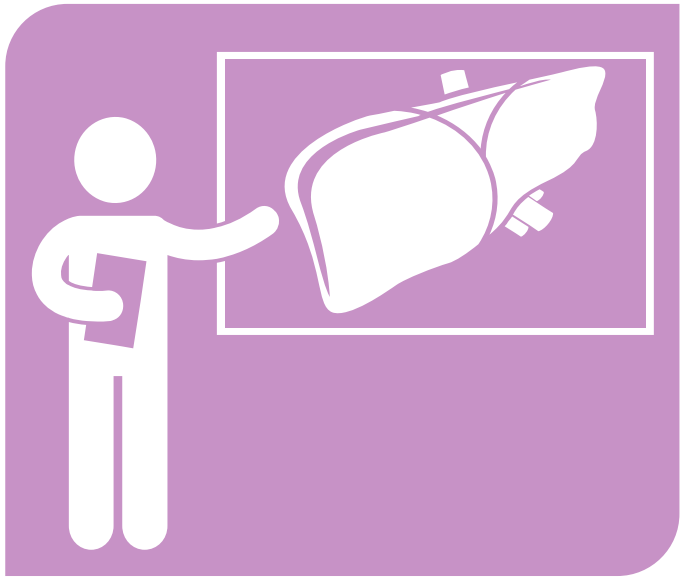
How?

The team has an **extensive database that they use to track patients for follow-up**. They have all the relevant patient details, including the address and telephone number so that they can reach out to patients when necessary. They can go back ten years in a patient's treatment history which is particularly useful to see what kind of treatments they have/have not responded to in the past:

- There is an **extensive blood bank** with blood samples from every patient – there are currently over 3,000 samples. The team have been collecting samples since the centre was established 13 years ago. The blood samples are stored at -80˚C for long-term use
- All fellows are **trained to conduct liver biopsies** and the rate of complication with biopsies is low







Izmir Tepecik Education and Research Hospital

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE?

INCREASED RESOURCES

Why?

The centre does not currently have a non-invasive elastography machine due to funding limitations. The current infrastructure is also inadequate as the hospital relies on public funding. There are not enough beds or computers to meet patient and administrate needs, a problem that is exacerbated due to the high rate of referrals from other centres

How?

Increased government and NGO funding is needed to improve infrastructure constraints at the hospital

INCREASED AWARENESS OF PATIENTS

Why?

Because of the hospital's location and status as a public hospital, many of the patients come from a poor socio-economic background, or are immigrants. This means that they are often poorly educated and lack basic knowledge about infectious diseases and methods of prevention

How?

Increasing the number of education programmes within the community is one way of reducing the transmission of Hepatitis C. The team organises trainings in schools and also uses the help of theatre activities to educate students on hygiene practices that will reduce the transmission of HCV

ACCESS TO NEW TREATMENTS

Why?

Public hospitals in Turkey currently do not have access to DAAs as they are not reimbursed by the government

How?

In the future, with lowered prices for DAAs, public hospitals should begin to get access to DAAs

Izmir Tepecik Education and Research Hospital

WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

INCREASED DEMAND FOR TREATMENT

Interferon-based treatment cannot be administered to many of the individuals followed by the Tepecik team due the side-effects it may/has given them

EXPANSION OF COMMUNITY-BASED CARE ACTIVITIES

Until now, the team has been very active in screening and educating patients in the community (barber shops, gypsy quarters, schools, brothels, prisons etc.)

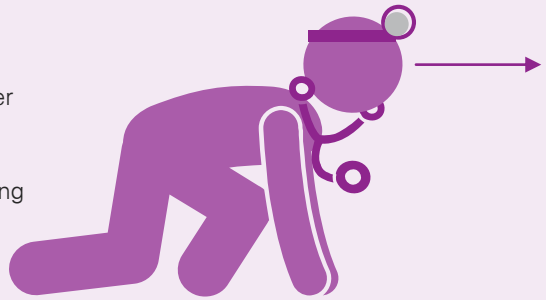
When it comes to clinical management the team relies on healthcare professionals from local hospitals to administer interferon-based treatments to villagers. This has been allowed by the health authorities based on the fact that the patients visit the Tepecik hospital every two months for a follow-up with the specialists. The latter then give a report to the patients who will then share it with their local doctor to pursue the treatment

How could this change?

Certain patients will now be able to receive treatment:

- Dialysis patients whose conditions are critical as they suffer from other serious complications
- Cirrhotic patients who were either not able to receive or not responding to interferon-based treatment

The Tepecik team will begin to use the new therapies as soon as they become eligible for reimbursement



The same model could be used with the all oral regimens, allowing local doctors to treat more patients as treatment eligibility will increase and its duration shorten from one year down to three months

Prindsen Mottakssenter and partners, Oslo, Norway

Prindsen Mottakssenter Low Threshold Clinic and partners

The Prindsen Mottakssenter team is led by Dr. Kjersti Ulstein, with support from Professor Olav Dalgard

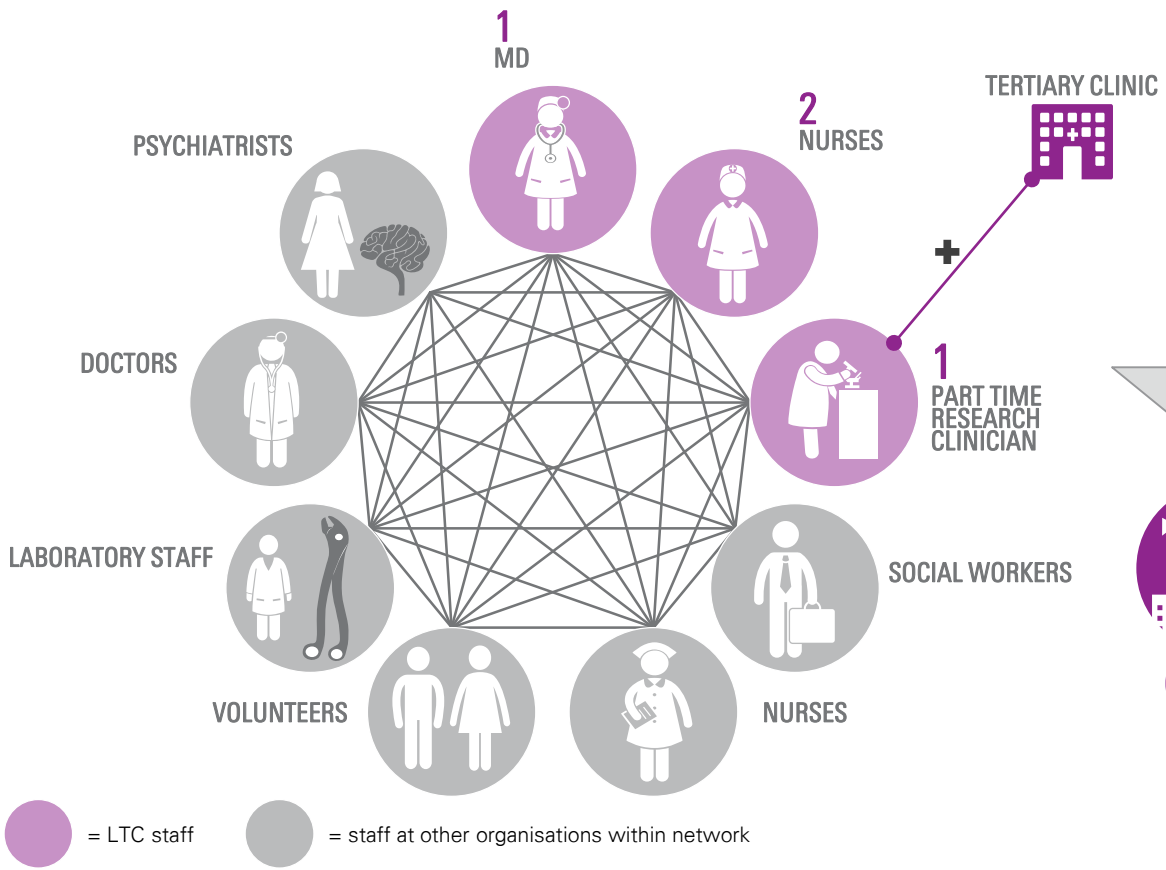
The centre has strong links with other organisations within the Oslo area and deals almost exclusively with patients who are drug users

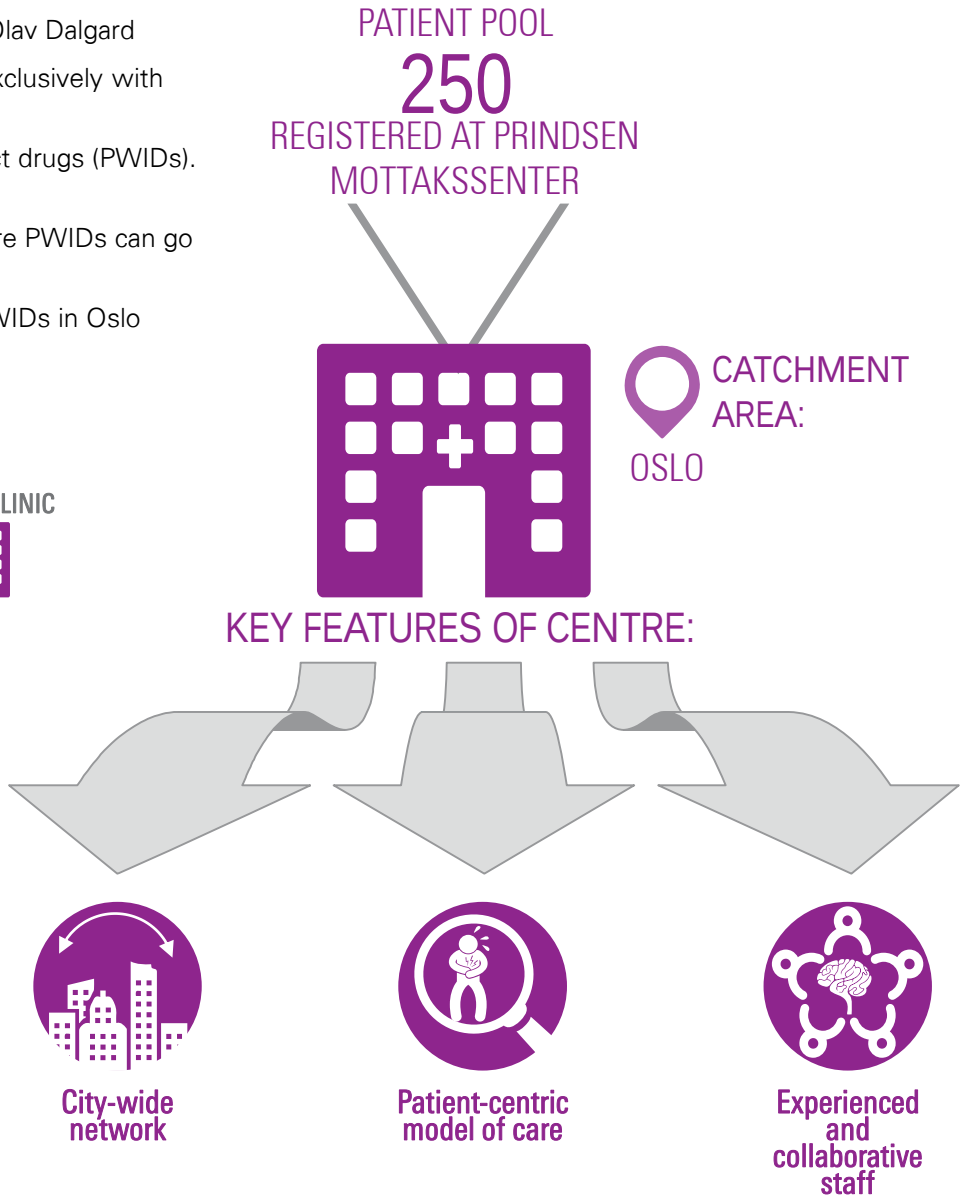
The Gatehospitalet is operated by the Salvation Army as a refuge centre for people who inject drugs (PWIDs). It is run by Dr. Karim Sayed

Each administrative region in Oslo has its own opioid substitution therapy (OST) centre, where PWIDs can go to receive drug substitutions and welfare support

24SJU is a centre set up by the Ministry of Health to offer health and welfare services for PWIDs in Oslo

HCV team





Prindsen Mottakssenter Low Threshold Clinic and partners

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

CITY-WIDE NETWORK

Why?

Prindsen Mottakssenter is part of a city-wide network that connects the low threshold clinic with OST centres, community centres, private institutions and other public health providers. This integration of services means that staff are well-equipped to support patients in the most suitable environments. By utilising the network, the centre is able to achieve far more than it would be capable of in isolation due to its limited resources

How?

The publicly funded parts of the network all fall under the same government umbrella, so have this common point as a foundation for collaboration

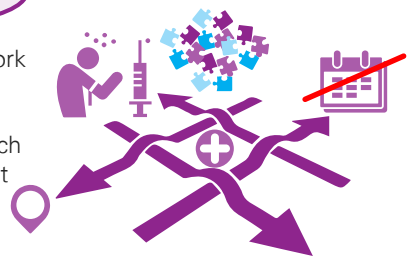
Many of the staff from across the network have been involved in this work for a long time and know each other well, so have a long history of working with one another and their patients, which encourages communication and collaboration

Staff take a proactive approach to contacting one another and sharing resources – for instance, Prindsen Mottakssenter and the Gatehospitalet share the same portable elastography machine

PATIENT-CENTRIC MODEL OF CARE

Why?

Because the majority of patients cared for by the network are active drug users, many of whom have chaotic lifestyles not suited to traditional treatment, staff at Prindsen Mottakssenter take a flexible, reactive approach to delivering care, adjusting their course of action to suit the individual needs of each patient



How?

Operations are set up with the patients' lifestyle in mind: appointments are not necessary – patients can turn up at any point during opening hours to be tested or receive support. If it is preferable, staff can also visit patients in their homes to conduct tests or administer treatment. The strong network means that low threshold clinic staff can also be called out to OST centres

Collaboration with OST centres and local pharmacies means that patients can receive their medication from these locations, rather than having to go to the clinic or a hospital, or manage the treatment themselves

EXPERIENCED AND COLLABORATIVE STAFF

Why?

Many of the staff (both at the low threshold clinic and other centres within the network) have worked in the field for a long time, and are familiar with one another and the patients

They have a close, trusting relationship with other staff and patients, which helps to facilitate the patient-centric care model and collaborative network

How?

Most of the staff across the network have many years' worth of experience working with PWIDs in the Oslo area. They know many of the patients well, and are familiar with their lifestyles, individual challenges, and disease prognosis

Having this strong background means that patients trust the staff, and are therefore more receptive to suggestions about being tested and treated for Hepatitis C. The staff's good understanding of their patients allows them to individualise their approach to each patient

Prindsen Mottakssenter Low Threshold Clinic and partners

HOW CAN HCV CARE BE IMPROVED AT YOUR CENTRE?

MORE EFFICIENT DATA MANAGEMENT

Why?

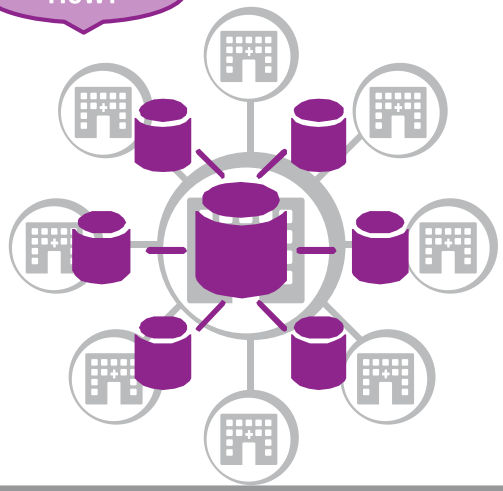
Currently the low threshold clinic does not have an advanced data management system for the storage of patient records. This means that it can take a long time to find specific pieces of information about patients, and it is very difficult to use the data to perform analysis (e.g. segmenting all recorded patients by fibrosis stage, genotype, etc.)

A more efficient data system would also support the centre's research objectives, making it easier to retrieve data and quantify the impact on patients and demonstrate trends such as a reduction in reinfection rates, etc. This is a key part of proving the centre's impact and gaining support for expansion of the programme

How?

Developing a more bespoke database would address many of the existing issues. This is part of the centre's plans for 2016. Having a system that was fully integrated across the entire Oslo PWID network would be ideal due to the highly collaborative nature of delivering care in the city

An integrated system would facilitate the exchange of information and speed up decision-making processes

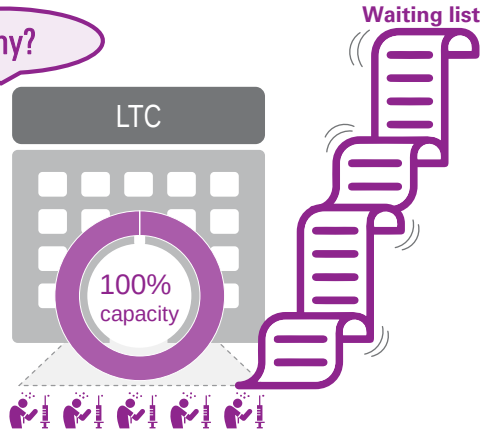


INCREASED STAFFING RESOURCES

Why?

The centre is currently operating at maximum capacity in terms of treating patients. This limit is currently five patients at any one time. Even though more patients are being tested and diagnosed with Hepatitis C, there are not enough resources to begin treating them, so the waiting list is growing

PWIDs require very intensive support from nursing staff to ensure they adhere to treatment and that any complications such as malnutrition, infection of injection sites, etc. are adequately addressed. Even with interferon-free DAAs, this is still an issue



How?

Hiring additional nursing staff would enable more patients to be treated, as would hiring a specialist social worker to take on many of the pastoral duties. Another potential solution would be to spend less time on each individual patient, allowing nurses to see more people in the same timeframe. However, this runs the risk of reducing the adherence rate, and would need to be managed carefully to ensure that as many patients as possible are still cured

Taking steps to develop a more efficient data management system would also free up staff capacity in the long term.

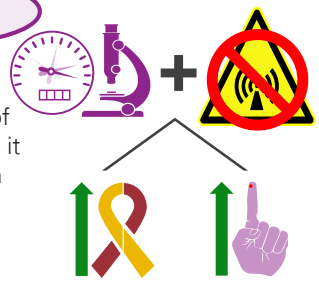
Prindsen Mottakssenter Low Threshold Clinic and partners

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

INCREASED AWARENESS AMONGST GPS

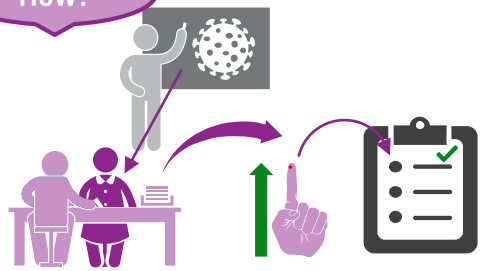
Why?

Primary care physicians currently do not routinely test for Hepatitis C or have a particularly good awareness of the disease, its symptoms, and the health implications it can have for patients. Raised awareness and testing in this part of the health system would increase early diagnoses and prevent long-term complications from developing



How?

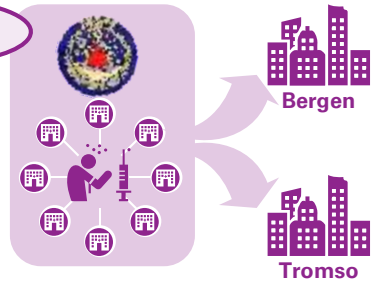
Working to educate GPs and trying to ensure that testing for Hepatitis C became a standard procedure offered to patients (particularly those who were known drug users, presently or formerly) would help to increase testing and identification rates



PWID-SPECIFIC INITIATIVES IN OTHER CITIES

Why?

Oslo is currently the only Norwegian city with a PWID-specific care network for the treatment of Hepatitis C. Expanding this model to other cities such as Bergen and Tromso would help to address this particular patient group where HCV is often prolific



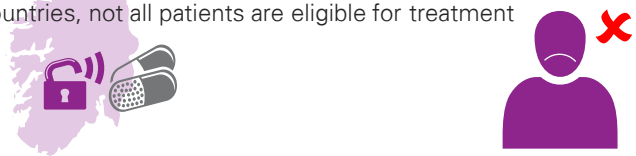
How?

The current system in Oslo can be used as a proof of concept and model for replication in other cities to establish similar practices, based on largely pre-existing resources such as OST centres and private clinics

INCREASED ACCESS TO MEDICATION

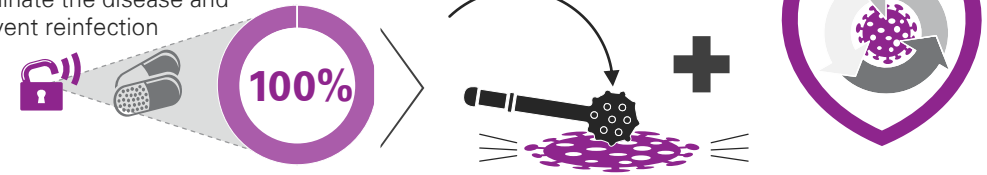
Why?

Although Norway generally has a very good level of access to medication compared to other countries, not all patients are eligible for treatment



How?

Widening access to include all patients with HCV would help to eliminate the disease and prevent reinfection



Prindsen Mottakssenter Low Threshold Clinic and partners

WHAT IMPACT HAS THE ARRIVAL OF THE NEW THERAPIES HAD ON YOUR NETWORK AND DAY-TO-DAY ACTIVITIES?

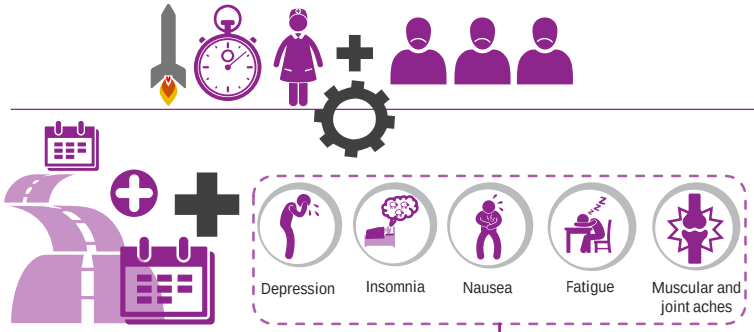
What was the status quo?

How has this changed?

INCREASED FOCUS ON PATIENT ADHERENCE

With interferon-based treatments, clinic nurses spent a lot of time helping patients to manage side-effects and complications that resulted from the medication

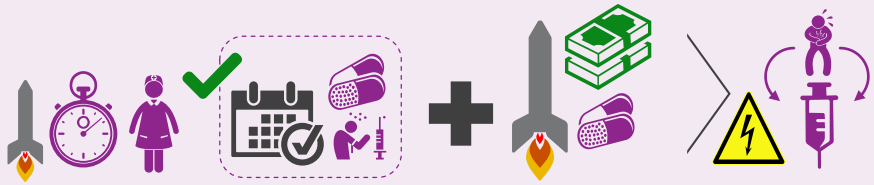
The amount of time required to treat each patient was further exacerbated by the long timescale associated with interferon-based treatment



With the increased use of all oral regimens, the nurses' workload has now shifted from managing side effects to ensuring that patients adhere to their treatment plan, since missing even a couple of days' medication can compromise the entire process

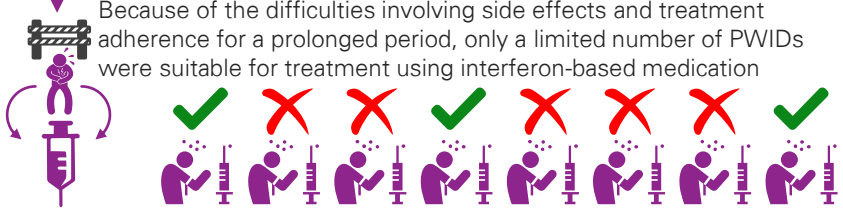
In non-PWID patients, adherence is not typically a problem. However, due to the unique challenges associated with PWIDs, nurses still have to spend a lot of time ensuring that medication is taken daily. Whilst DAAs usually result in a lot of time being saved in the administration of treatment, this has not been the case in Oslo

The high cost of DAAs is also a factor in the importance of ensuring treatment adherence



PRIORITISATION OF PATIENTS

Because of the difficulties involving side effects and treatment adherence for a prolonged period, only a limited number of PWIDs were suitable for treatment using interferon-based medication



Although the introduction of all oral regimens has resulted in significantly more patients being eligible and/or willing to undergo treatment, the high cost of the drugs and limited capacity of staff mean that not all patients can be treated at once

In Norway, only patients with a fibrosis score of F2 or higher are eligible for treatment using the all oral regimens. Although some exceptions can occasionally be made, standard practice is to prioritise patients with the most severe levels of fibrosis. This requires staff to identify patients most in need of treatment and act accordingly

Prindsen Mottakssenter Low Threshold Clinic and partners

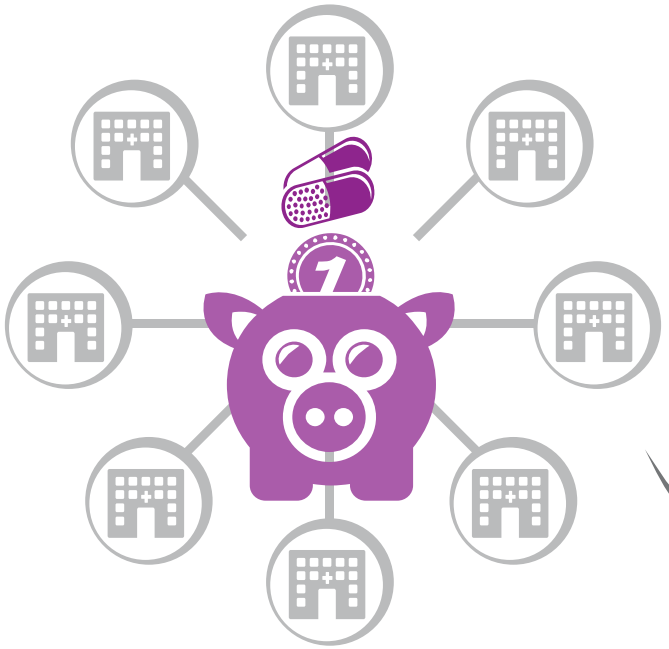
WHAT IMPACT HAS THE ARRIVAL OF THE NEW THERAPIES HAD ON YOUR NETWORK AND DAY-TO-DAY ACTIVITIES? (cont.)

What was the status quo?

How has this changed?

SHIFT IN THE FUNDING MODEL

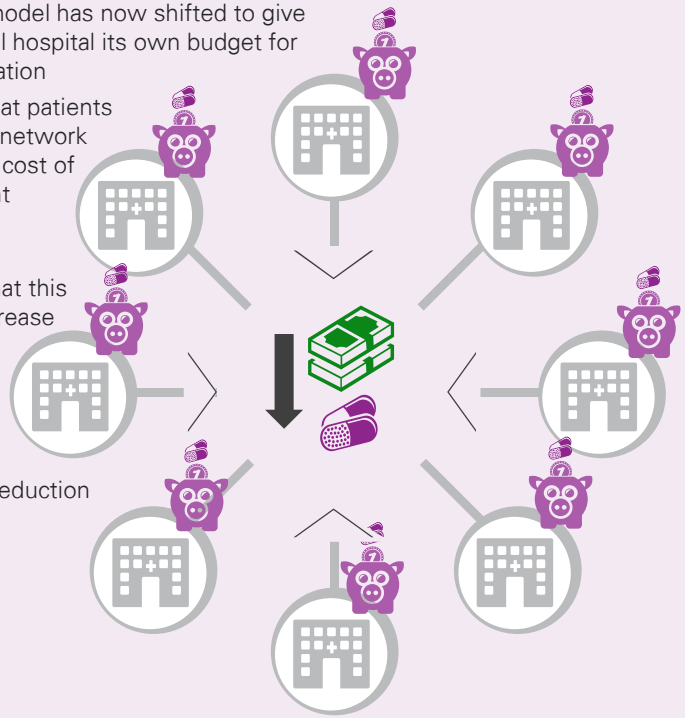
Funding for medication used to operate under a centralised model, with the government health department paying for treatment from one account



The funding model has now shifted to give each individual hospital its own budget for use on medication

This means that patients treated in the network now have the cost of their treatment billed to their local hospital

The hope is that this model will increase competition through a bidding process to hospitals, and will lead to a reduction in drug prices



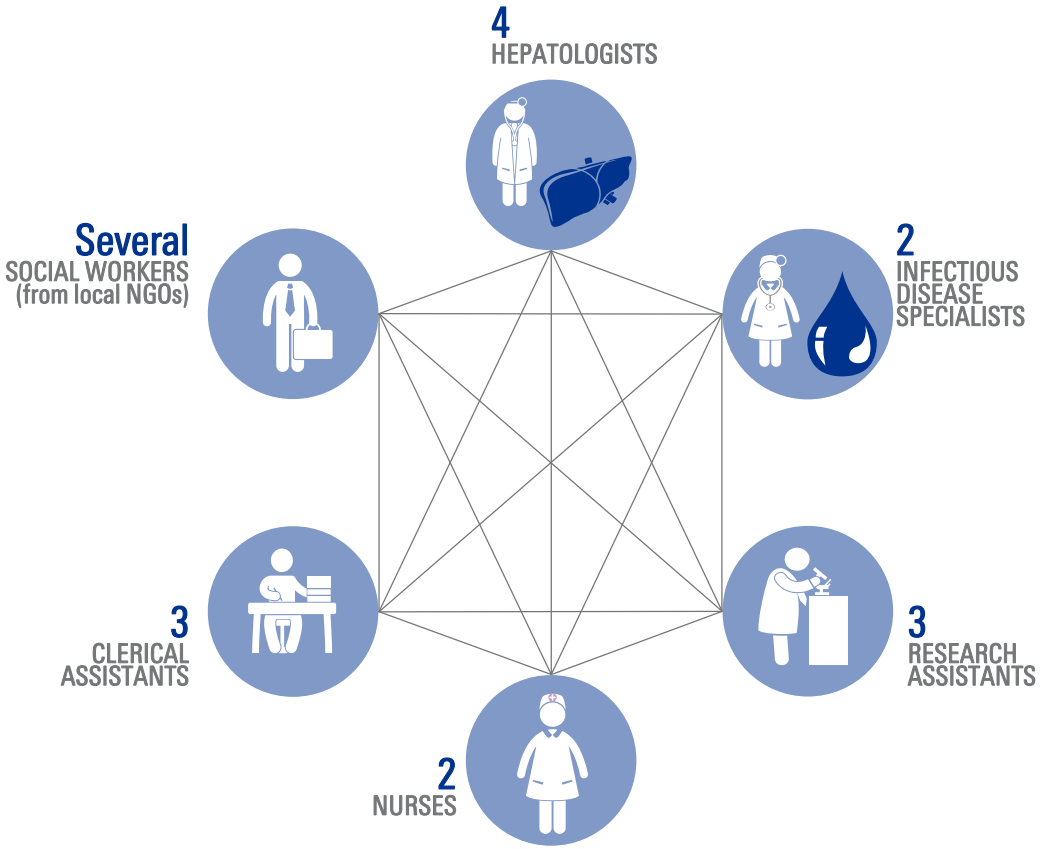
Prince of Wales Hospital, Hong Kong

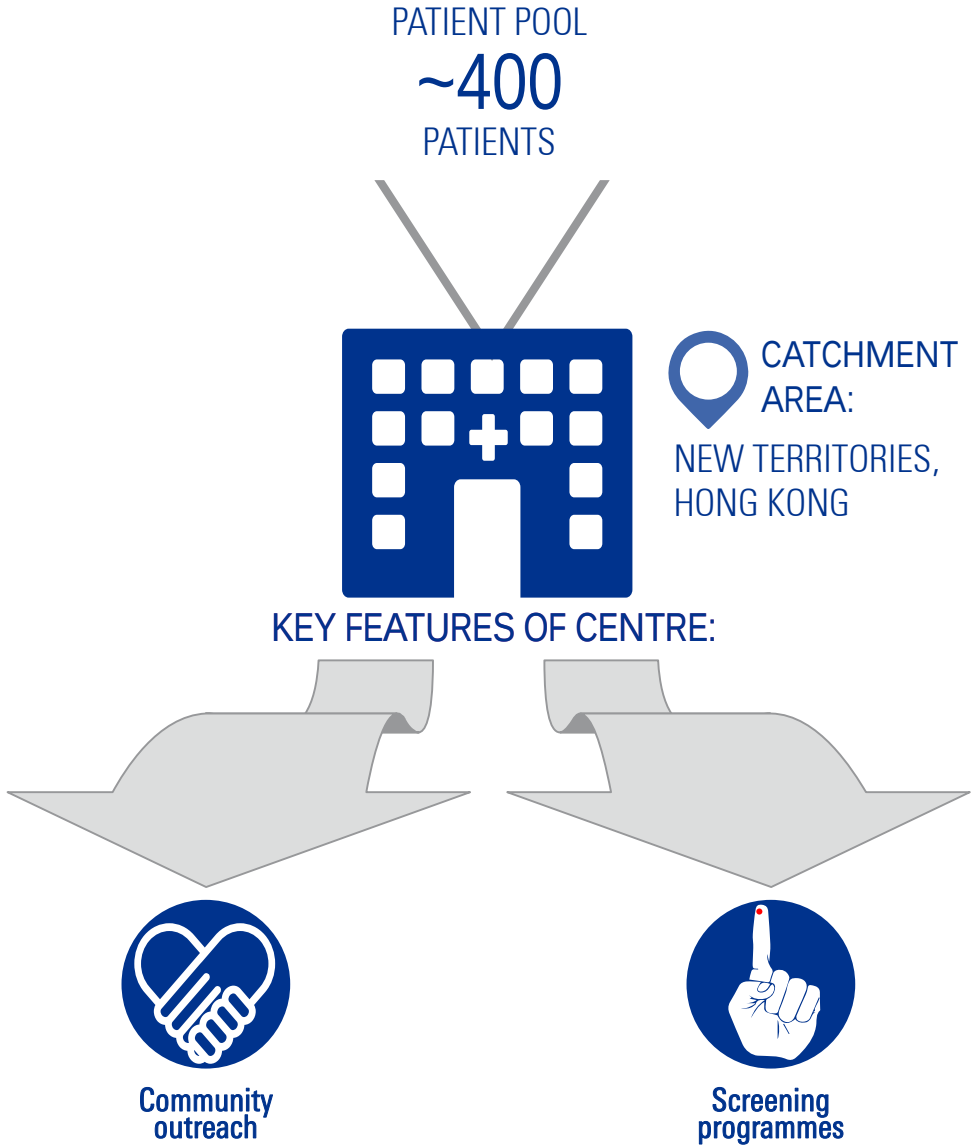
Prince of Wales Hospital

The Prince of Wales Hospital team is led by Prof. Henry Chan

The centre includes community outreach with the involvement of patient groups

HCV team





Prince of Wales Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

A COLLABORATIVE TEAM

Why?

Working as a team provides patients with the best care

How?

Apart from the doctors and the nurses, the team relies heavily on research assistants (both from the clinical and laboratory sides). In addition, they benefit from the support of administrative staff who help them organise their activities. Finally, during clinics the hepatologists can share their workload with their gastroenterologist colleagues as GI clinics are held at the same time and place

OUTREACH PROGRAMME

Why?

By targeting and screening high-risk groups such as IV drug users, the team has been able to identify many patients infected with HCV

How?

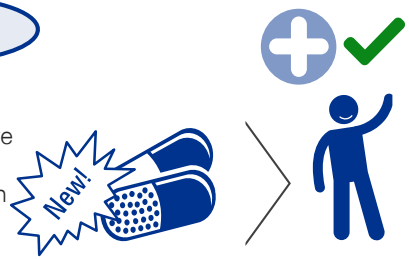
The team has a very good relationship with the local NGO Caritas Lok Heep Club and has launched jointly the 'New Life New Liver' programme. This enables the clinical team to access ex-IV drug users and screen them for HCV. The team also works with other NGOs and rehabilitation centres throughout Hong Kong to get access to as many people as possible who are likely to carry the virus

New Life New Liver

ACCESS TO NEW TREATMENTS

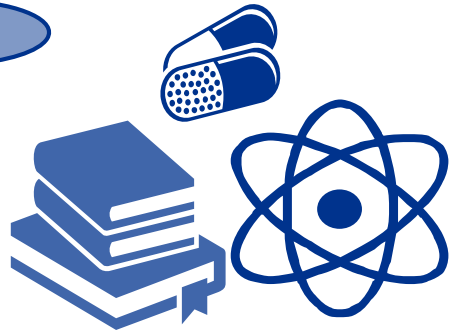
Why?

Having access to new treatments means the team is able to offer new options to patients who may not have responded to or who many not have been eligible for the therapies previously available. In addition, the team who has been dealing with DAAs for a few years now teaches and educates their peers from other hospitals as they seek their advice on the use of such treatments



How?

The team is very active in research and has been a pioneer in the city in terms of clinical trials with the DAAs



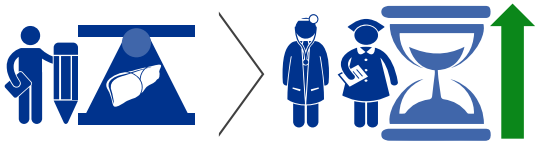
Prince of Wales Hospital

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

INCREASED RESOURCES

Why?

At times, the clinic staff are so busy that the elastography tests will be performed by a secretary, allowing the physicians and nurses to address tasks where their specific knowledge is required



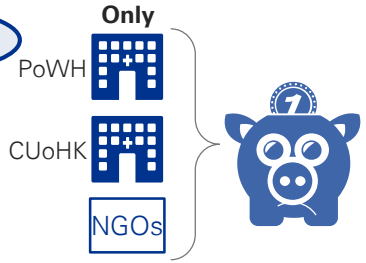
How?

Welcoming additional team members would give patients more time with their physician and nurses who would also be able to see more patients

NEW FUNDING STREAMS

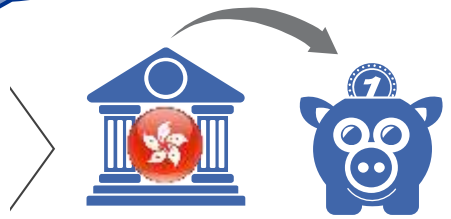
Why?

The current outreach programme is solely funded by the team at the Prince of Wales Hospital, its related university the Chinese University of Hong Kong and participating NGOs. As a result, resources for both this programme and outreach work are limited



How?

The team believes that if the programme was receiving more interest from the public, the government would eventually support them with additional funds

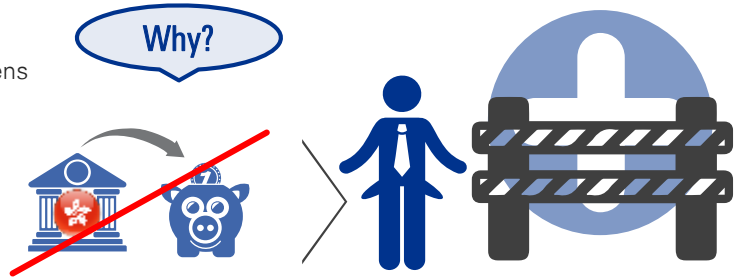


HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

INCREASED ACCESS TO TREATMENT

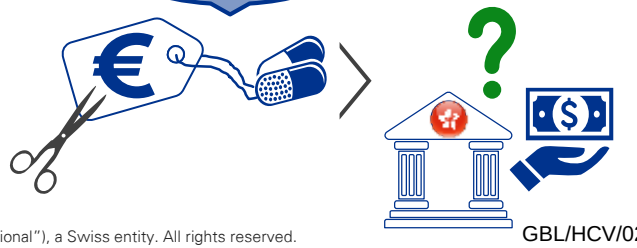
Why?

The interferon-free DAA regimens are not currently reimbursed by the government. As a result, most patients infected with the virus who mainly come from disadvantaged backgrounds cannot access them



How?

Reduced prices may convince the local government to reimburse them



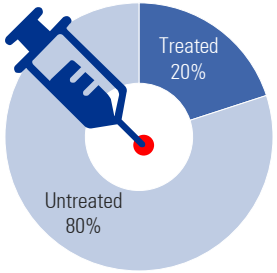
Prince of Wales Hospital

WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What is the status quo?

GREATER DEMAND

At the moment, only 20% of the patients from the 'New Life New Liver' programme receive treatment. This is mainly due to the fact that the interferon-based treatments offered to them have serious side effects which they fear. As a result, they are reluctant to receive treatment

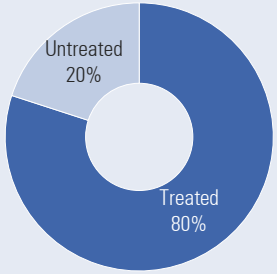


TRIAGING EXERCISE

The team currently has the capacity to treat their Hepatitis C patients

How could this change?

The team estimates that 80% of their Hepatitis C patients will be willing to receive the new treatments when they become available to them (i.e. covered by their healthcare system)



When the new treatments are reimbursed, the team expects a large number of patients to become newly eligible for treatment. As a result, the team will have to increase its appointment quotas, particularly so it can prioritise subsets of patients such as those with liver damage

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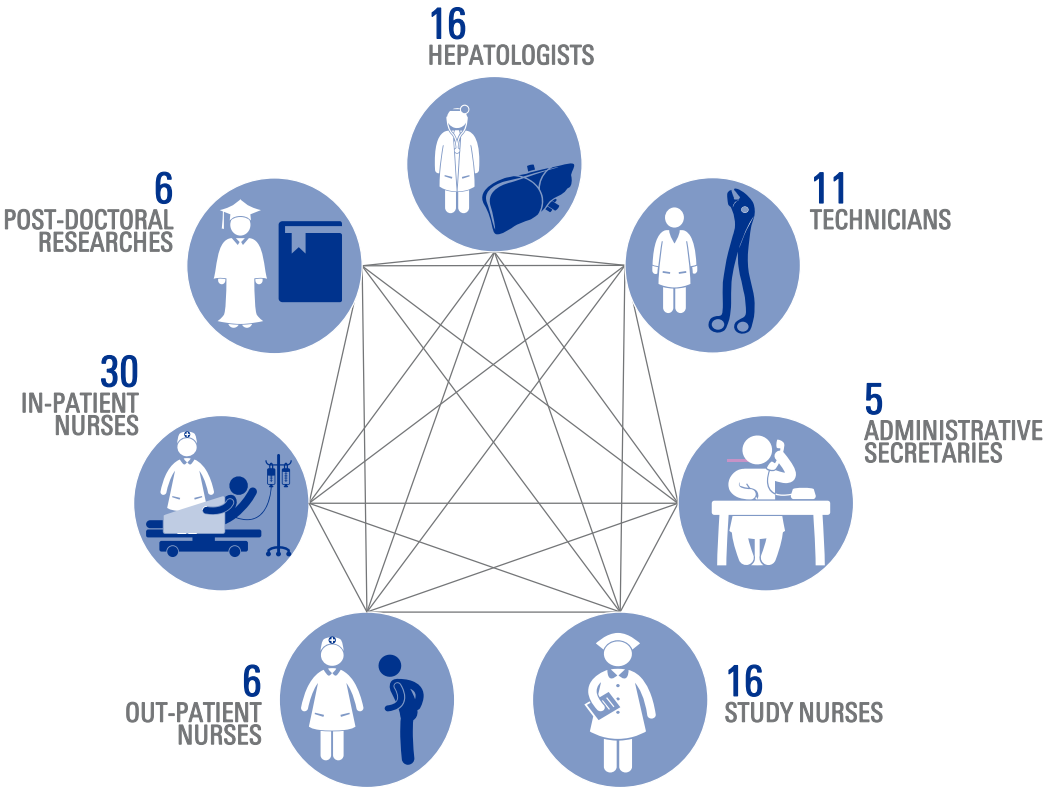
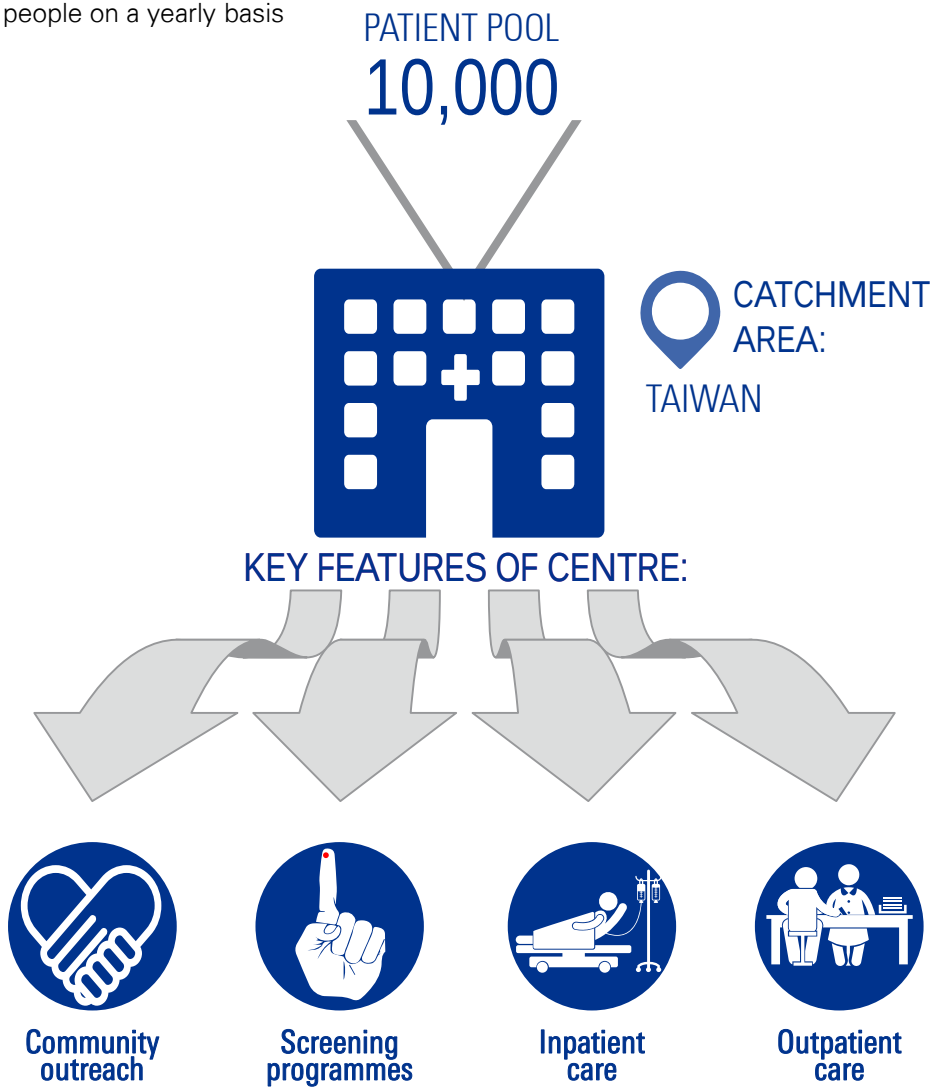
Kaohsiung Medical University Hospital, Taiwan

Kaohsiung Medical University

The centre has set up a community outreach programme which screens approximately 10,000 people on a yearly basis

HCV team





Kaohsiung Medical University

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

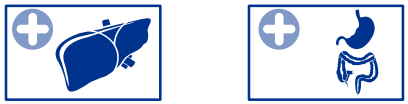
STRONG COLLABORATION AT DIFFERENT LEVELS

- **Research –** the team at Kaohsiung includes researchers who together focus on improving clinical care. In addition, the entire team has been actively collaborating with the Taiwan Liver Research Foundation for the past 15 years
- **Community-based healthcare providers –** through their outreach programme all over Taiwan, the team has built over the years strong links with local hospitals and family physicians
- **Health authorities –** the team has discussions with the authorities to obtain funding and support for screening programmes as the prevalence in endemic areas can reach 30%
- **International policy –** the team reports on its prevention and screening activities to the World Health Assembly in the hope other countries, especially those with a high prevalence of the virus, will benefit from its knowledge and experience

INDEPENDENT HEPATOLOGY UNIT

Why?

The Kaohsiung Medical University is the only centre where the hepatology unit is a whole department, independent from the gastroenterology department



How?

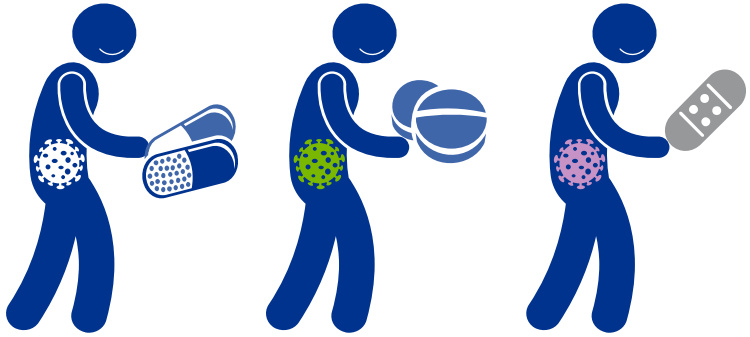
The team has specialised in the management of liver diseases whereas other gastroenterology units in the country follow a more 'generalist' approach

The team reaches approximately 60,000 patient visits via outpatient care and approximately 32,000 people on inpatient care on a yearly basis

RESEARCH

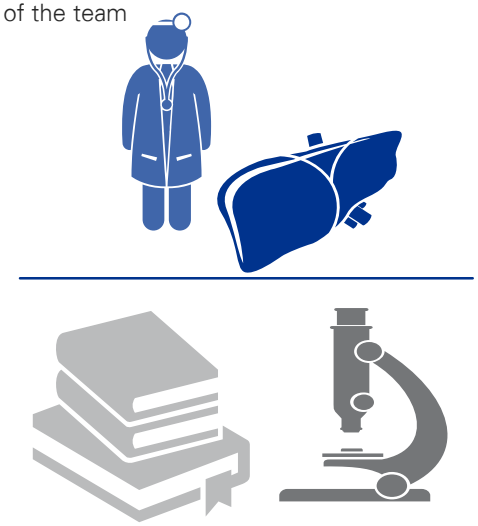
Why?

With strong research capabilities and capacity, the team has been at the forefront of the development of guidelines on the management of Hepatitis C patients as well as on the use of new treatments. The team was one of the first to establish individualised treatment based on the patient's genotype



How?

Every one of the 16 hepatologists conduct research on top of their clinical workload. This dual clinical/research aspect of their work is key to the success of the team



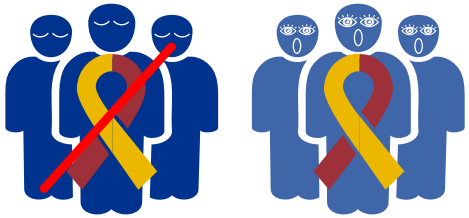
Kaohsiung Medical University

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE AND AT THE NATIONAL LEVEL?

INCREASED AWARENESS

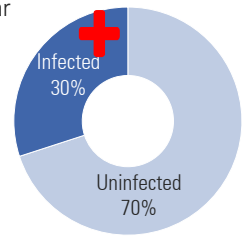
Why?

Disease awareness is a critical issue in Taiwan. The team estimates that approximately half of infected people are not diagnosed



How?

Over the years, the team has strengthened its outreach programme which involves the screening of a large number of people from underserved regions as well as endemic ones where the prevalence of the virus can reach up to 30%. On average, the team screens about **10,000 individuals** each year



INCREASED ACCESS TO CARE

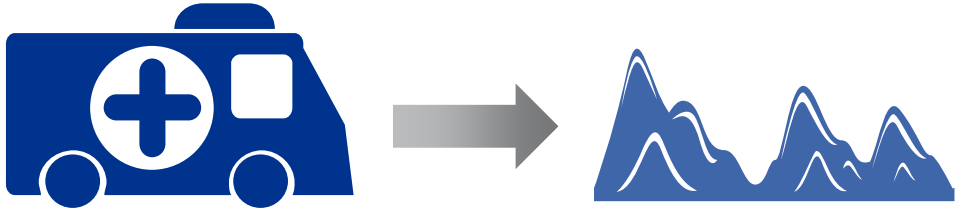
Why?

In Taiwan, several areas such as small islands and high mountains are underserved. As a result, access to care, especially specialist care, is a challenge

How?

With its outreach programme, the team regularly travels to these underserved regions where it has set up community-based clinics with the help of the local authorities and local doctors

The specialist team not only screens and diagnoses patients, it also teaches its peers how to recognise high-risk groups and symptoms as well as how to refer patients to the right care setting for follow-up and treatment when necessary



Kaohsiung Medical University

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE AND AT THE NATIONAL LEVEL? (cont.)

PERSONALISED THERAPY

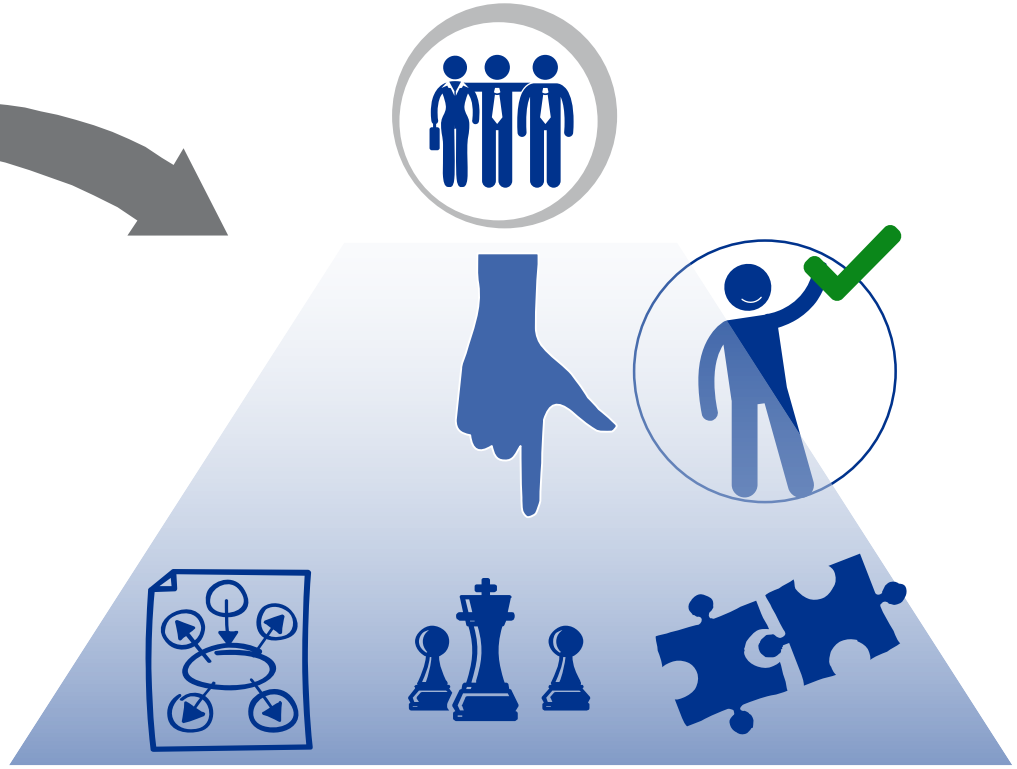
Why?

Personalised therapy allows HCPs to adapt the treatment based on the condition of each individual. Not only does it increases cure rates, it also is a cost-effective process

How?

Teams should define their patient-specific strategies based on the HCV genotype, treatment history as well as virological responses observed

Patients would then benefit from an accurate and tailored care to improve their individual condition



Kaohsiung Medical University

WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What is the status quo?

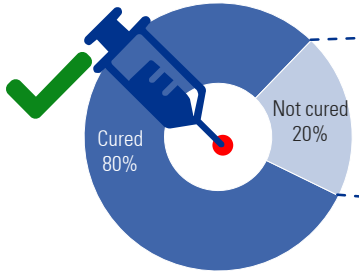
How could this change?

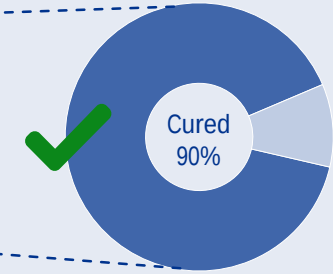
INCREASED DEMAND

Unlike most other countries, patients who receive interferon-based treatment in Taiwan clear the virus in 80% of the cases (versus 50-60% elsewhere). As a result, these treatments are perceived to be efficacious even though they usually come with serious side effects

Of the 20% of patients who go uncured by interferon-based treatments, 90% will be able to be cured by DAAs

Furthermore, many patients who were unwilling to undergo interferon-based treatment due to the side-effects are now more likely to take medication





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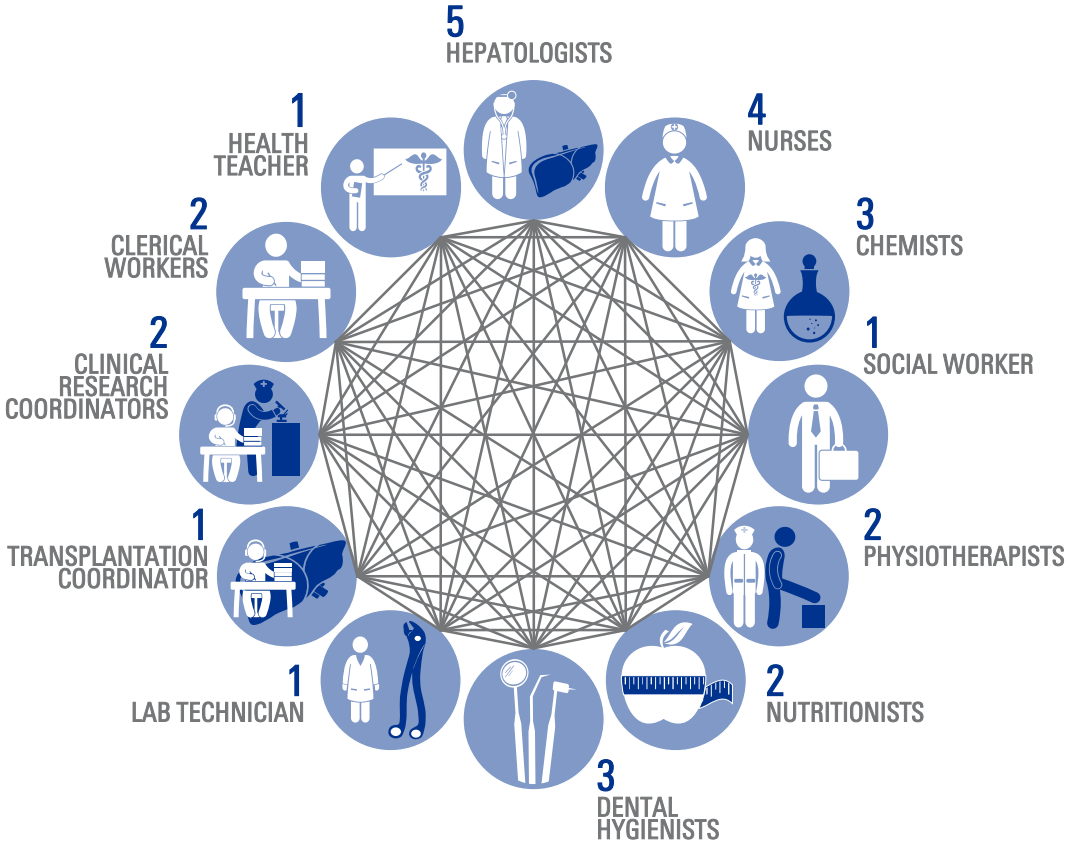
National Okayama University Hospital, Japan

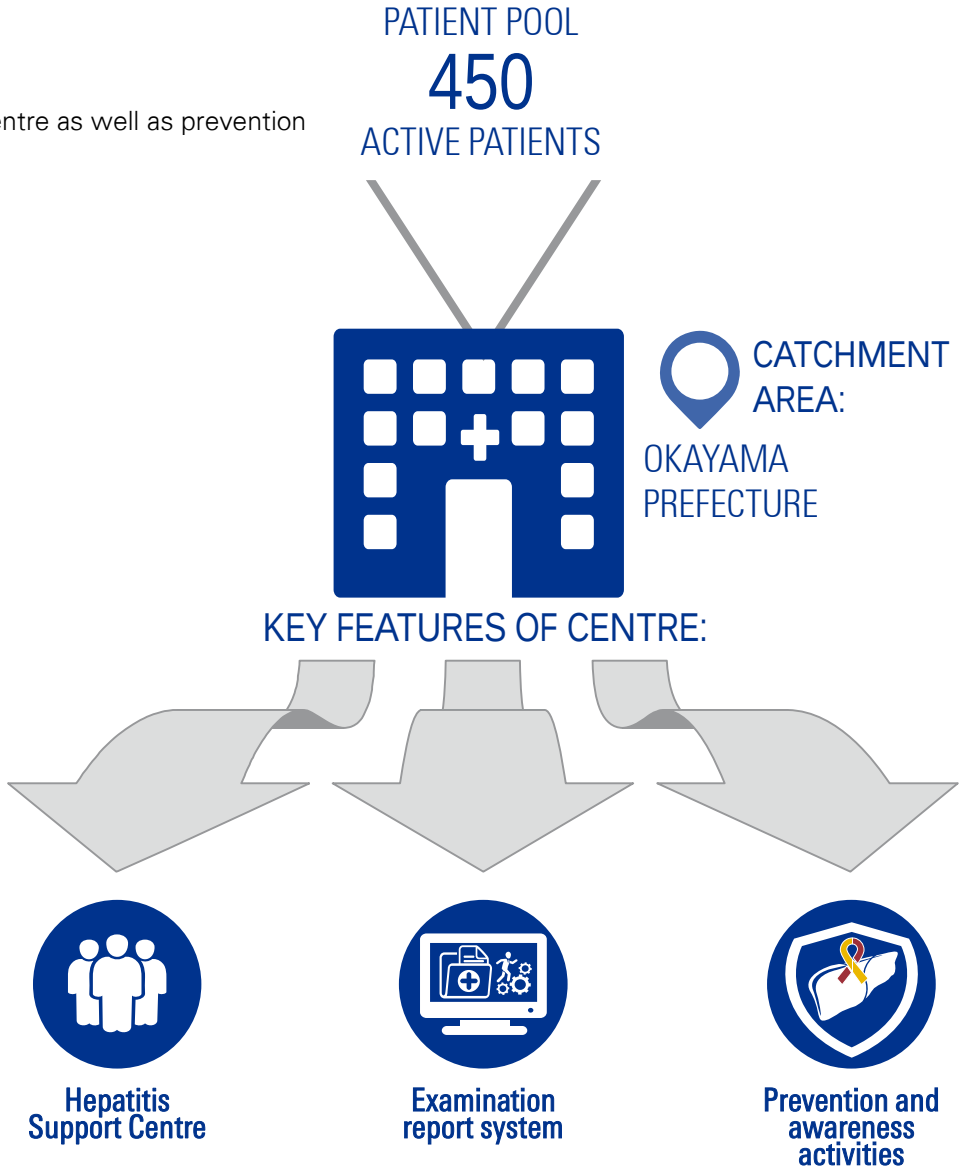
National Okayama University Hospital

The National Okayama University Hospital team is led by Dr. Ikeda

The team uses a dedicated examination report system and has set up a Hepatitis Support Centre as well as prevention and awareness programmes

Liver Disease Support Team





National Okayama University Hospital

WHAT ARE THE STRENGTHS OF YOUR HOSPITAL IN RELATION TO HCV CARE?

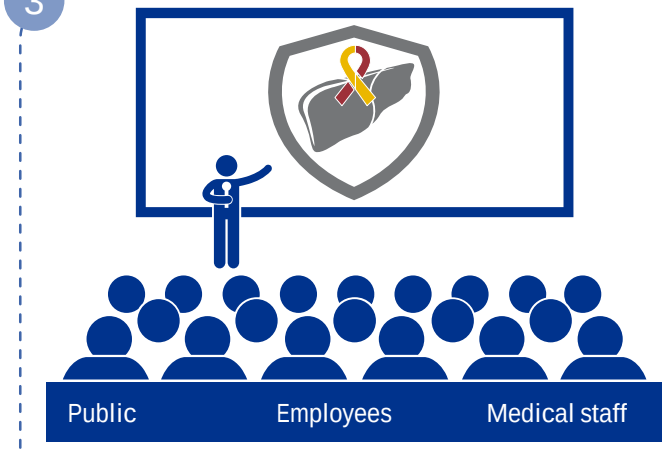
1 Solid liver disease support structure

- The **Hepatitis Support Center** (with three staff members: nurse, social worker and clerical worker) was established to provide consultation for patients and their families via phone or in person:
  - ✓ **Main duties:** provision of medical consultation/ information to patients with liver diseases, explanation on the subsidy/support for application for the subsidy, referring patients to specialists
  - ✓ Number of telephone consultations: maximum four per day
  - ✓ Number of consultations on the subsidy: maximum eight per day
  - ✓ Since the release of interferon-free treatments, the number of consultations has been on the rise
- If the above members cannot handle the demand, the Liver Disease Support Team (27 members) will respond to the consultations

2 Thorough treatment recommendation using an examination report system

- **Purpose for introducing the examination report system:**
  By thoroughly reporting the examination results of HCV positive patients, the ratio of the HCV positive patients who receive treatment by hepatologists has increased. As a result it promoted the prevention and early detection of cirrhosis and liver cancer
- **Structure of the examination report system:**
  If a patient is HCV positive, an icon to suggest treatment recommendation by a hepatologist will automatically appear on the EMR. His/her doctor gives explanation to the patient with printed examination results and other relevant documents, or the Hepatitis Support Center mails the examination results to the patient and recommends treatment

3 HCV prevention/awareness activities (outreach program)



- **Holding seminars on liver diseases**:
  - ✓ Providing lectures for internal participants to gain knowledge on liver diseases and tips for daily life four times a year
  - ✓ Participants are mainly interested in care provision to a certain extent
- **Providing visiting seminars on liver diseases**:
  - ✓ Visiting companies and other work places to provide information on liver diseases and HCV examinations once or twice a year since autumn 2014
  - ✓ Held an event with 300 participants at neighbour AEON (large shopping mall) with cooperation of the local government in August 2014
- **Providing training to medical staff (twice a year)**

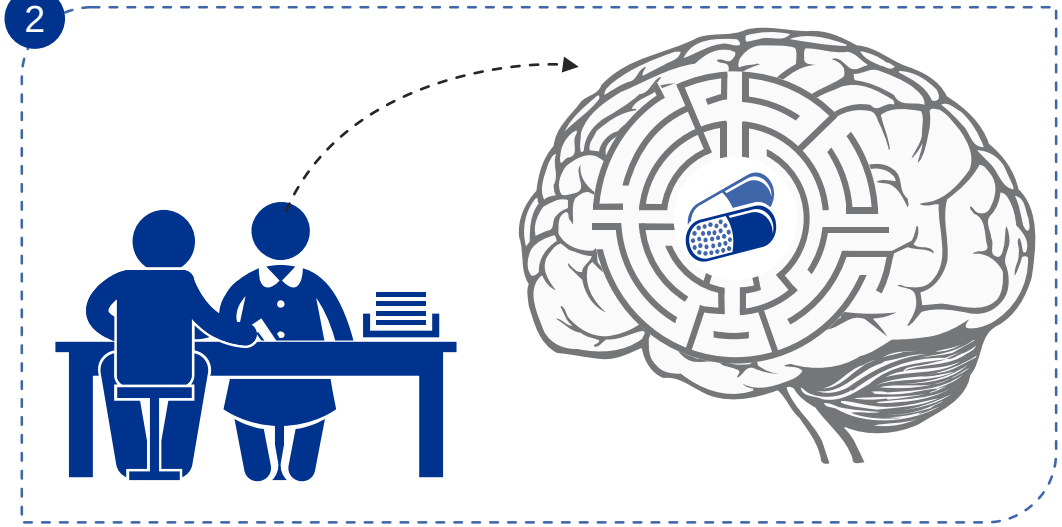
National Okayama University Hospital

WHAT ARE THE MAJOR ISSUES ON HCV CARE ON A NATIONAL/REGION LEVEL

1 Local residents' insufficient recognition of HCV and low implementation rate of examinations

- Although abnormal liver function values are found at companies' regular examinations, patients tend to be diagnosed with other diseases (such as fatty liver) as they do not have symptoms. Therefore, there are many patients who do not realise they have the disease, without taking HCV examinations
- Although it is said Japan has approximately 150-200 million HCV patients, only 500,000 people are receiving treatment at medical institutions. The remaining 100-150 million people may not realise that they are infected by HCV

2 Primary care doctors' insufficient recognition/knowledge in all oral DAA treatment



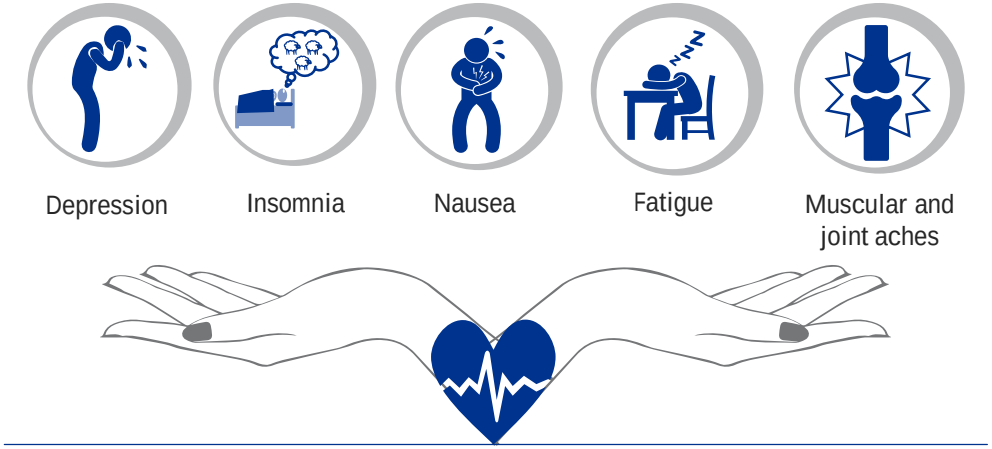
- The recognition/knowledge in all oral DAA treatment remains poor among primary care doctors. As a result, patients of the primary doctors known to be HCV-positive are not referred to the hepatologists and may end up being seriously ill
- Hepatologists seem to have a certain level of knowledge in interferon-free treatments compared to primary care doctors. As they are still not confident regarding these treatments, they refer their patients to the Hospital for treatment in most cases

National Okayama University Hospital

CHANGE OF HCPS' ROLE/INVOLVEMENT WITH ALL ORAL DAA TREATMENT

IFN treatment

Change of HCPs' role/involvement with all oral treatment



HCP's major role was providing care for side effects of IFN treatment.

Nurses

- Motivated patients

Doctors

- Examined the situation of side effects

Psychiatrists

- Provided patients with moral support

All oral DAA treatment

The importance of HCP's role/involvement before treatment is increasing, such as administration supervision/guidance and explanations on the subsidy system/support for application for the subsidy system

- Doctors/nurses/pharmacists supervise/instruct administration, such as on preventing a failure of taking drugs and on checking companion drugs prescribed by primary care doctors

- Social workers/clerical workers explain the subsidy system/provide patients and their families with support for application for the subsidy system

High cure rate

The hospital succeeded in curing **over 90%** of the HCV patients with all oral DAA treatment

Increasing treatable patients

All oral DAA treatment **can be applied** to patients who could not receive HCV treatment with interferon treatment

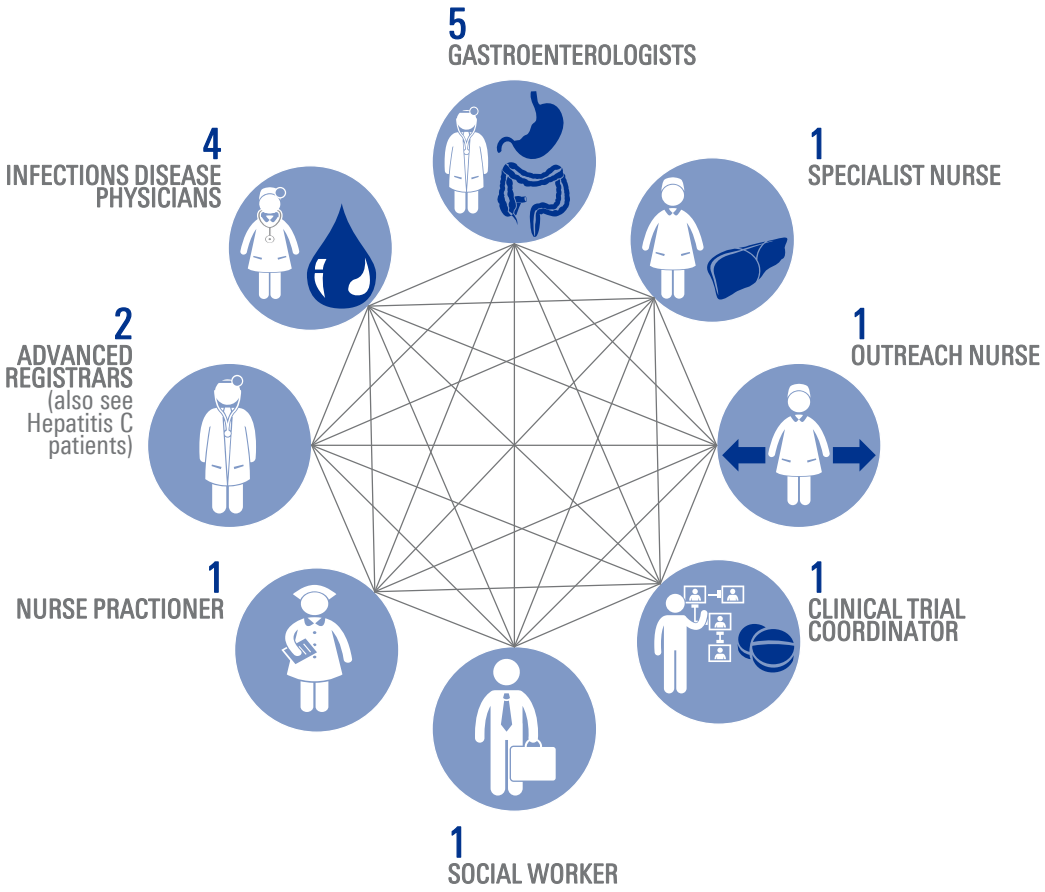
John Hunter Hospital, Newcastle, Australia

John Hunter Hospital

The John Hunter team is led by Dr Steven Bollipo

The centre has a strong outreach programme and a collaborative approach between different medical specialties

HCV team



PATIENT POOL

700

ACTIVE PATIENTS

CATCHMENT AREA:

HUNTER, NEW ENGLAND (region in New South Wales)

KEY FEATURES OF CENTRE:

- Community outreach
- Collaboration between Gastroenterology, Infectious Diseases, and Drug & Alcohol teams
- Work in prisons

John Hunter Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

STRONG COLLABORATION INTERNALLY: a formal partnership across departments

- **Overview:** At John Hunter, there is a partnership between three medical departments – ID, Gastroenterology and Drugs & Alcohol. This type of partnership is very unique because in most hospitals there is usually one department – either ID or Gastroenterology taking the lead on delivering care to Hepatitis C patients.

- **Rationale**: The partnership was at first informal as the three departments regularly manage patients of their own which have contracted the virus. However with the large number of patients that are expected to be treated with the introduction of the all oral DAAs, the team members felt that it was important to formalise the relationship

STRONG NURSE PRACTITIONER-BASED SERVICE

Why?

As patient numbers have increased as well as the need to see patients earlier, the centre needed to find ways to improve patient throughput

How?

The centre's triaging system changed so that new referrals were triaged to the nurse practitioner as well as and instead of the specialists to do the initial assessments

This increased the number of patients assessed by the team in total, which allowed a higher number of patients to progress onto treatment

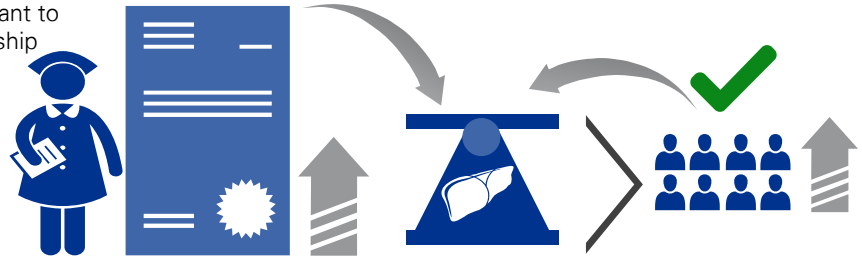
The nurse practitioner was able to refer patients to additional services including social workers, drug and alcohol services and dieticians, as required

The nurse practitioner also managed her own caseload of patients on treatment with support from the specialists

EXTENSIVE TRAINING IN ELASTOGRAPHY AND INCREASED USAGE

Why?

Some hospitals may not have an elastography machine or if they do there is only a single specialist that is trained to use the machine. This means that access to the elastography machine is limited



How?

In contrast, John Hunter have democratised access to elastrography training and therefore access to the machine. Up to a dozen professionals are qualified to use the elastography machine across the gastroenterology, ID and drug & alcohol departments. It is particularly unique that the specialist nurse is trained to use the elastography machine and has carried out more scans than many of the doctors

Currently, a greater number of patients than before are able to have scans

Having two portable elastography machines also enables the centre to perform scans on more patients, even within outreach clinics

Performing more scans makes it easier for patients to be triaged according to the severity of their disease. This is particularly useful in a context where access to new treatments will be driven by the stage of liver damage

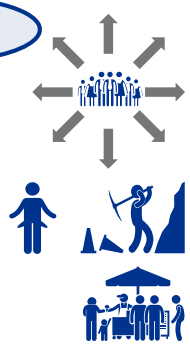
John Hunter Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE? (CONT.)

COMMUNITY OUTREACH

Why?

The centre covers a large area with a dispersed population. The population is also socio-economically disadvantaged with many being unemployed and from the working classes (traders and miners). There is also a large aboriginal community who generally has sub-optimal health indicators. This highlights that the population within this region is quite vulnerable and in need of outreach care



Aboriginal population with HCV

Wider population with HCV

How?

The centre has outreach clinics in two locations: Cessnock and Raymond Terrace

Cessnock is located in an area with a high IV-drug using population as well as the presence of the aboriginal community

Two doctors run the clinics once a fortnight and the nurse practitioner runs all of the elastography test thanks to a portable machine

In Raymond Terrace, the centre works with the aboriginal community from Karuah (aboriginal mission). The aim is to improve access to HCV care among a community that has a higher HCV prevalence than the wider population

WHAT ARE THE CHALLENGES AT YOUR CENTRE?

RURAL LOCATION

The rural location of the hospital compared to Sydney and Melbourne means that the centre has a more economically disadvantaged patient population which creates specific challenges, including the following:

Lack of specialists

- The centre covers a large rural area and yet it is a relatively small centre. Therefore, the specialists are required to cover multiple areas of care.
- In metropolitan settings some specialists can focus on hepatology. However, at John Hunter all the gastroenterologists practice general gastroenterology. This makes it difficult for the specialists to meet demand.
- One way that the team has attempted to address this problem is by having a collaborative approach among different departments

Difficulty of understanding patient population

- Due to the area covered, it is very difficult to identify the prevalence of Hepatitis C among the patient population
- There is also limited screening which prevents the centre from understanding how many patients carry the virus

John Hunter Hospital

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE?

INCREASED RESOURCES FOR ELASTOGRAPHY MACHINE

Why?

The centre covers a geographically wide catchment area and therefore it is crucial that the centre can access patients in remote areas

How?

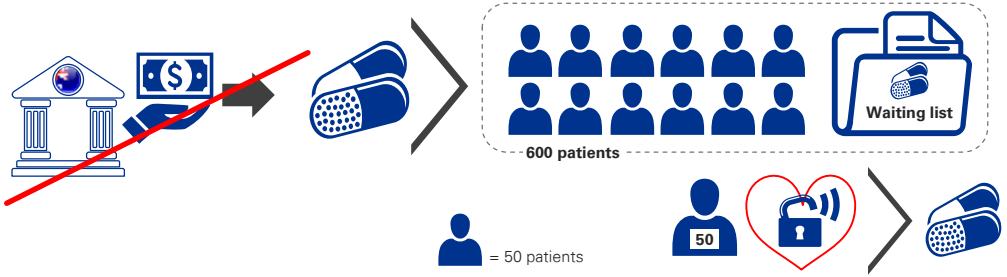
Over the years, the team has strengthened its outreach programme which involves the screening of a large number of people from underserved regions as well as endemic ones where the prevalence of the virus can reach up to 30%. On average, the team screens about **1,000 individuals** each year

HOW COULD YOU IMPROVE HCV CARE AT A COUNTRY LEVEL?

INCREASED ACCESS TO CARE

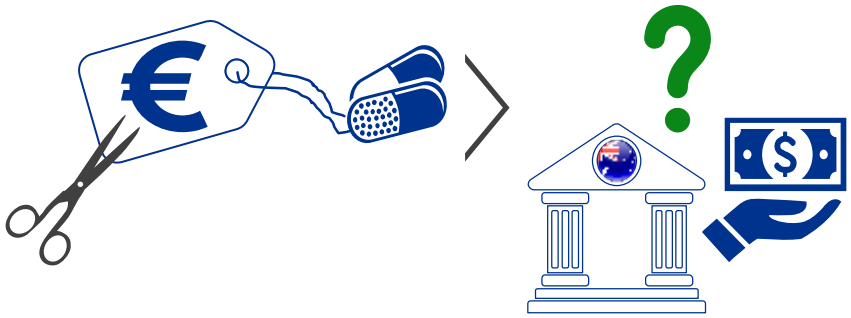
Why?

The all oral DAA regimens are not currently reimbursed by the government. As a result, most patients infected with the virus cannot access them. There are more than 600 patients on file who are waiting to get treatment. Only 40-50 patients are able to get access to treatment through compassionate access



How?

Reduced prices may convince the local government to reimburse them



John Hunter Hospital

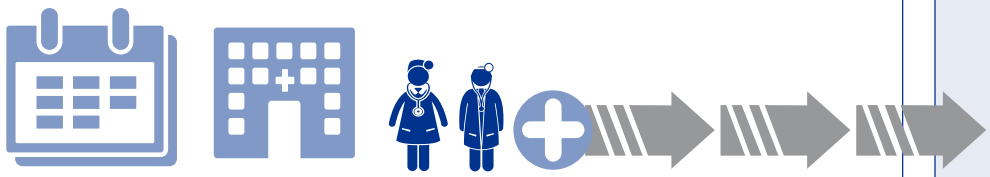
WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What is the status quo?

How could this change?

GREATER FOCUS ON OUTREACH

The centre currently has two regular outreach clinics

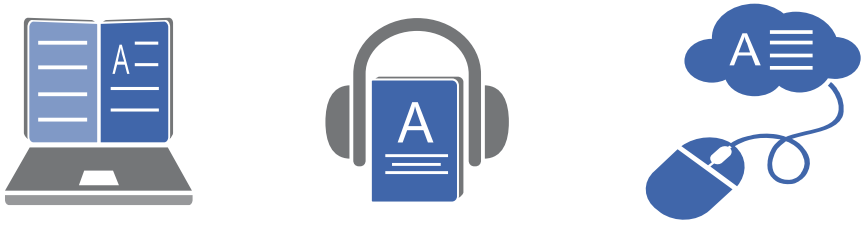


As the demand for treatment and the amount of patients from the whole region diagnosed with Hepatitis C increase, there will be a greater need for outreach

Building nurse practitioner capability and expertise would be another way of shifting the burden of care away from the specialist and facilitating more outreach services

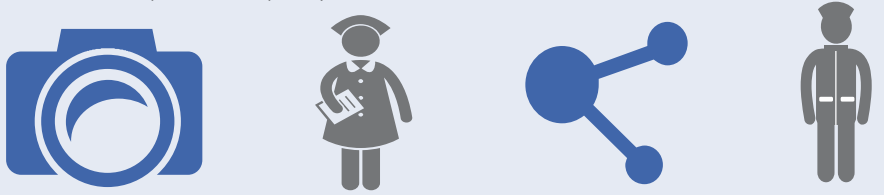
INCREASED USE OF TELEMEDICINE

The telemedicine infrastructure is currently in place through the John Hunter hospital network. The hospital has a multi-million dollar telehealth centre that includes clinical virtual meeting rooms, videoconferencing end points and room integrations, and clinical care cameras. This telehealth system is being used for check-up consultations in remote and regional areas of the Hunter, New England and Lower Mid North Coast regions.2 However, this infrastructure is currently not being utilised by the Hepatitis C team



The team has indicated that with an increased need to treat more patients in remote areas, there will be a greater impetus to use a telemedicine model. This is particularly important with a centre that has a small team and limited specialist capacity

The team could train a nurse from local institutions and she or he would be linked along with her or his patients to one specialist in John Hunter. This would increase the centre's potential to hold clinics because they are currently limited by their constrained specialist capacity



John Hunter Hospital

WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What is the status quo?

How could this change?

CHANGING ROLE OF SOCIAL WORKER

With interferon treatment, the social worker assesses a patient's housing/employment/income/mental health/drug and alcohol situation. This is to ensure that the patient in the best possible position to start a difficult treatment process

The social worker plays a pivotal role throughout the treatment programme with mandatory meetings at week 4 following treatment initiation

She also has a specific role post-treatment – once or twice after treatment to monitor the patient's recovery and to support them with the adjustment to no longer having that virus as it may have been part of the patient's life for quite a long time

The social worker believes that with access to the new treatments her role will shift to addressing the general wellbeing and health of patients

For patients with drug and alcohol problems there will still be the need for a social worker to assess the stability of the patient's situation even with the oral treatments. This will be key to ensuring adherence to treatment

Social workers may also broaden their roles to work more with patients with advanced stage liver disease

John Hunter Hospital

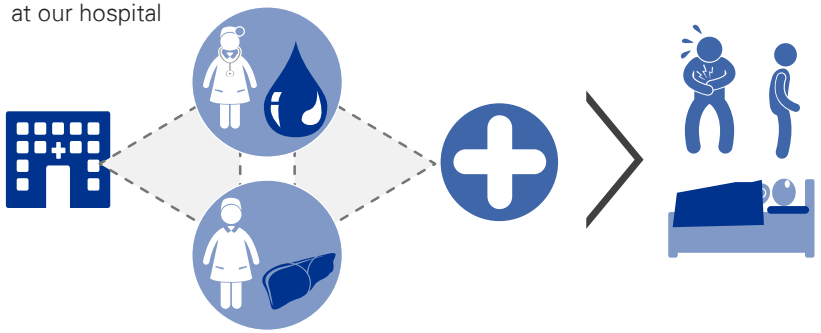
WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES? (cont.)

What is the status quo?

How could this change?

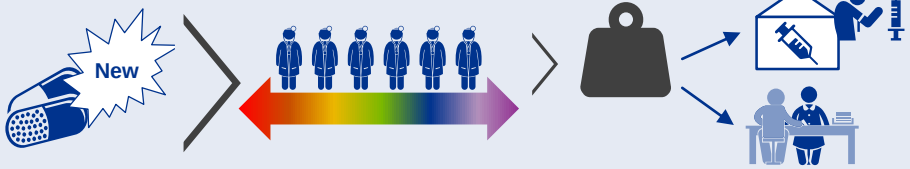
NEW CHANNELS TO DELIVER HCV CARE

At the moment, care is solely provided by a team of specialists who are centralised at our hospital



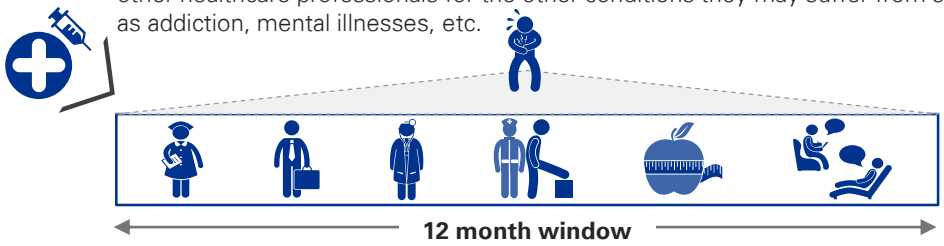
The new medication will be an opportunity to widen the spectrum of care providers as the specialist team may be able to delegate their responsibilities:

- Methadone clinics could be used to deliver treatment to patients when they come to pick up their methadone
- General practitioners could possibly manage patients who are non-problematic, clinically and psycho-socially. Those who have issues or who are more difficult to manage would still be treated by a team of specialists



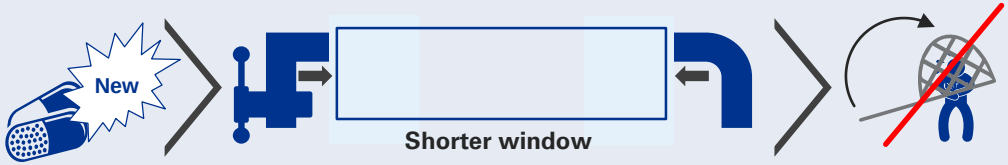
SHIFT TOWARDS THE PRE-ASSESSMENT OF PATIENTS

With interferon-based treatments which are given to patients for approximately an entire year, the team has a wide window to make sure patients can be seen by other healthcare professionals for the other conditions they may suffer from such as addiction, mental illnesses, etc.



With the arrival of the new therapies, this window will be much shorter and the team may not be able to 'catch' the patients and refer them to other services

As a result, a greater focus on pre-assessing the patients to really understand their situation would be a way to make sure they are treated not only for Hepatitis C, but also for the other conditions they may suffer from



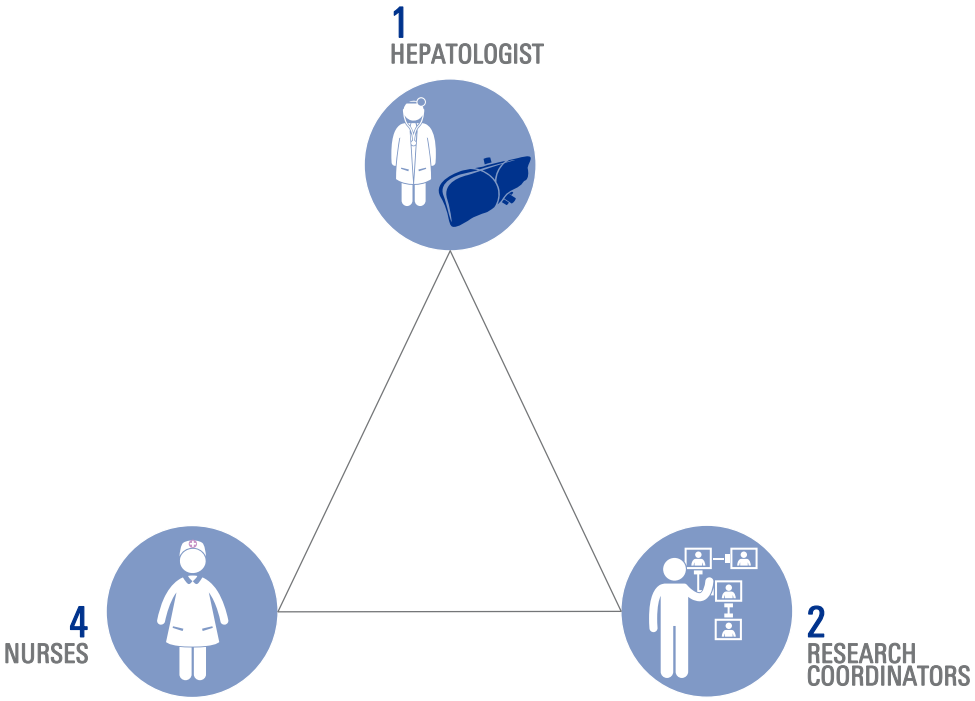
Hospital ZNA, Antwerp, Belgium

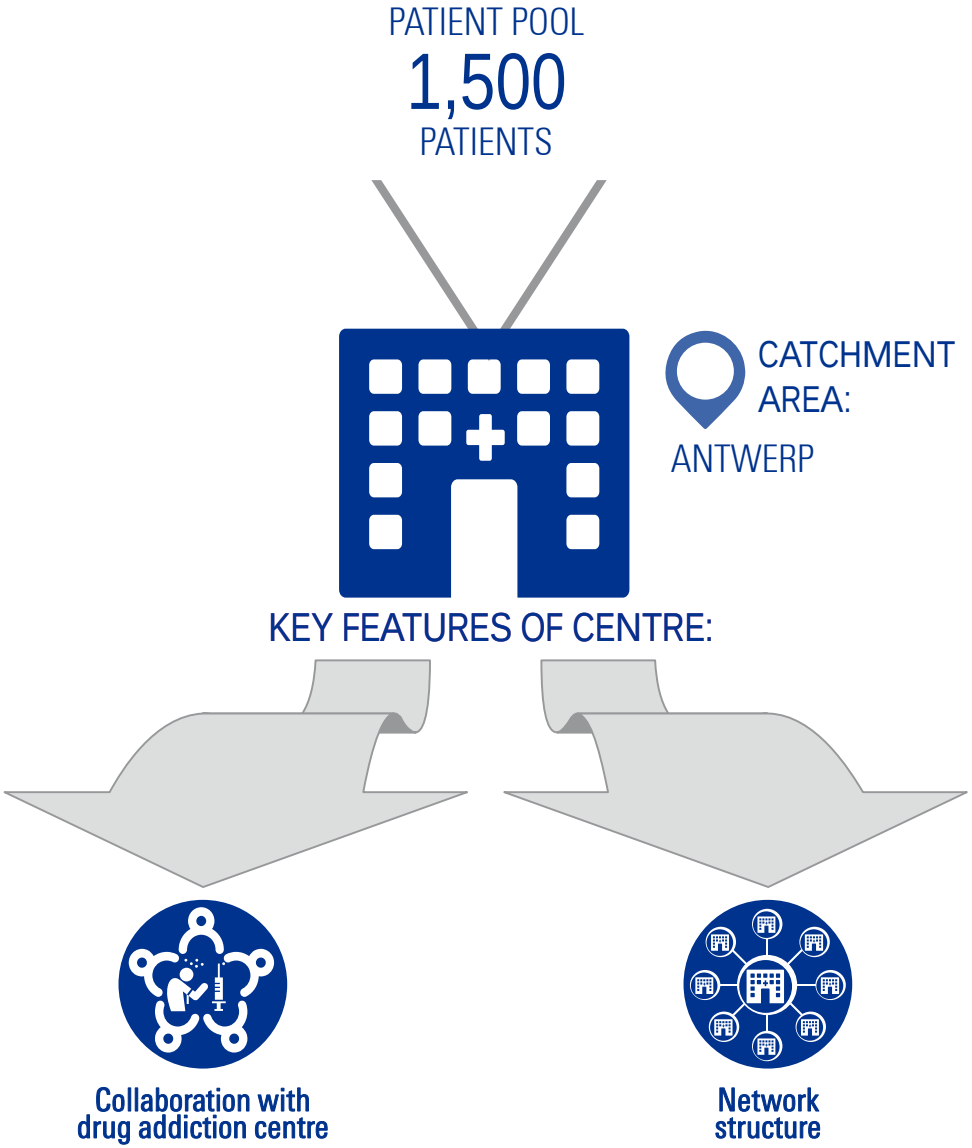
Antwerp Network Hospital

The Antwerp team is led by Dr Stefan Bourgeois

The centre has strong collaboration with a drug addiction centre

HCV team (includes members outside core team)





Antwerp Network Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

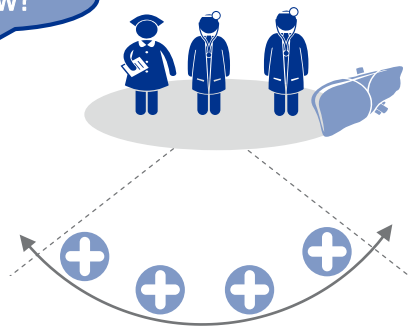
EXTENSIVE REACH WITH A SMALL TEAM

Why?

The Antwerp team is relatively small with one hepatologist and a team of supporting HCPs. Therefore it is a team that needs to adopt innovative ways of using its limited capacity to engage with Hepatitis C patients

How?

The HCPs (including Dr Bourgeois) are not solely dedicated to Hepatitis C or infectious diseases but work across multiple disease areas. Dr Bourgeois also works closely with HCPs based at the Free Clinic drug addiction centre



ENGAGEMENT WITH DRUG ADDICTION CENTRE

Why?

In Belgium, the IV drug using population has a high prevalence of Hepatitis C relative to the rest of western Europe. In western Europe the prevalence among IV drug users varies between 33 and 98 percent whereas in Belgium the range is between 46.9 and 94.4 percent[1]

How?

The centre works with the Free Clinic and other smaller drug addiction centres. 50% of its Hepatitis C patients are referred through the Free Clinic

Close collaboration allows the IV drug-using population to feel more comfortable when engaging with the hospital environment. In some cases the nurse at the Free Clinic accompanies clients to their appointments at the main hospital to give them the extra layer of support that they may need in the hospital setting. This is because the drug using population may have previously negative encounters with the medical profession and therefore may feel unwilling to engage with the hospital setting

Once a year Dr Bourgeois delivers a presentation at the Free Clinic along with the local staff to educate people about Hepatitis C – this programme is sponsored by pharmaceutical companies. The presentation is targeted at patients as well as their friends and family

Source: 1. Renard F. et al., 'L'hépatite C en Belgique, Comment améliorer le dépistage et la prévention?'» UCL – RESO Unite de l'Education pour la Santé, (June 2005) https://www.uclouvain.be/cps/ucl/doc/reso/documents/Dos34.pdf

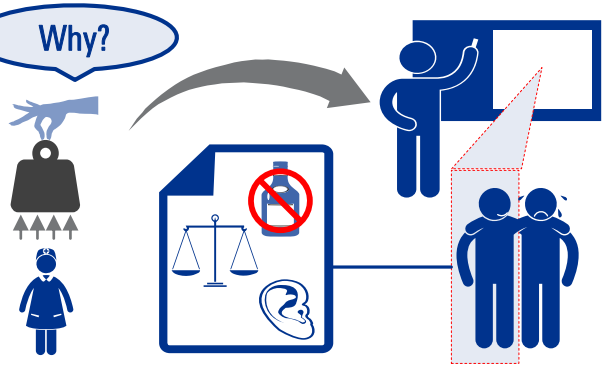
Antwerp Network Hospital

WHAT ARE THE STRENGTHS OF YOUR CENTRE? (cont.)

'BUDDY TRAINING'

Why?

Patients from the Free Clinic may sometimes need extra support when visiting the main hospital site for appointments and tests. To shift the burden of responsibility away from the nursing staff, the buddy programme is being put in place and is due to commence January 2016



How?

There will be a few 'buddies' who will be able to accompany patients from the Free Clinic to the hospital

Buddies will have to be stable, without alcohol problems and have a strong mental health profile.

In terms of more general characteristics, the buddies will have to be patient and able to listen to someone with ease

The role will be purely on a voluntary basis with expenses covered

Pharmaceutical companies have provided funding for the programme

HEPATITIS C CAFE

Why?

It is important to provide a safe, friendly forum in which former and current patients can exchange experiences

How?

The cafe meets monthly at the Free Clinic and patients can bring along friends and family. The model relies on peer-to-peer communication

Antwerp Network Hospital

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE?

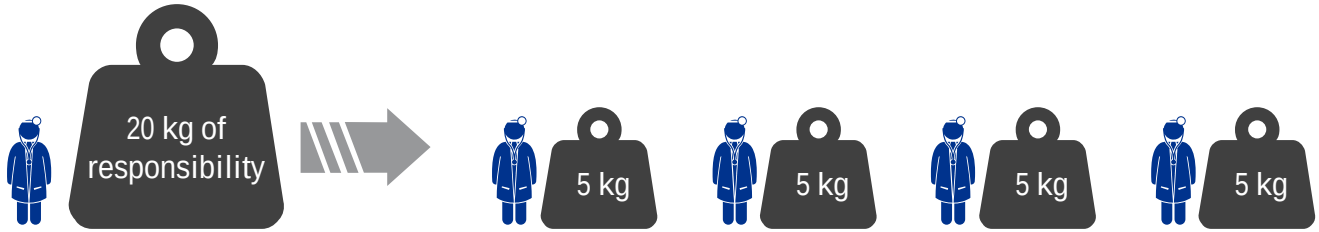
INCREASED STAFF CAPACITY

Why?

The centre relies a great deal on the presence of one hepatologist. This can be a strength in that there is continuity of care and patients can establish a strong relationship with Dr Bourgeois. However, one main challenge is that if Dr Bourgeois is unavailable there are relatively few people to fill in the gap

How?

Having more staff would help to spread the burden of responsibility at the centre which currently rests primarily with Dr Bourgeois



INCREASED RESOURCES FOR ELASTOGRAPHY MACHINE

Why?

The centre covers a geographically wide catchment area and therefore it is crucial that the centre can access patients in remote areas

How?

The team needs more portable elastography machines to run its outreach clinics and also to use as a tool to triage patients by severity

LIFESTYLE OF PATIENTS

A lot of the patients from the Free Clinic have problems with alcohol which makes it challenging to administer costly treatments

This is particularly challenging when patients have to wait to get started on treatment and in the meantime have little motivation to give up drinking

Antwerp Network Hospital

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY LEVEL?

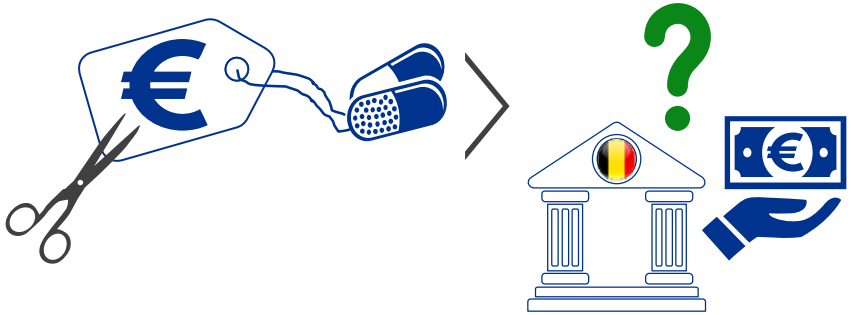
INCREASED ACCESS TO TREATMENT

Why?

Currently, patients can only get the cost of their treatment reimbursed if they have advanced fibrosis or cirrhosis. This means that only the most acutely affected patients can access the new, interferon-free treatments

How?

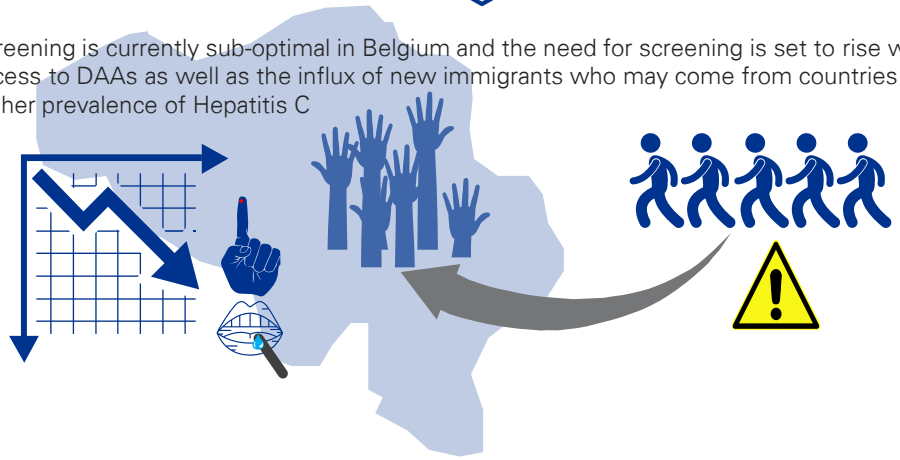
Reduced medication prices may convince the local government to reimburse them



INCREASED SCREENING

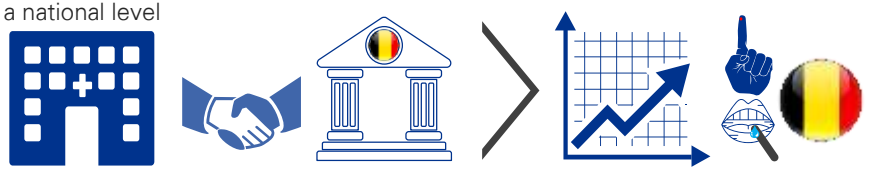
Why?

Screening is currently sub-optimal in Belgium and the need for screening is set to rise with both access to DAAs as well as the influx of new immigrants who may come from countries with a higher prevalence of Hepatitis C



How?

Collaboration with the government is one possible way of improving screening in Hepatitis C at a national level



The centre is also currently involved in awareness-building activities that are directed at both family doctors and patients

Antwerp Network Hospital

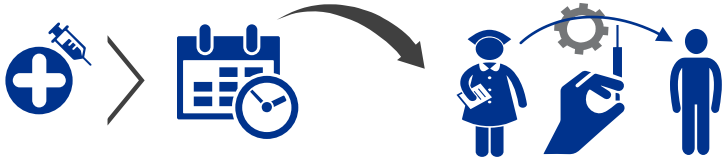
WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

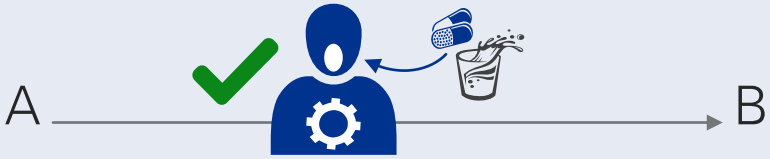
How could this change?

PATIENT THROUGHPUT

With interferon it takes a lot of time to teach patients how to inject the medication

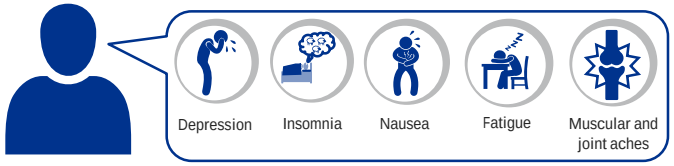


With the DAAs, the process is different since they are administered orally



TOLERABILITY FOR PATIENTS

Interferon therapies were associated with a number of side effects



DAA treatments are all oral and treatment time is usually three to six months

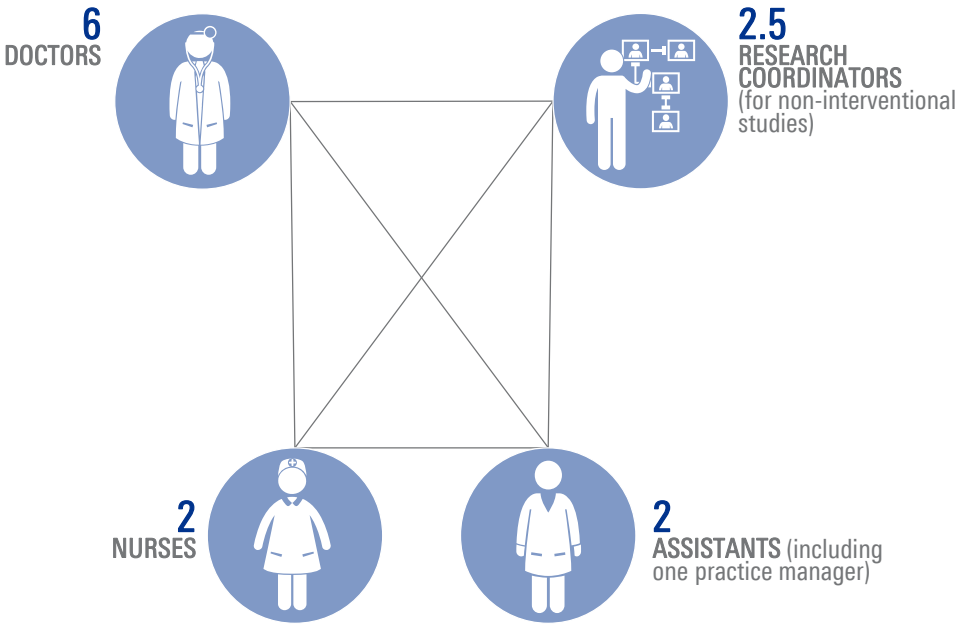
Praxiszentrum Kaiserdamm, Germany

Praxiszentrum Kaiserdamm, Berlin

The Berlin team is led by Dr Uwe Naumann

The centre is able to treat patients with all levels of fibrosis and has a strong opioid substitution therapy (OST) programme

HCV team



PATIENT POOL

3-5

NEW PATIENTS PER WEEK

CATCHMENT AREA:

BERLIN, PARTICULARLY CHARLOTTENBURG AND SPANDAU LOCALITY

KEY FEATURES OF CENTRE:

Capacity to treat wide spectrum of patients with DAAs

Strong opioid substitution therapy (OST) programme

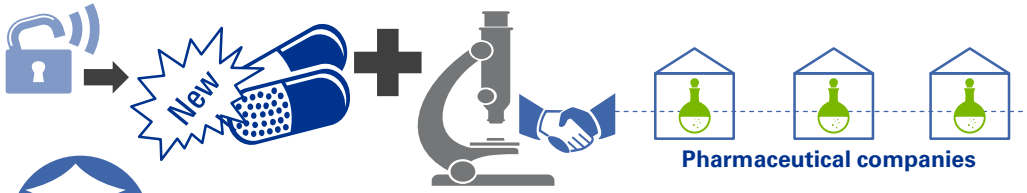
Praxiszentrum Kaiserdamm, Berlin

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

ACCESS TO NEW TREATMENTS

Why?

The centre has access to new DAA treatment methods, and also takes part in non-interventional studies in collaboration with pharmaceutical companies



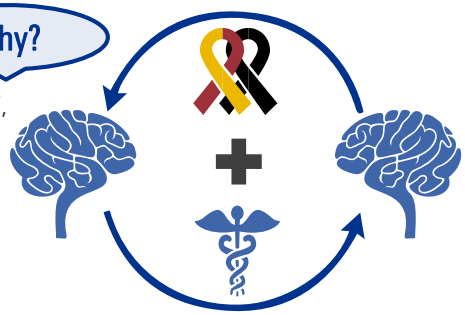
How?

Access to all oral DAAs allows the centre to treat an increased number of newly eligible patients

EXPERIENCED, KNOWLEDGEABLE STAFF

Why?

Staff have a high level of knowledge about HCV, comorbidities, and treatment methods



How?

The team has a lot of experience with treating HIV, and are able to apply their skills from this to treating HCV, as well as use it to better manage co-infected patients

Staff have received specialised training delivered with the assistance of pharmaceutical companies, which helps them to keep their knowledge up-to-date. There is a low rate of staff turnover, with a good sense of team spirit at the centre

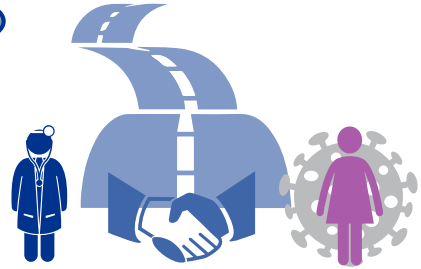
GOOD RELATIONSHIP BETWEEN DOCTORS AND PATIENTS

Why?

Patients have a good, trusting relationship with their doctors and the rest of the team

How?

Many patients have been with the centre for many years, some for decades, allowing doctors to form a long-standing relationship with them



Praxiszentrum Kaiserdamm, Berlin

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

INCREASED CAPACITY TO SEE PATIENTS

Why?

Although new treatment methods have many positives, they also mean that demand has risen, and the centre struggles to meet this need. It is common for patients to wait one to two months for an initial appointment, and then a further four weeks for an ultrasound. By the time patients get their test results, it could be three to four months from their first contact with the centre

How?

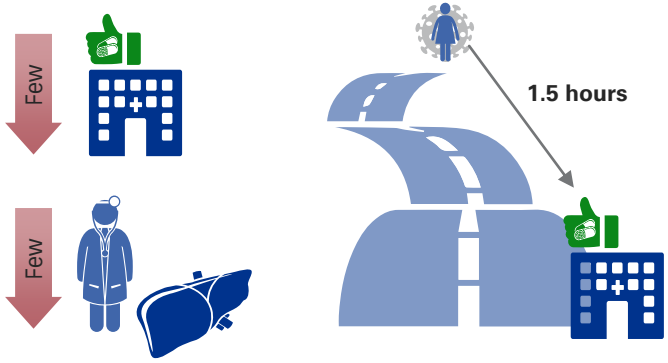
Prioritisation of patients allows for emphasis to be placed on the most acute cases

Longer term, more staff and treatment centres will increase capacity

MORE RESOURCES TO DEAL WITH THE CENTRE'S WIDE CATCHMENT AREA

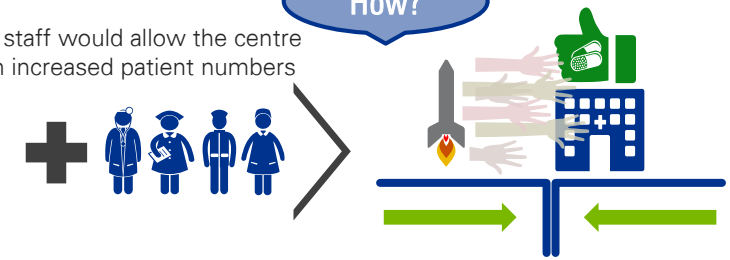
Why?

There are not many specialised hepatologists in the Berlin area, and very few centres where treatment can occur. Even though the standard of care delivered by the centre is generally good, some patients have to travel as long as one and a half hours to the centre



How?

Hiring more staff would allow the centre to cope with increased patient numbers



Alternatively, setting up more centres would reduce patient travel distances

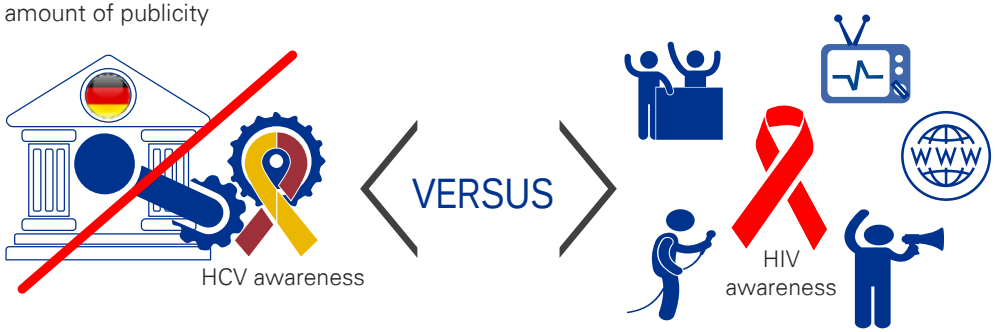
Praxiszentrum Kaiserdamm, Berlin

HOW CAN HCV CARE BE IMPROVED AT A NATIONAL LEVEL?

INCREASED LEVELS OF PUBLIC AWARENESS AND TESTING

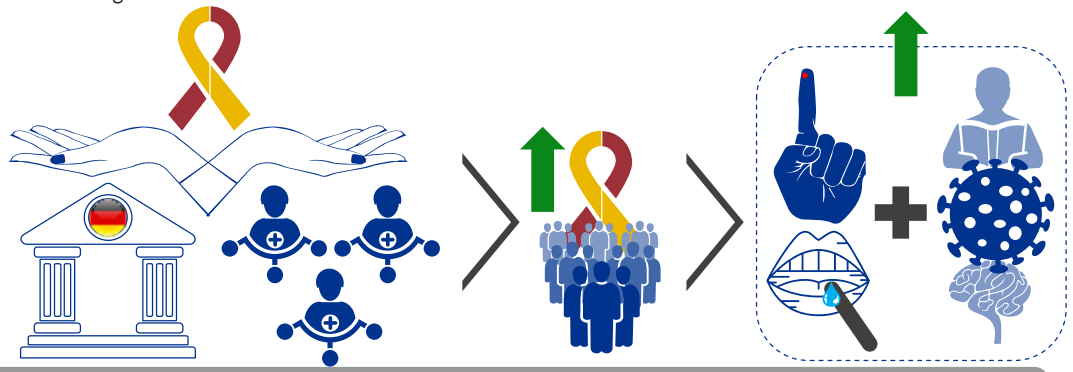
Why?

There is no HCV-related government programme to encourage awareness and screening for the disease. This is a stark contrast to action taken relating to HIV, which received a large amount of publicity



How?

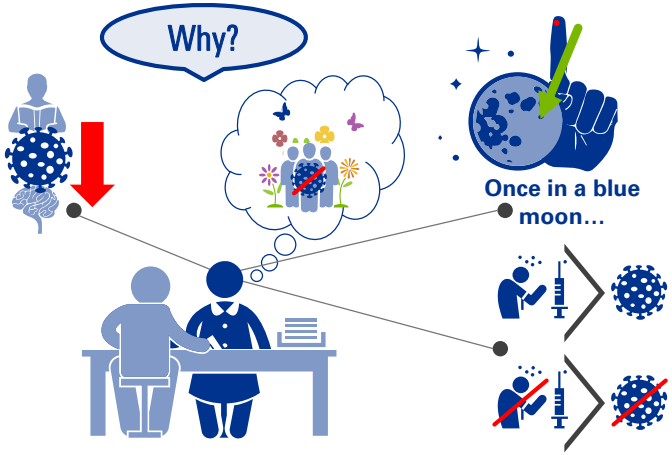
Greater understanding and support from the government and other health organisations could help to increase public awareness of HCV, encourage more people to get tested, and improve knowledge of the disease



BETTER KNOWLEDGE AMONGST GPS

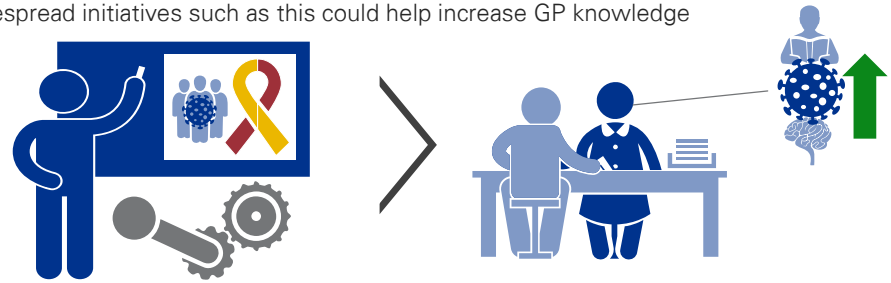
Why?

Many GPs do not have a high level of knowledge of HCV, with some thinking that none of their patients are infected, or that only drug users can have Hepatitis C. GPs seldom test for the disease



How?

Training programmes for GPs will help increase awareness amongst the medical community, to highlight facts such as the prevalence of HCV, and the fact that anyone can be infected. One of the doctors from Praxiszentrum Kaiserdamm sometimes visits other centres to deliver training. More widespread initiatives such as this could help increase GP knowledge



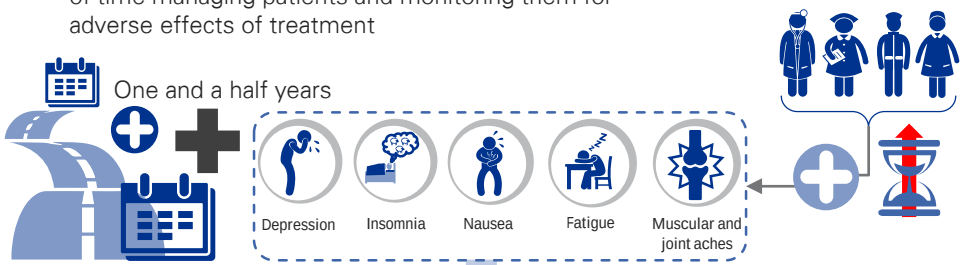
Praxiszentrum Kaiserdamm, Berlin

WHAT IMPACT HAS THE ARRIVAL OF THE NEW THERAPIES HAD ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

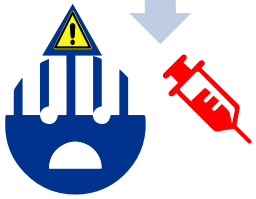
ALL ORAL TREATMENT

Interferon-based treatment was time consuming (often taking up to one and a half years) and frequently came with side effects for patients. Staff had to spend a lot of time managing patients and monitoring them for adverse effects of treatment



PATIENTS ARE MORE WILLING TO UNDERGO TREATMENT

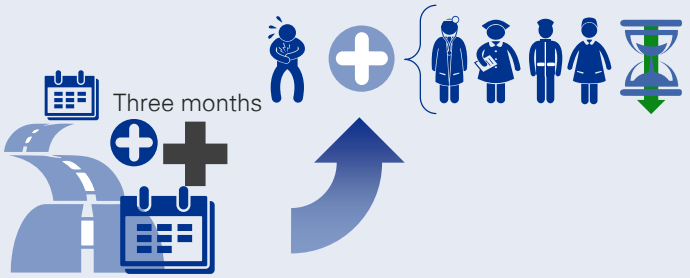
Interferon-based treatment is both time consuming and often comes with side effects. Many patients were also reluctant to undergo treatment



How did this change?

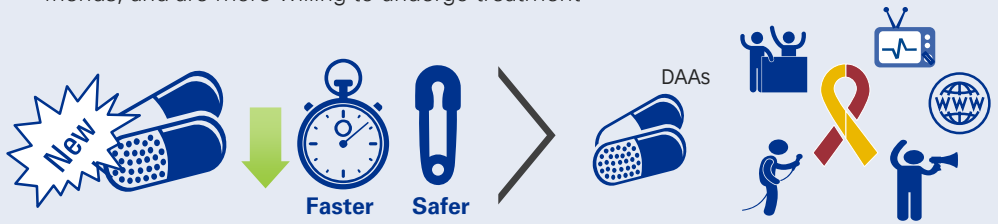
ALL ORAL TREATMENT

With the introduction of DAAs, treatment time is now typically three to six months



PATIENTS ARE MORE WILLING TO UNDERGO TREATMENT

DAA treatment is now all oral with a typical treatment time of three to six months. Many patients have heard about the new treatment, either in the media or from friends, and are more willing to undergo treatment

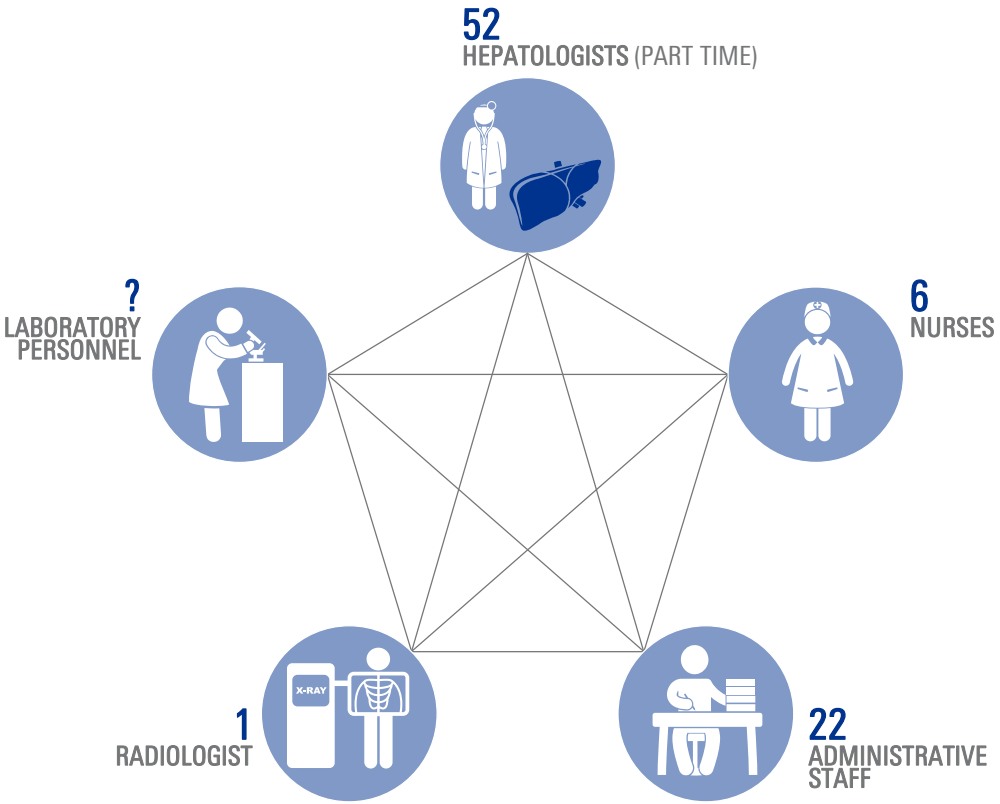


New Cairo Viral Hepatitis Treatment Centre, Egypt

New Cairo Viral Hepatitis Treatment Centre

The team at the New Cairo Viral Hepatitis Treatment Centre is led by Prof. Mohammed El-Kassas

HCV team



PATIENT POOL

~7,000

HCV PATIENTS

CATCHMENT AREA:

CAIRO CITY, ONE OF SIX CENTRES

KEY FEATURES OF CENTRE:

- Participation in National Program for Treatment of Chronic HCV in Egypt
- Government support for funding of treatment
- Endemic rates of HCV in Egypt

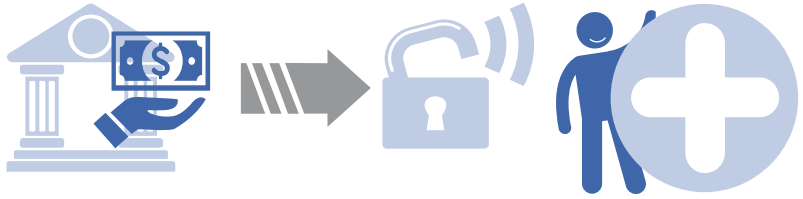
New Cairo Viral Hepatitis Treatment Centre

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

COLLABORATION WITH THE EGYPTIAN GOVERNMENT

Why?

Financial support from the government helps patients gain access to treatment



How?

Since Egypt is generally a low-income country, and HCV medication is typically expensive, government funding has been allocated to help cover the cost of treatment, although it can take some time for patients to receive government-funded treatment. Agreements have also been made with some pharmaceutical companies to help offer treatment at a reduced price

DEDICATED AND COMMITTED STAFF

Why?

HCV is a major health problem in Egypt and clinic staff are committed to its treatment and eventual eradication

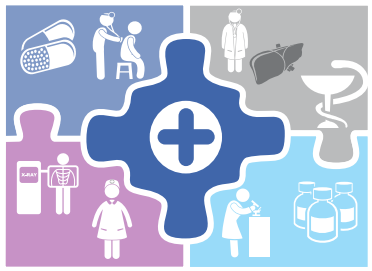
How?

Staff members commit a lot of time and energy to the treatment of HCV and fully believe in efforts to treat the disease nationwide. This is not only the health workers but also our admin. support team, the data managers etc.

INTEGRATED CARE

Why?

The centre offers a good level of integrated care for patients, making use of multiple members of staff, treatment and diagnostic options in house



How?

Staff at the centre includes hepatologists, full-time nurses, a radiologist, research staff, and administrative staff. Facilities include a research laboratory, an endoscopy suite and wards for patients

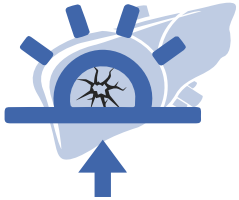
New Cairo Viral Hepatitis Treatment Centre

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

EARLIER SCREENING FOR LIVER COMPLICATIONS

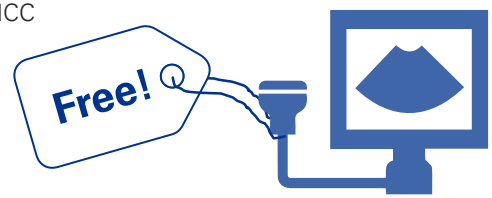
Why?

One of our goals is to detect liver damage much earlier so that patients have a better chance of receiving treatment and living a healthier life



How?

Ideally, if the use of ultrasound was free of charge for the patient, we would be able to screen much earlier on for cirrhosis and HCC

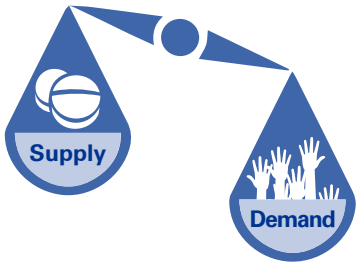


HOW CAN HCV CARE BE IMPROVED AT A NATIONAL LEVEL?

INCREASED SUPPLY OF HCV MEDICATION

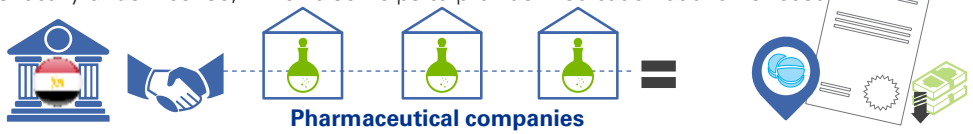
Why?

Since the majority of HCV medication is imported to Egypt from other countries, such as the U.S., this can result in drug shortages impacting on treatment. If demand outweighs supply then new patients face having their treatment delayed so that others can continue with their medication plan



How?

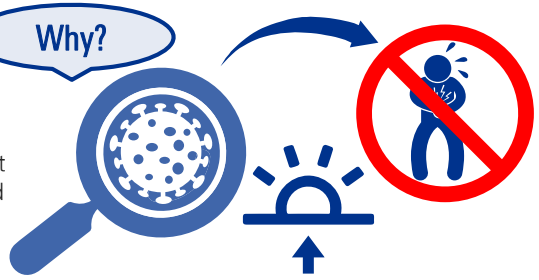
The Egyptian government works with pharmaceutical companies to produce drugs locally under license, which also helps to provide medication at a lower cost



SCREENING PROGRAMME

Why?

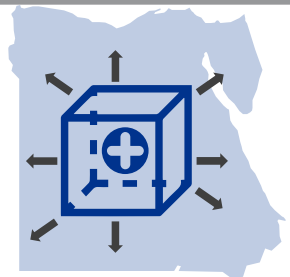
It is important to be able to detect infection before the patient presents with symptoms, so that pre-emptive treatment can occur. A screening programme would be a good way to achieve this



How?

At the moment, Egypt does not have the capacity to treat all the individuals infected with the virus

However, further down the line, when most people currently on the books will have been cured, there will be capacity to set up a screening programme and provide care to more people



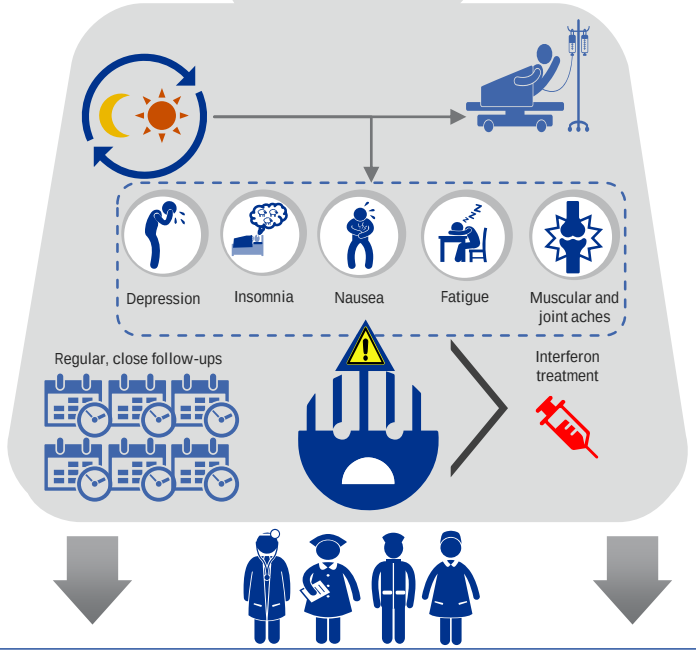
New Cairo Viral Hepatitis Treatment Centre

WHAT IMPACT HAS THE ARRIVAL OF THE NEW THERAPIES HAD ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

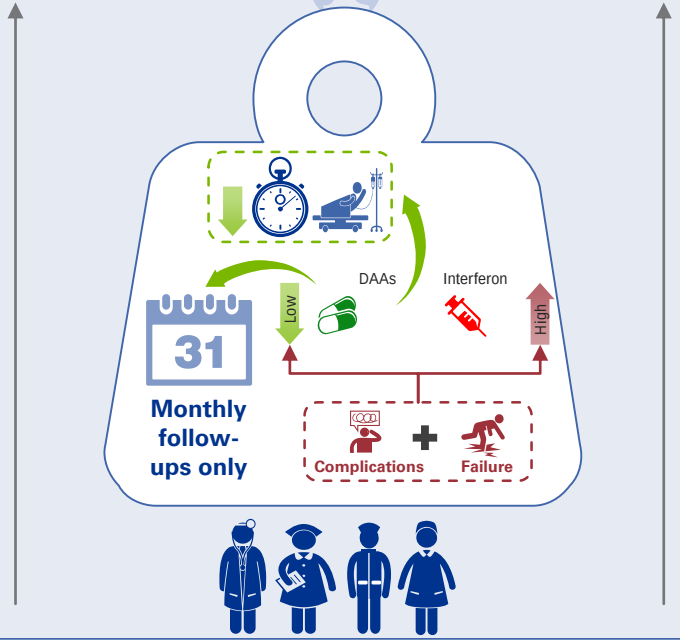
REDUCED WORKLOAD FOR CLINICIANS

When treating patients with **interferon**, staff were required to work long hours administering treatment and managing side effects and the adherence of patients. Regular and close follow up appointments were necessary



How could this change?

Treating patients with **DAAs** now allows staff to reduce the amount of time spent treating each patient – it is faster for them to administer treatment and follow ups only need to occur on a monthly basis, lowering the workload for staff

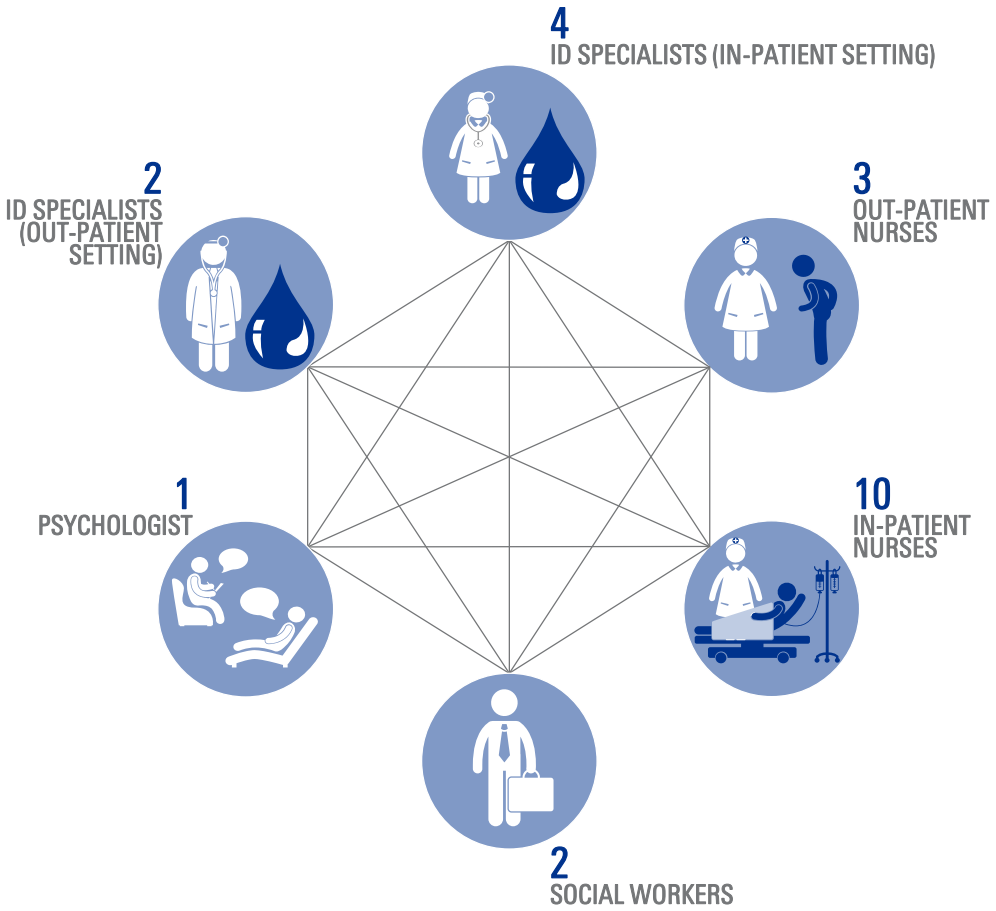


HUHIV and The University Hospital for Infectious Diseases, Croatia

The University Hospital for Infectious Diseases, Zagreb

The HCV team at the University Hospital for Infectious Diseases in Zagreb is led by Prof. Adriana Vince

HCV team



PATIENT POOL

1,000

HCV PATIENTS

CATCHMENT AREA:

WHOLE OF CROATIA

KEY FEATURES OF CENTRE:

- Collaboration with outreach centres
- Collaboration between departments
- Gold standard of care in Croatia

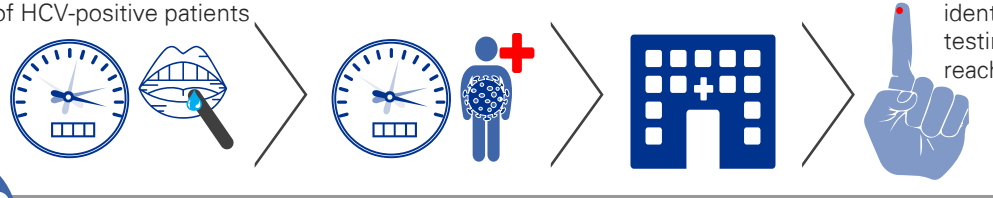
The University Hospital for Infectious Diseases, Zagreb

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

COLLABORATION WITH OUTREACH CENTRES

Why?

Close collaboration with outreach centres such as CAHIV allows for fast diagnosis and treatment of HCV-positive patients



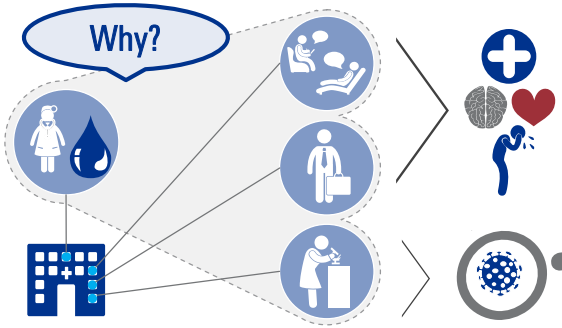
How?

The use of rapid, saliva-based testing technology in outreach centres allows for fast identification of HCV-positive patients, who can then be referred to the hospital for further testing and treatment. Strong links with the outreach centres means that many patients can reach the hospital with testing already carried out

EFFECTIVE COLLABORATION BETWEEN HOSPITAL DEPARTMENTS

Why?

ID physicians cooperate effectively with other members of staff such as social workers, psychologists, and diagnostic lab staff to ensure the provision of well connected care



How?

Collaboration and close communication with staff in the diagnostic labs means that the severity of the disease can be quickly assessed and next steps decided

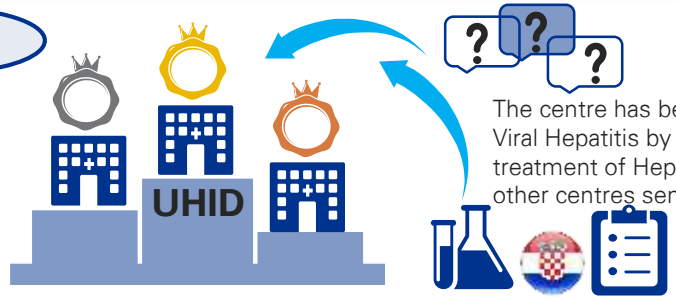
By working closely with social workers and psychologists, doctors can ensure that their patients' psychological needs are looked after. This is especially important since doctors do not always have enough time to address these issues with patients themselves

Close collaboration with the liver transplant unit in another hospital ensures better quality of care for patients with decompensated cirrhosis and/or hepatocellular carcinoma

GOLD STANDARD OF CARE IN CROATIA

Why?

The centre is seen as one of the leading hospitals in Croatia, and is often approached by other centres for assistance with treatment or diagnosis of patients



How?

The centre has been appointed as a National Referral Centre for Diagnostics and Treatment of Viral Hepatitis by the Ministry of Health, making it responsible for setting national guidelines for treatment of Hepatitis C in Croatia The high standard of facilities and staff expertise means that other centres send their samples for analysis

The University Hospital for Infectious Diseases, Zagreb

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

ADDITIONAL STAFF TO HELP WITH ADMINISTRATIVE BURDEN

Why?

Administrative duties take up a lot of time that could otherwise be devoted to the treatment of patients

How?

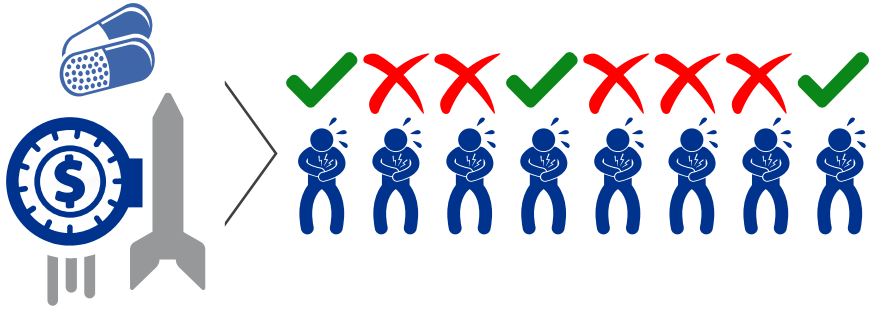
Hiring additional staff or training nurses to take on administrative duties could help to alleviate the burden presented by this problem

HOW CAN HCV CARE BE IMPROVED AT A NATIONAL LEVEL?

DAA TREATMENT MADE AVAILABLE TO ALL PATIENTS

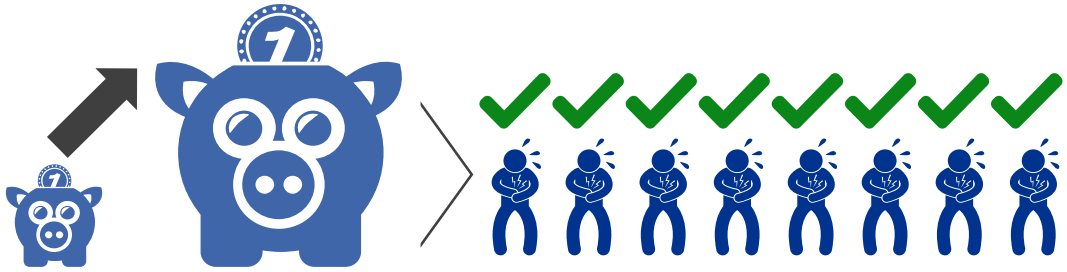
Why?

Currently, only certain patients are eligible for treatment with all oral DAA medication, due to the high cost of the drugs. Patients can receive DAA treatment after prioritisation according to fibrosis stage



How?

Increased funding would be required to increase the availability of all oral DAA medication to all patients



The University Hospital for Infectious Diseases, Zagreb

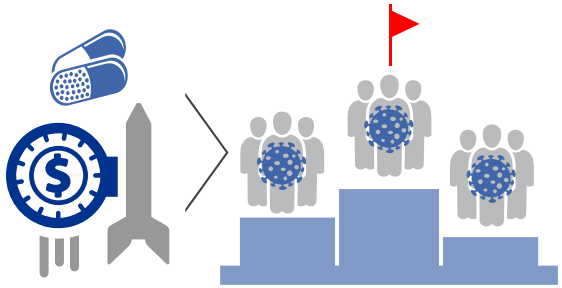
WHAT IMPACT HAS THE ARRIVAL OF THE NEW THERAPIES HAD ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

How could this change?

PRIORITISATION OF PATIENTS

Because of the high costs of new all oral DAA treatments, not all patients can be offered the new treatment immediately, resulting in a need to prioritise certain groups

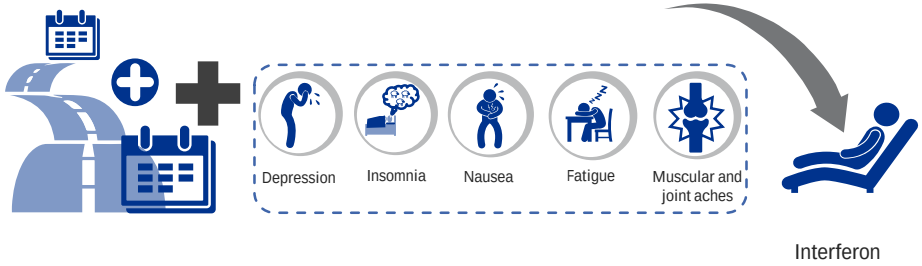


Patient eligibility is determined by fibrosis stage and disease genotype.

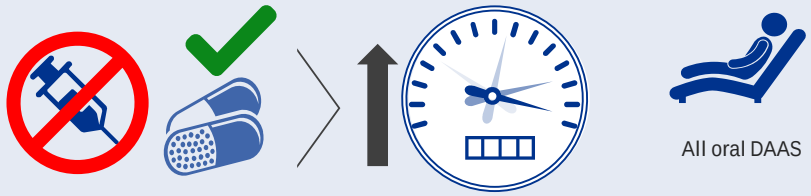
Certain patients groups are given priority access to all oral DAAs, such as patients with liver cirrhosis, HBV/HIV co-infection, severe co-morbidities, and transplant patients

TREATMENT SCHEDULES

Because of the long treatment duration and side effects, many patients were unwilling to undergo treatment or struggled with adherence



Treatment with all oral DAA regimens is generally 12 to 24 weeks. This means that more patients can be treated in a shorter time frame, and that patients who were previously ineligible can now be treated



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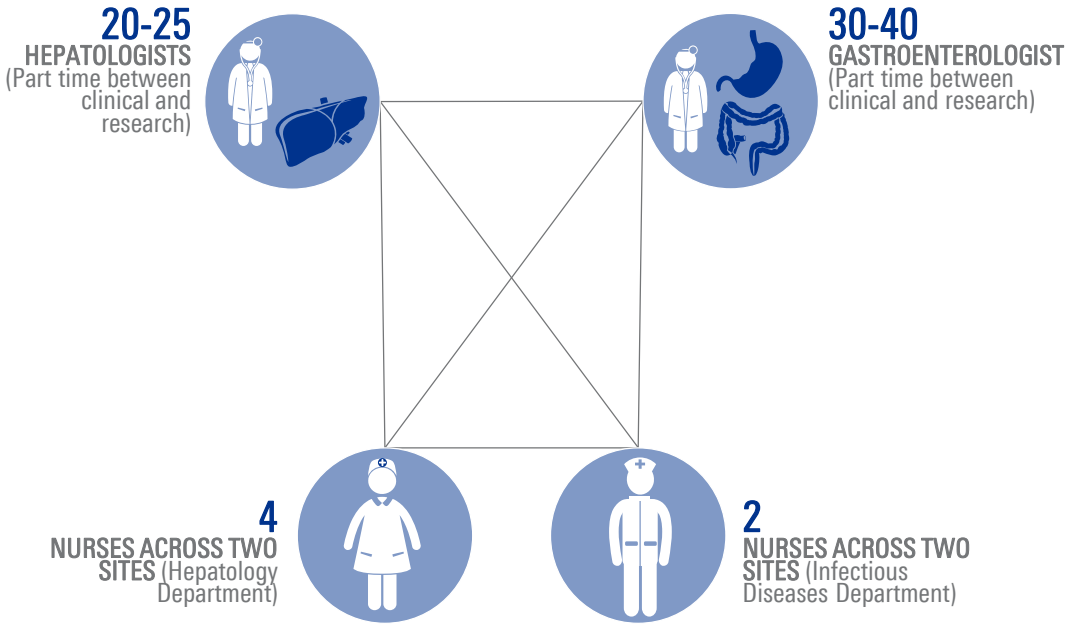
Karolinska University Hospital, Sweden

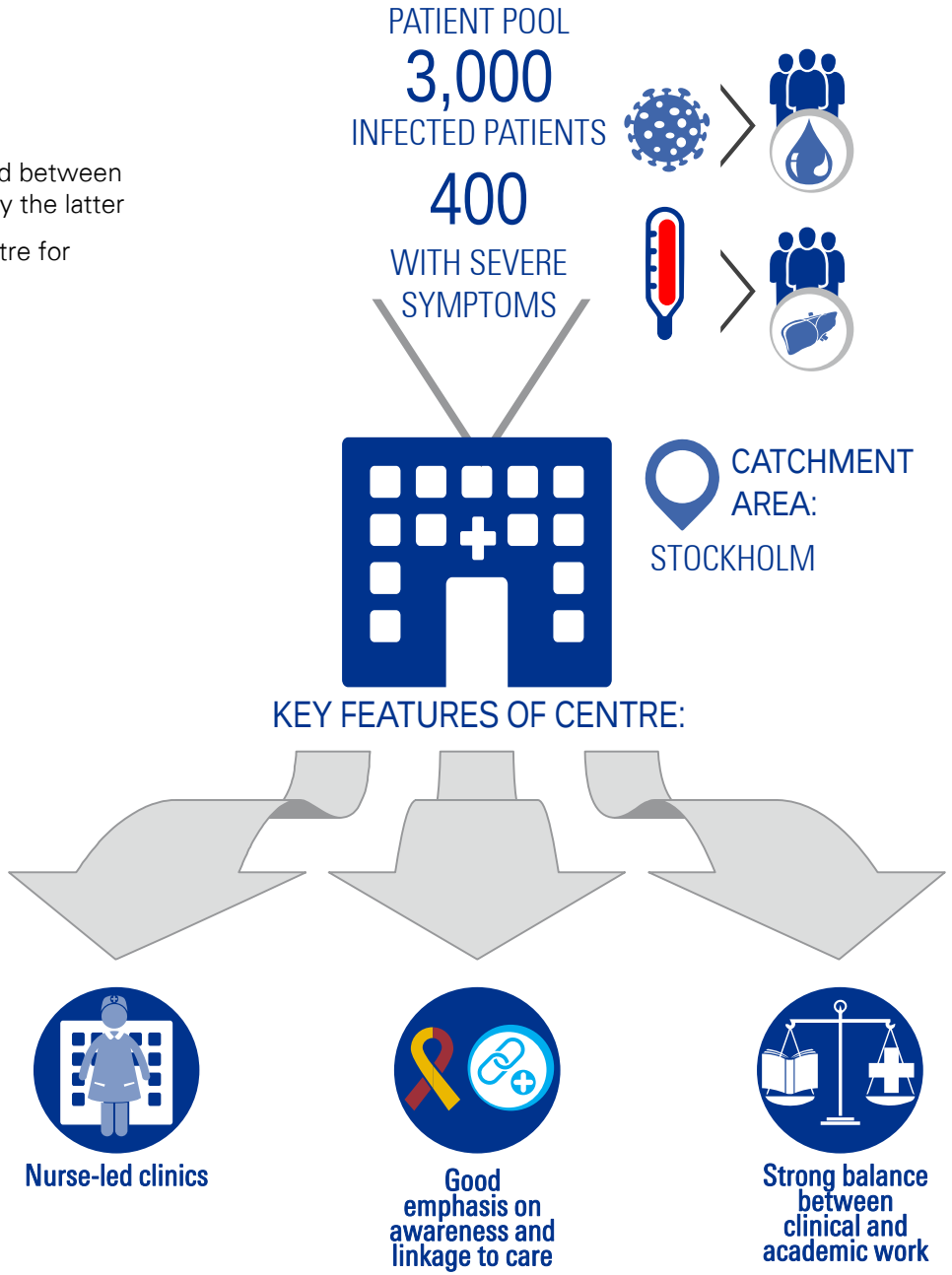
Karolinska University Hospital, Stockholm

The Karolinska team is divided across two sites at Huddinge and Solna. Patient care is divided between the Infectious Disease and Hepatology teams, with the most series patients being handled by the latter

The centre has strong ties with the research institute and acts as a hepatological referral centre for much of Sweden

HCV team





Karolinska University Hospital, Stockholm

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

NURSE-LED CLINICS

Why?

In Sweden nurses take a leading role in the management of patients. This frees up doctors' time to address the most critical patients who need specific care. Another benefit is that the nurses are able to act as the main point of contact for patients, and can build a much stronger relationship with them due to being heavily involved in the management of their disease

How?

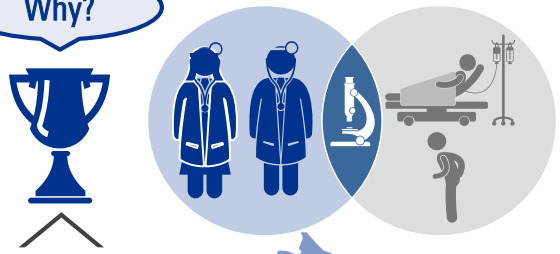
Nurses take the lead at almost every stage of the patient pathway, taking responsibility for testing, communication of results, and administration of treatment

In non-acute cases, doctors analyse tests and communicate treatment plans to the nurses. Other than one call during treatment to discuss any side effects, and a follow up meeting after treatment, patients interact solely with nurses, since doctors do not need to be involved

STRONG BALANCE BETWEEN CLINICAL AND ACADEMIC WORK

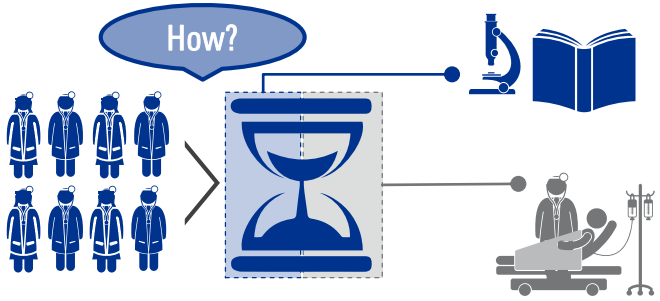
Why?

A strong balance between clinical and research work not only enhances the reputation of the centre, but gives doctors the opportunity to involve patients in their research



How?

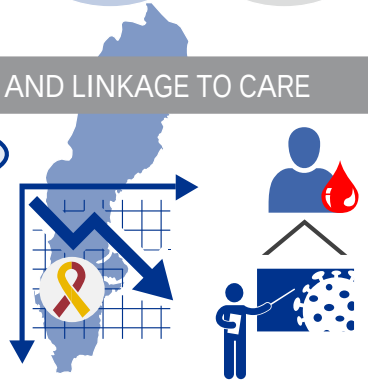
Many doctors at the Karolinska University Hospital divide their time between clinical work and academic research at the Karolinska Institute



GOOD EMPHASIS ON AWARENESS AND LINKAGE TO CARE

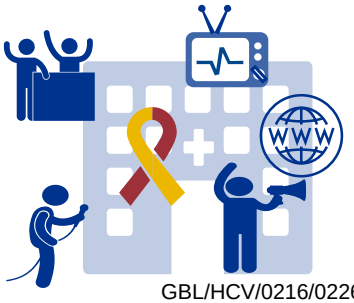
Why?

Awareness levels of Hepatitis C are not particularly high in Sweden, with many people unaware that they might be living with the disease. Having a strong focus on initiatives to raise awareness and provide links to care can help educate people and encourage them to get tested



How?

Staff from the centre are involved in awareness campaigns to increase the general public's knowledge of Hepatitis C, even if they have never visited the Karolinska themselves. Doctors from the Karolinska have appeared on television shows, at public lectures, and have spoken to government representatives about the need for a national HCV plan



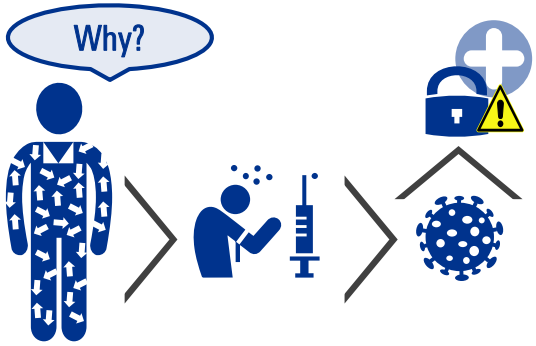
Karolinska University Hospital, Stockholm

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

INCREASED LINKAGE WITH THE PRISON SYSTEM

Why?

Prisoners are a group of patients with an above average susceptibility to HCV infection due to the increased likelihood of exposure to drugs. Additionally, their unique circumstances makes accessing traditional health systems difficult



How?

Karolinska staff are planning to collaborate with prison medical staff to diagnose and treat HCV-positive prisoners. Nurses will visit prisons to conduct diagnostic tests, including elastography, whilst video conferencing facilities will be used to discuss results with patients. Due to the complicated procedures involved in bringing prisoners to the hospital, use of technology can be an important time-saver in the management of patients

In addition to helping reduce infection rates amongst prisoners, the Karolinska team hope to use their work in this area as the basis for a study on reinfection rates

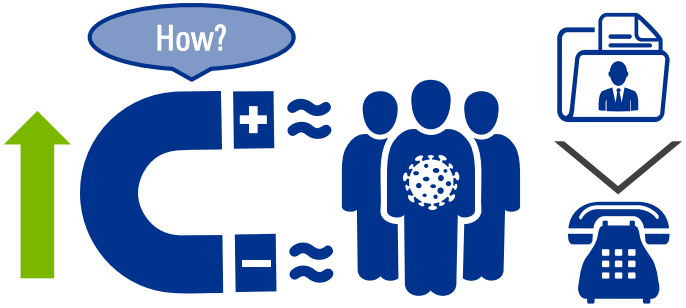
PATIENT RETENTION

Why?

When interferon-based treatments were in use many patients ended up dropping out of the system because of the side effects of the treatment. Some of these patients have not returned to treatment since the development of all oral DAA therapies but may still be living with HCV

How?

The Karolinska plans to use its patient records to identify and call every patient who is on record as having visited the centre but not completed treatment, and encouraging them to come back in for further testing



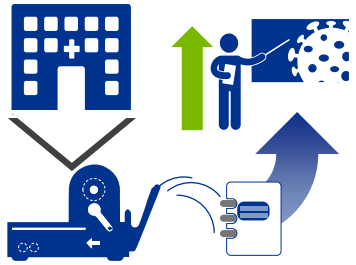
MORE INFORMATION TO GIVE TO PATIENTS

Why?

Having material, such as leaflets or booklets, to give to patients, can help to supplement the information provided by nurses in person

How?

Although the Karolinska currently has some materials which have been provided by external companies, they do not produce their own in-house material. Doing this could help to better educate patients about their disease and treatment



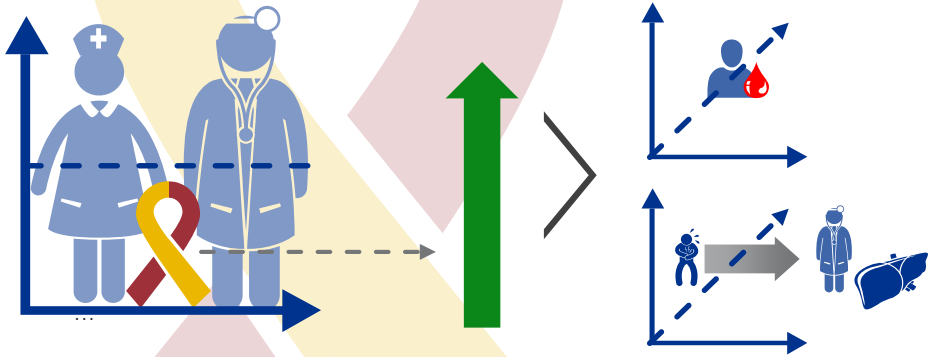
Karolinska University Hospital, Stockholm

HOW CAN HCV CARE BE IMPROVED AT A NATIONAL LEVEL?

GREATER AWARENESS AMONGST GPS

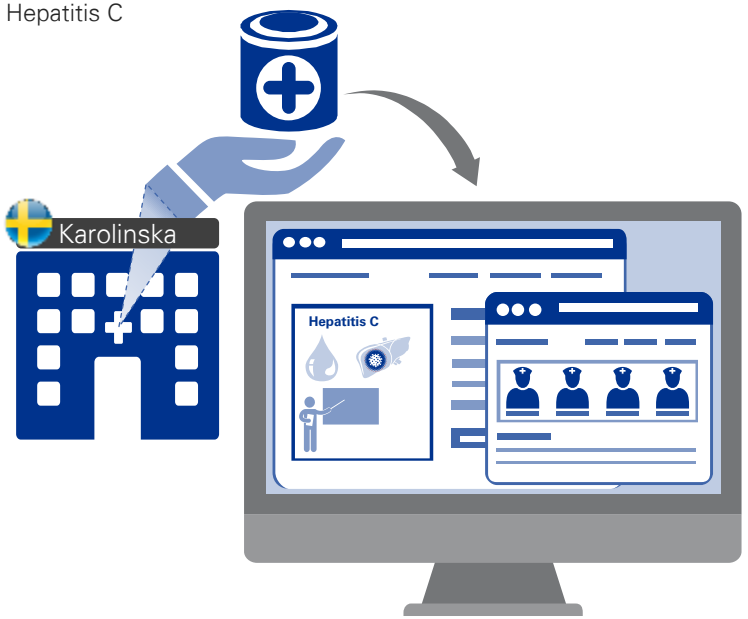
Why?

There currently is not a great level of awareness about HCV amongst primary health practitioners. Improving knowledge in this area of care can help to increase screening levels and referral rates of patients to specialist care

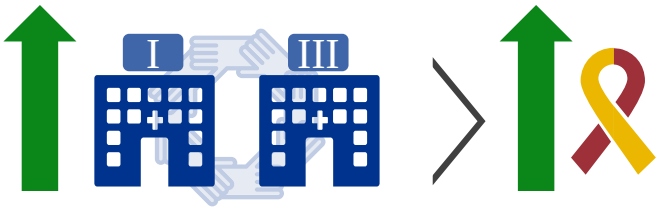


How?

Karolinska staff have contributed to an online training portal aimed at teaching GPs about Hepatitis C



Increased collaboration between tertiary and primary centres on the issue of Hepatitis C can help to raise awareness



Karolinska University Hospital, Stockholm

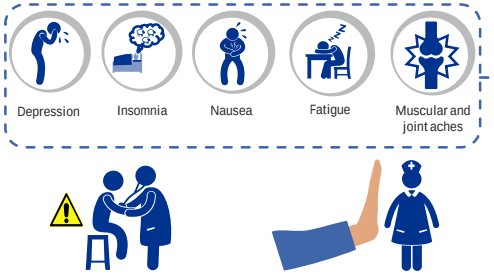
WHAT IMPACT HAS THE ARRIVAL OF THE NEW THERAPIES HAD ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

How could this change?

GREATER NURSE INVOLVEMENT

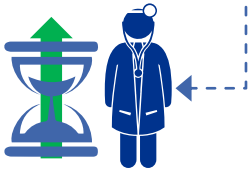
Because interferon-based treatments often caused side effects, the role of nurses was limited as doctors needed to closely manage patients



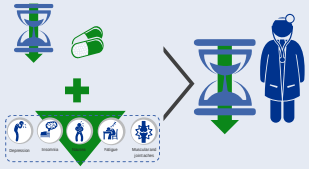
Nurses can now handle patients along the entirety of the pathway, consulting doctors as required regarding treatment

ABILITY TO SEE MORE PATIENTS

Interferon-based treatments often involved side effects, the management of which required a lot of doctors' time. Furthermore, in many cases interferon-based treatment can take up to nearly a year

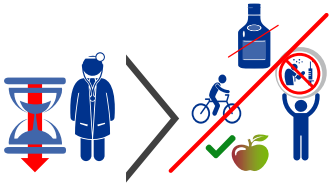


Doctors can now see more patients in the same amount of time, whilst also concentrating on the most severe cases

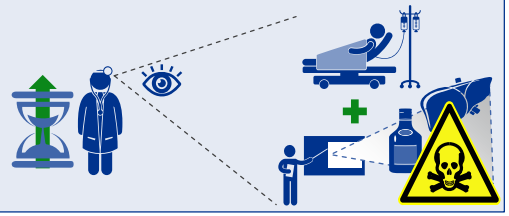


GREATER FOCUS ON POST TREATMENT CARE

When interferon-based treatments were in use, doctors spent a lot of time managing the side effects associated with the medication, and were thus unable to devote time to other issues surrounding healthy lifestyle choices and patient wellbeing



Doctors can now concentrate on more severe cases and important, specialist issues such as patient education and lifestyle improvement (for example, educating patients about the damages alcohol consumption can have on the liver)



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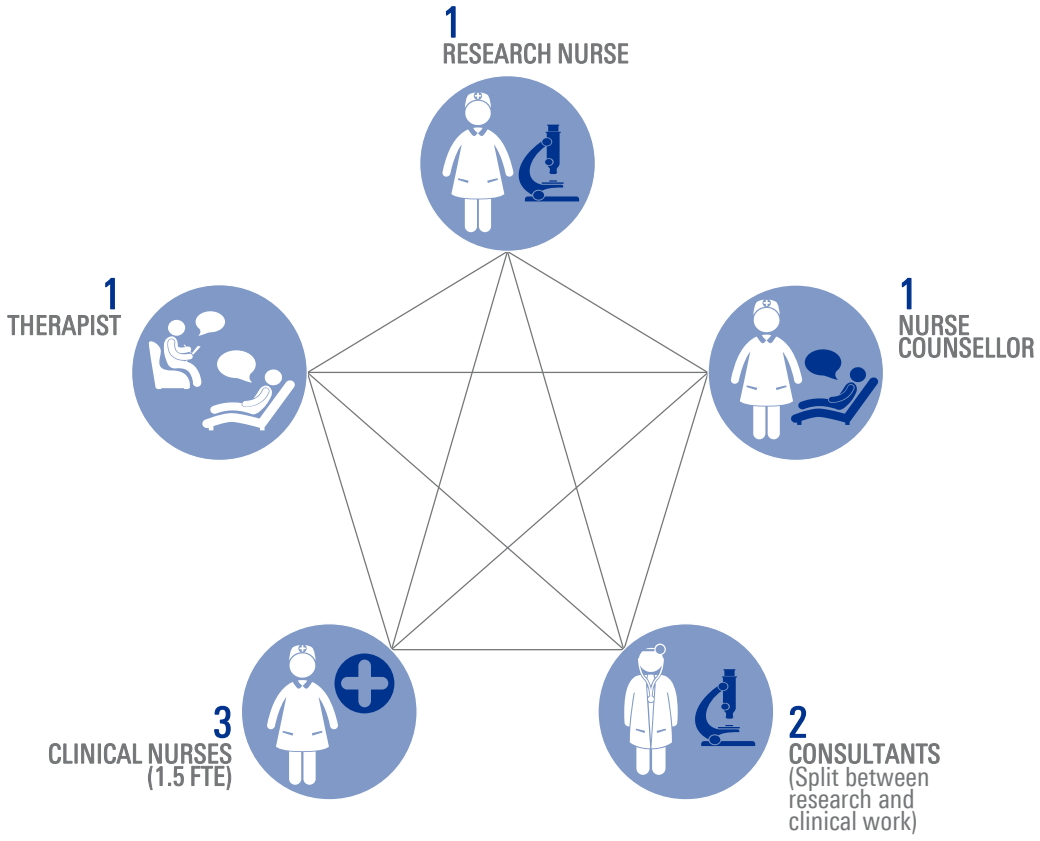
Beaumont Hospital, Ireland

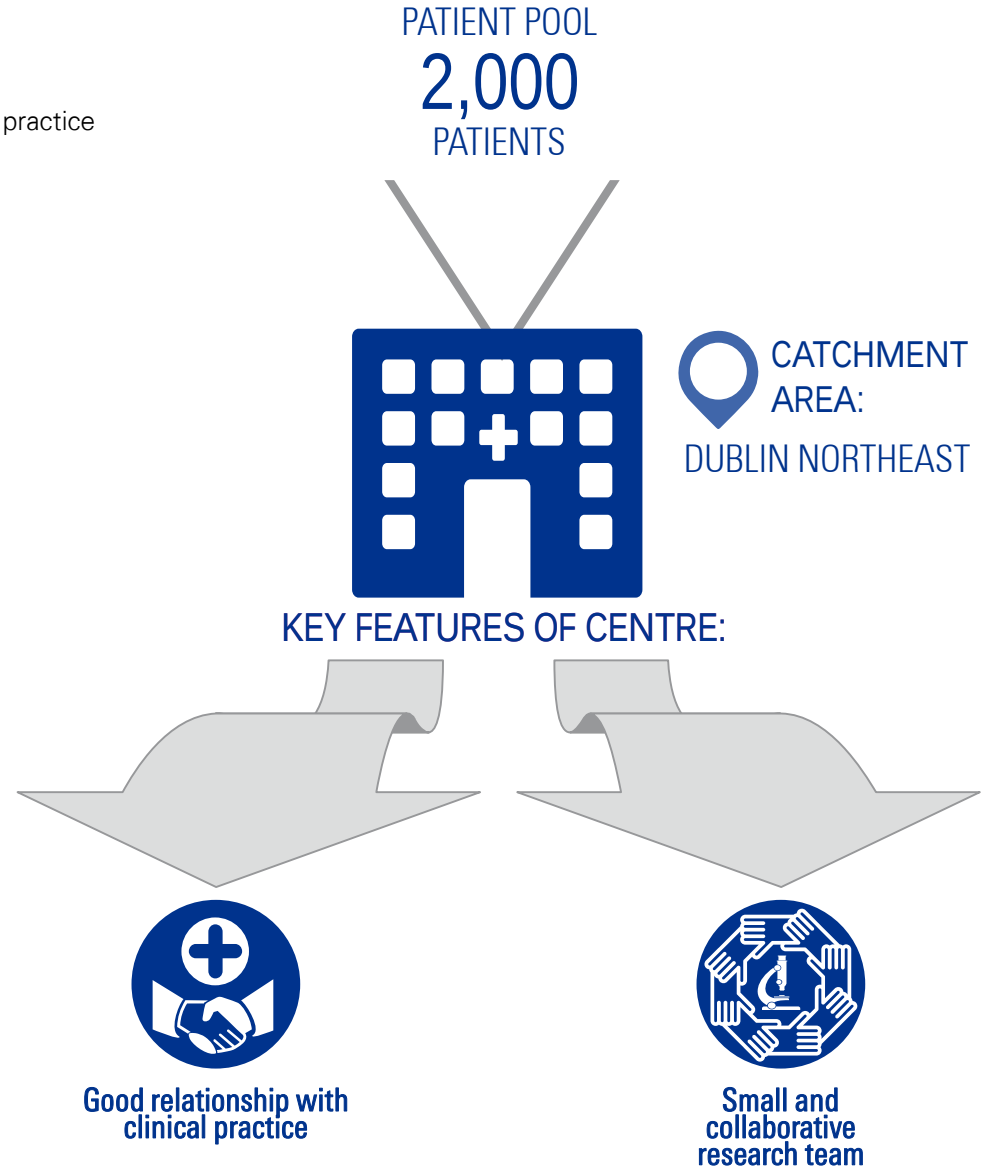
Beaumont Hospital, Dublin

The Beaumont Hospital team is led by Professor Frank Murray

The team has a good focus on research and has a collaborative relationship with the clinical practice

HCV team (includes members outside core team)





Beaumont Hospital, Dublin

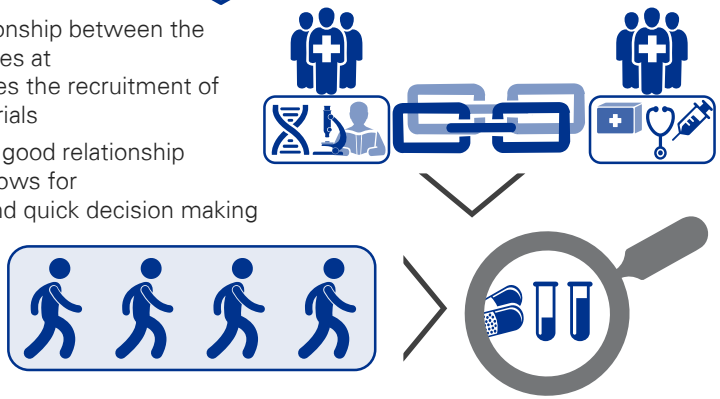
WHAT ARE THE STRENGTHS OF YOUR CENTRE?

GOOD RELATIONSHIP BETWEEN CLINICAL AND RESEARCH PRACTICES

Why?

A close, collaborative relationship between the clinical and research practices at Beaumont Hospital facilitates the recruitment of new patients for research trials

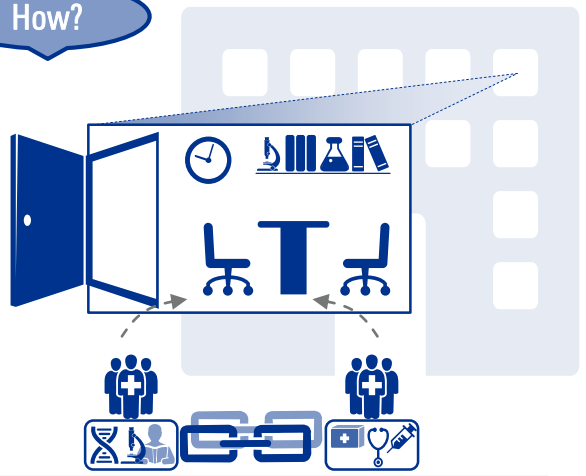
Having a small team with a good relationship between staff members allows for efficient division of tasks and quick decision making



How?

Clinical and research facilities are co-located at the same site, with staff sharing the same office space. This makes communication and sharing of information easy

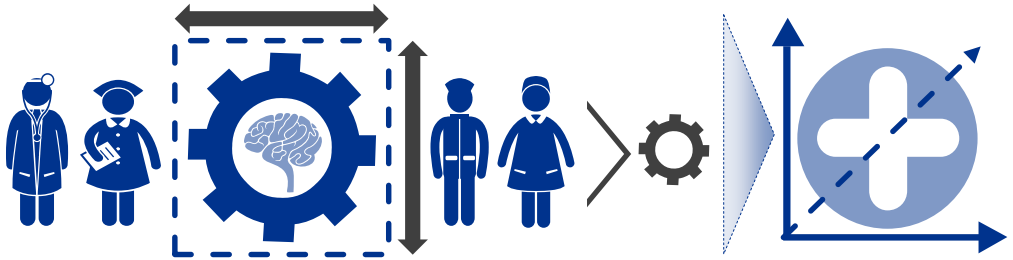
Since both the clinical and research teams are fairly small, it has been easy to develop strong relationships amongst staff members, with decisions made collaboratively



EXPERIENCED TEAM MEMBERS

Why?

Depth and range of experience amongst doctors and nurses in both clinical care and research is a pivotal part of providing patients with the highest levels of care



How?

Staff at Beaumont Hospital have many years experience of working with Hepatitis patients, which they can draw upon on a daily basis

Beaumont Hospital, Dublin

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE?

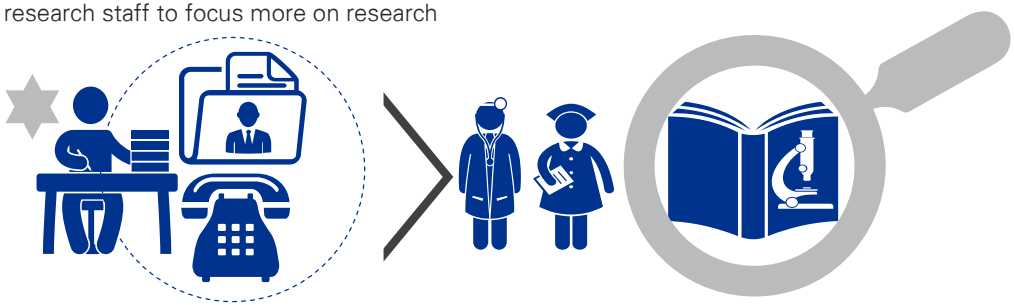
SPECIALIST ADMINISTRATIVE STAFF

Why?

Although the current research team is experienced and collaborative, there are no specialist research administrative staff members at the clinic. This means that nurses and doctors have to dedicate time to duties such as contacting patients for recruitment

How?

Hiring an additional team member to deal exclusively with administrative duties would allow research staff to focus more on research



INCREASED RESOURCES

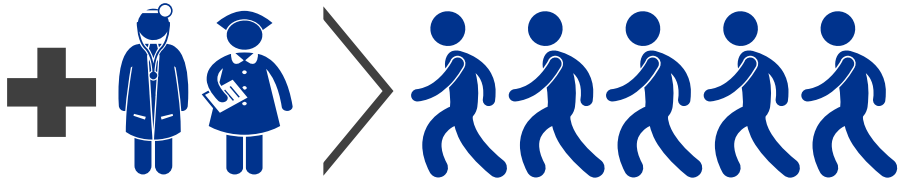
Why?

The introduction of all oral DAA treatments mean that more patients are both willing and able to undergo treatment, placing a strain on the centre's clinical resources

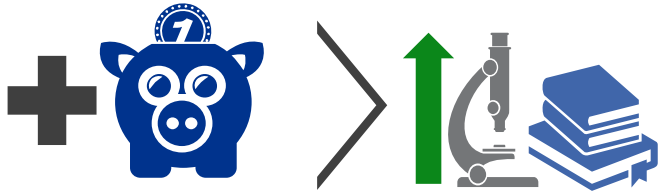
This also means that increased numbers of patients are becoming eligible to take part in studies, stretching the capacity of the research clinic

How?

Hiring additional staff is a solution to the increasing patient numbers



Applying for more funding will allow the centre to expand its current research activities



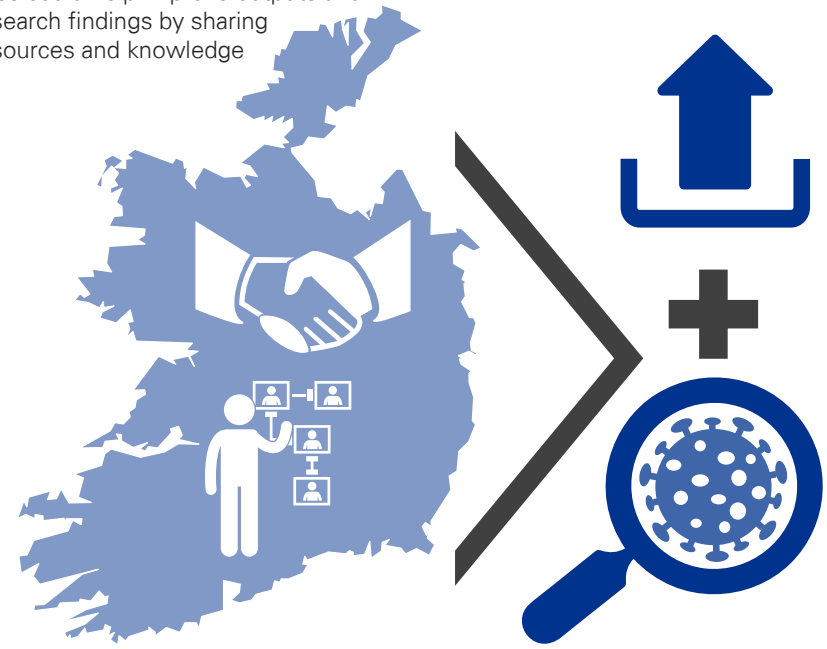
Beaumont Hospital, Dublin

HOW CAN HCV CARE BE IMPROVED AT A COUNTRY LEVEL?

INCREASED COORDINATION BETWEEN RESEARCH CENTRES

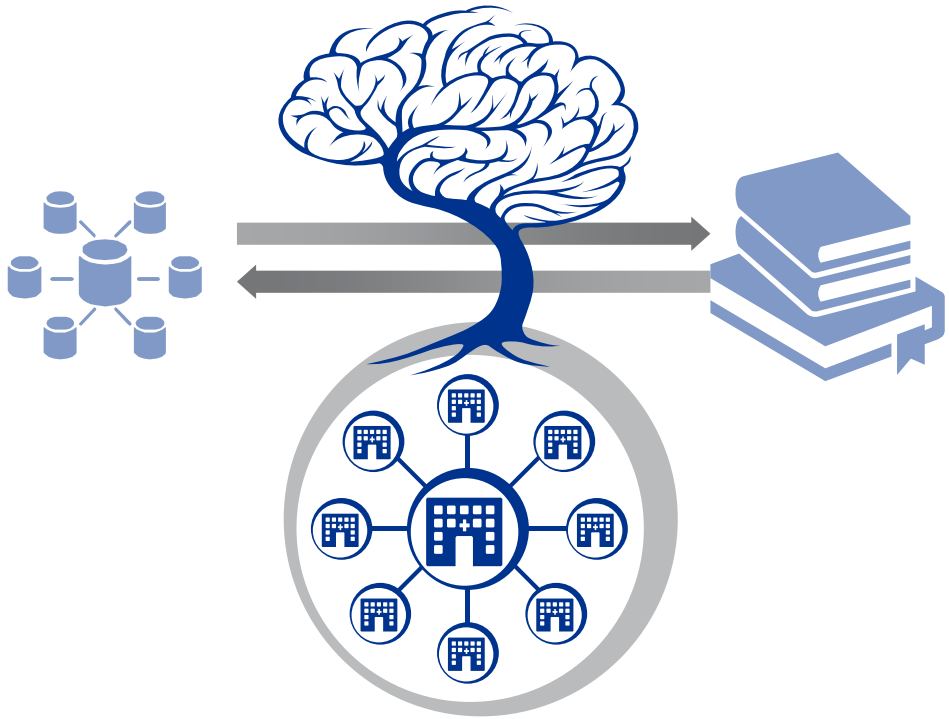
Why?

There are three or four well-established liver research centres across Ireland. Increased coordination and collaboration between these sites could help improve outputs and research findings by sharing resources and knowledge



How?

The current network could be developed further to better facilitate the exchange of information and knowledge between centres, both through formal and informal channels, depending upon the needs of participants



Beaumont Hospital, Dublin

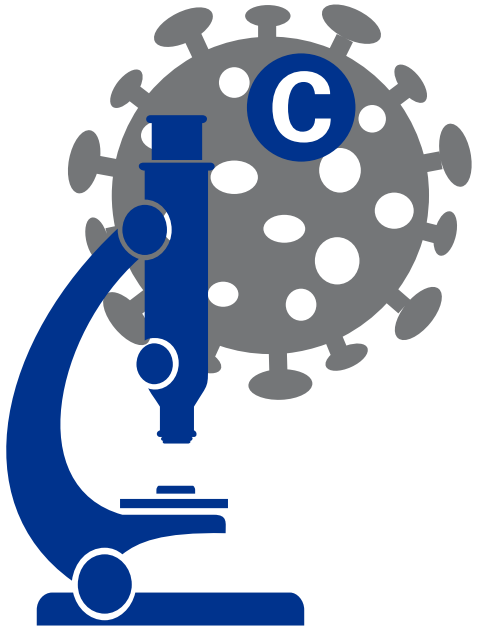
WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What was the status quo?

How could this change?

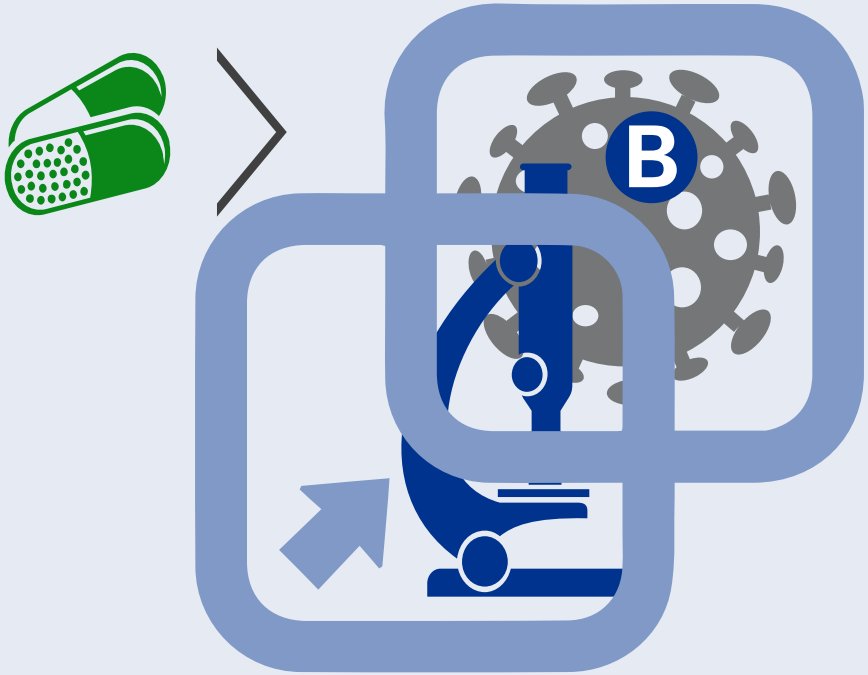
SHIFT TOWARDS HEPATITIS B RESEARCH

Prior to the development of all oral DAA treatments, a significant proportion of Hepatitis research was focussed on developing treatments for HCV



…

Now that all oral DAA treatments have been developed and provided to patients, there is less need for further research into treating HCV, since treatments are now available which successfully do this



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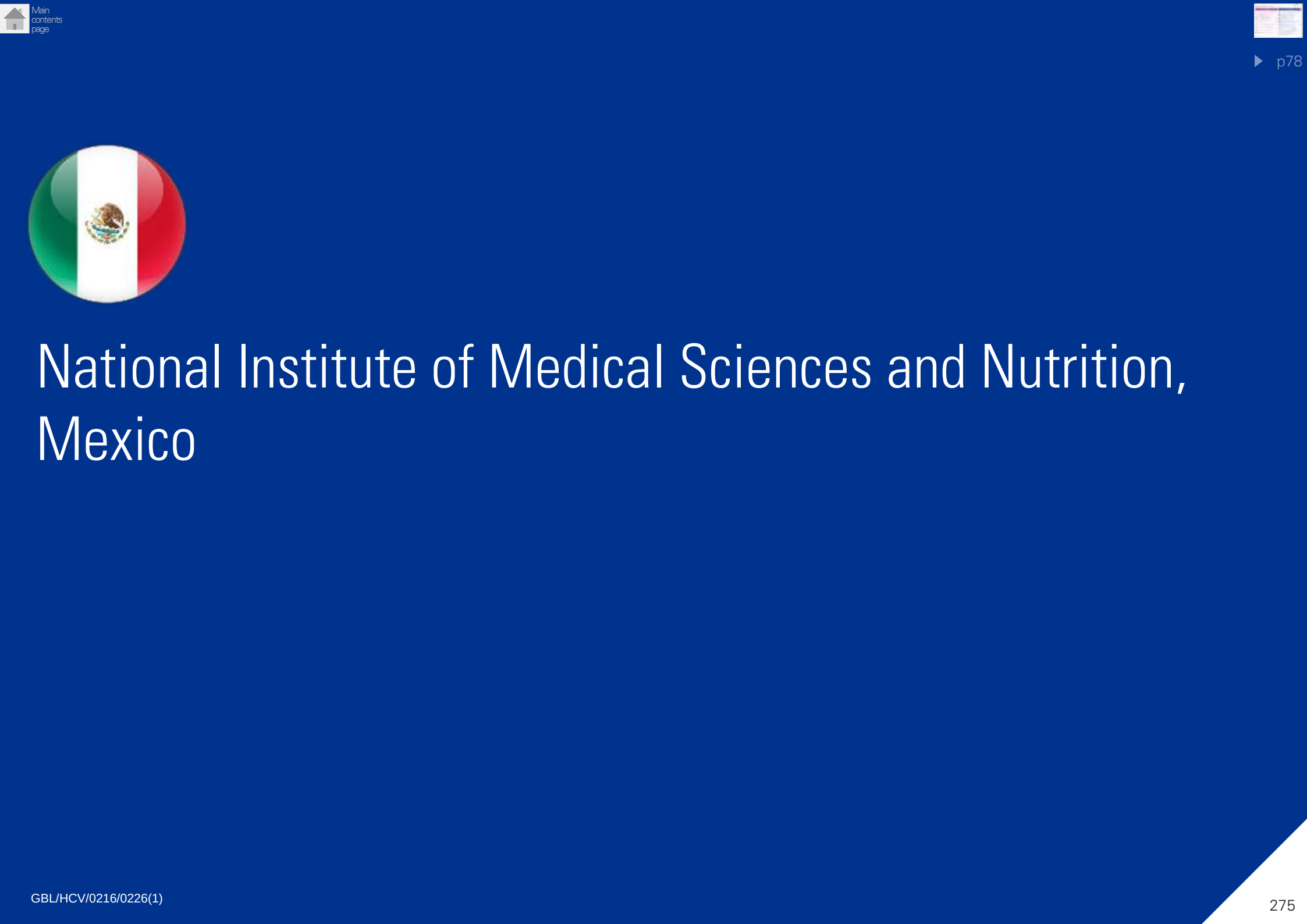


p78

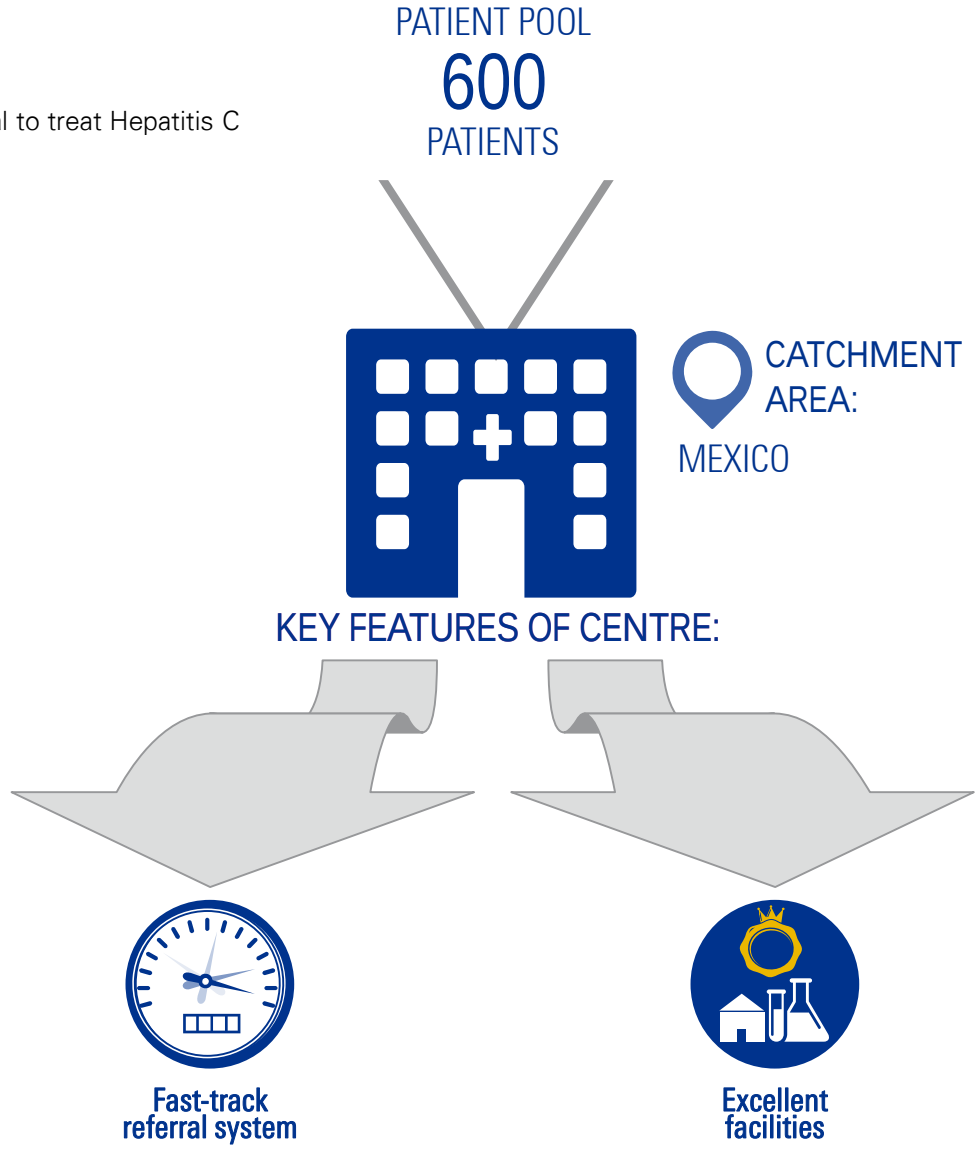
National Institute of Medical Sciences and Nutrition, Mexico

National Institute of Medical Sciences and Nutrition

The National Institute's Hepatitis C team is led by Dr David Kershenobich

The centre is one of eight tertiary hospitals in Mexico that has received government approval to treat Hepatitis C

HCV team (includes members outside core team)



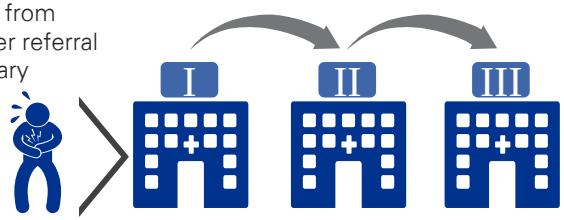
National Institute of Medical Sciences and Nutrition

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

FAST-TRACK REFERRAL SYSTEM

Why?

In Mexico, patients must be referred first from primary to secondary care, before a further referral takes place for them to be treated in tertiary centres such as the National Institute. They are then further assessed at the tertiary centres



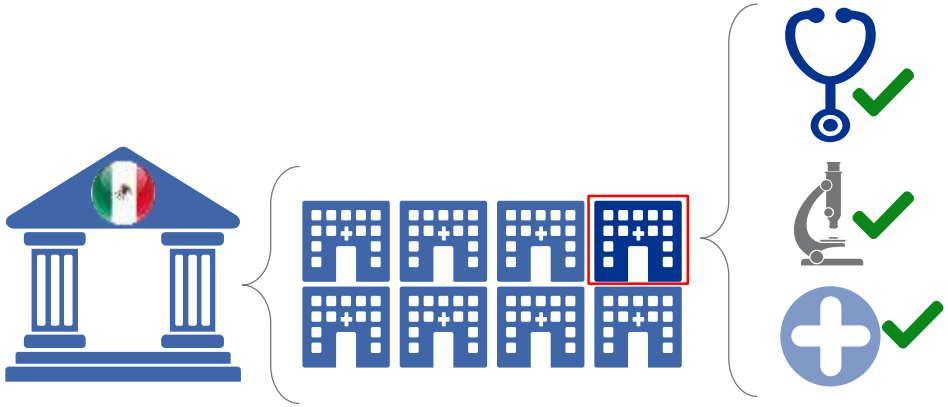
How?

Doctors from the National Institute can conduct a pre-consultation before they are registered with the centre, expediting their movement towards treatment. This saves time for the patient, as they do not have to wait for further referrals before starting their treatment plan

EXCELLENT FACILITIES

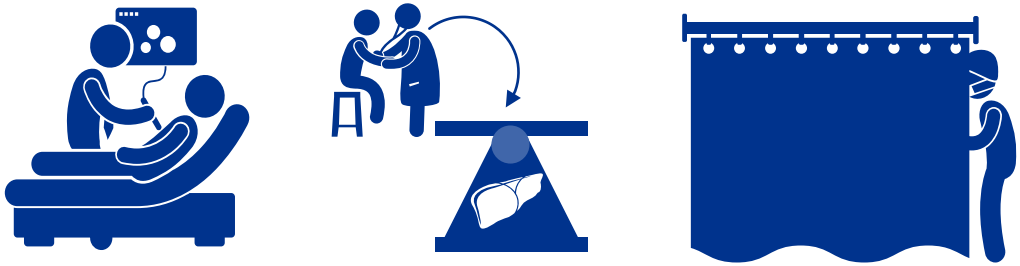
Why?

As one of eight specialist hospitals authorised by the government to treat Hepatitis C in Mexico, the National Institute is well equipped to deal with diagnosing and treating the disease



How?

The Institute has access to elastography machines and can get quick access to results due to in-house laboratories for analysis of liver biopsies. The centre also has ultrasound and endoscopy facilities, and can collaborate closely with other departments such as the ER when necessary



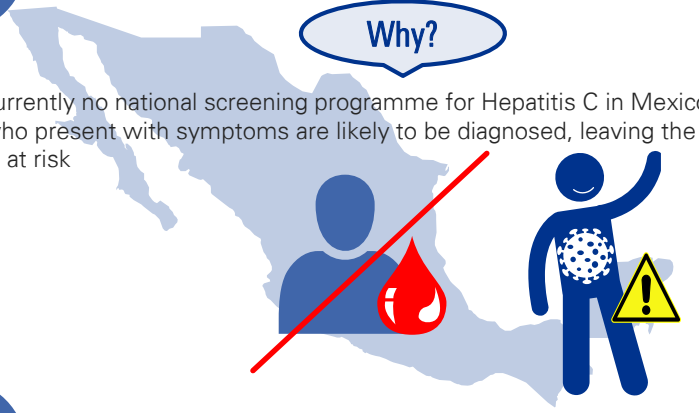
National Institute of Medical Sciences and Nutrition

HOW COULD YOU IMPROVE HCV CARE AT YOUR CENTRE AND AT THE NATIONAL LEVEL?

NATIONAL SCREENING PROGRAMMES

Why?

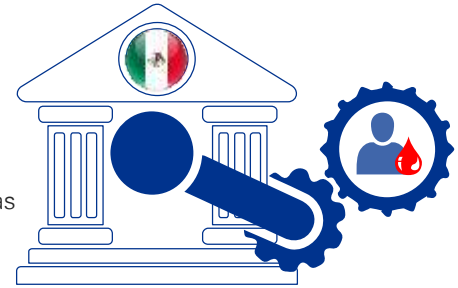
There is currently no national screening programme for Hepatitis C in Mexico, meaning that only patients who present with symptoms are likely to be diagnosed, leaving the asymptomatic population at risk

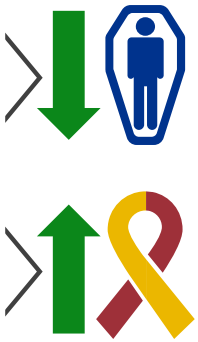


How?

Setting up a government-approved screening programme, either for high risk groups or the general population, would help increase awareness and diagnosis rates

Treating asymptomatic patients would help to reduce the prevalence of the virus, as well as fight morbidity associated with the virus

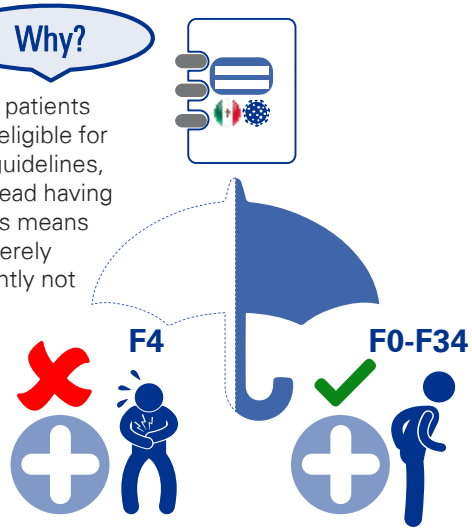




ADJUSTMENT OF TREATMENT ELIGIBILITY CRITERIA

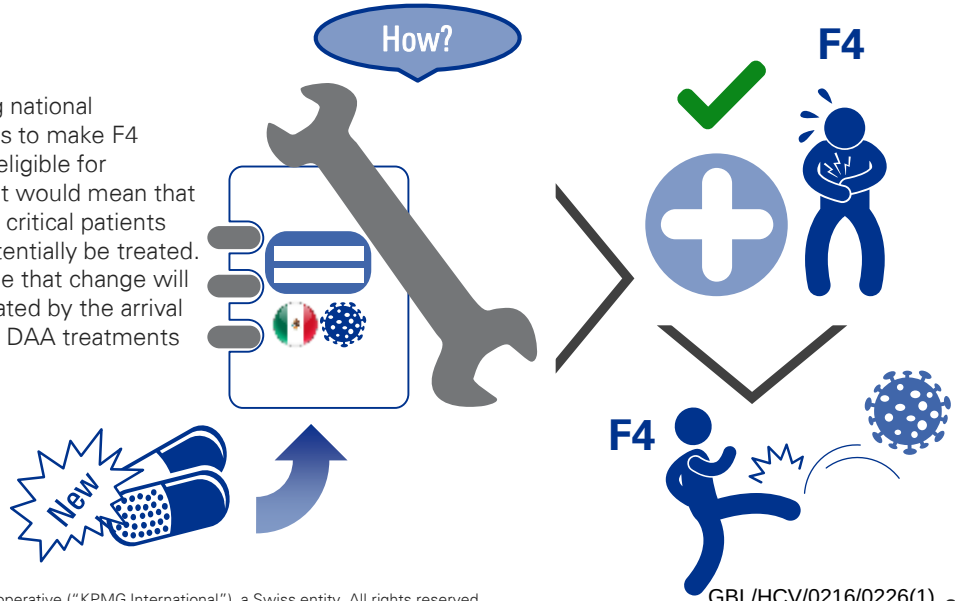
Why?

Currently the most severe patients with cirrhosis (F4) are not eligible for treatment under national guidelines, with F0 to F3 patients instead having approval to be treated. This means that the patients most severely affected by HCV are currently not offered treatment



How?

Adjusting national guidelines to make F4 patients eligible for treatment would mean that the most critical patients could potentially be treated. Staff hope that change will be instigated by the arrival of all oral DAA treatments



National Institute of Medical Sciences and Nutrition

WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

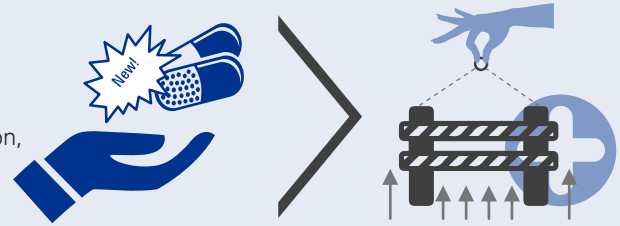
What was the status quo?

How could this change?

INCREASED DEMAND

Because patients are currently only **treated** using interferon-based medication, many people are not eligible or willing to undergo treatment

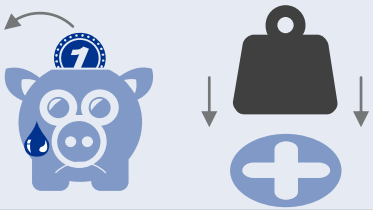
Introducing all oral DAA medication would remove many of the barriers to **treatment** associated with interferon-based medication, making more people eligible for treatment



INCREASED FINANCIAL BURDEN

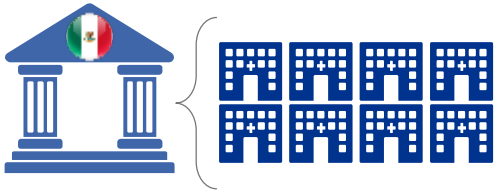
Currently patients are only treated with interferon-based treatments in Mexico

Whilst the introduction of all oral DAAs will open up possibilities in terms of the number of patients who can be treated, it will also result in an increased financial burden on the health system

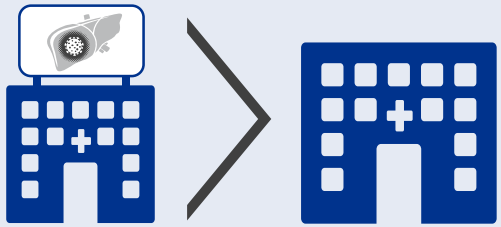


CHANGING MODELS OF CARE

Currently only eight government-accredited hospitals are allowed to administer treatment for Hepatitis C, due to the need to carefully manage patients and the side effects associated with interferon-based regimens



With the introductions of all oral DAAs, doctors anticipate that the provision of care will be able to transition from specialist centres to more general hospitals



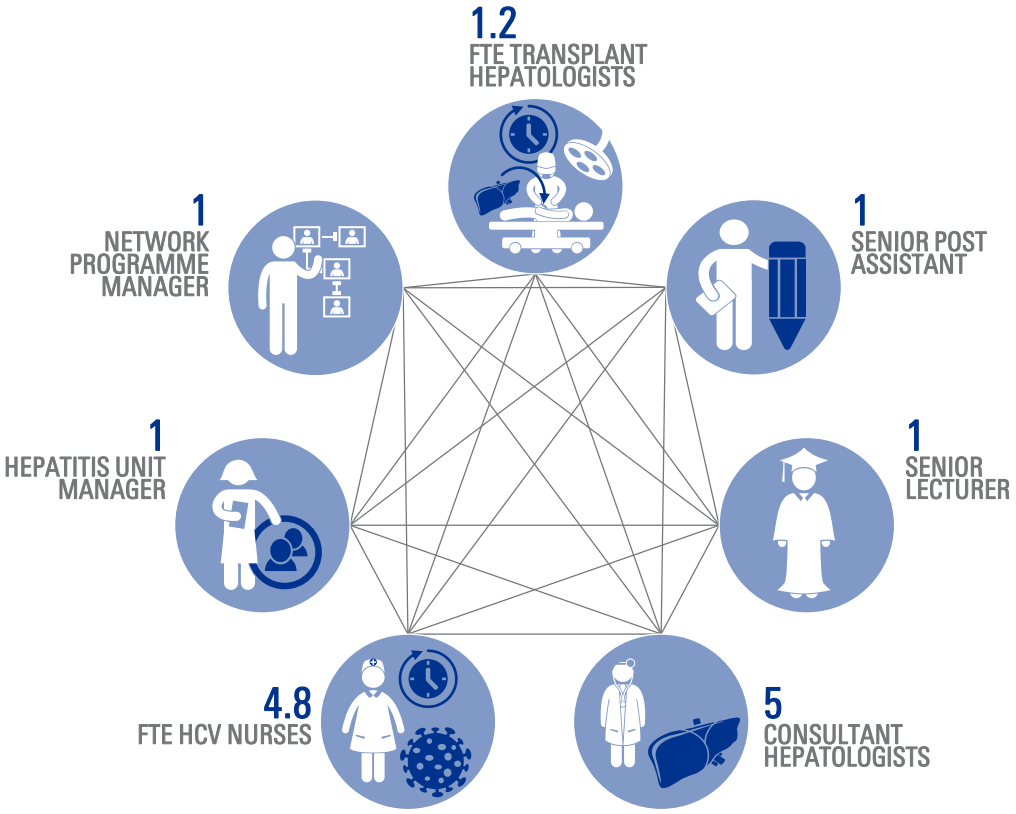
Institute of Liver Studies, Kings College Hospital, London, England

Institute of Liver Studies

The Kings College Hospital Liver Studies team is led by Dr Kosh Agarwal

The centre is Western Europe's largest liver transplant centre and one of the UK's biggest HCV service providers

HCV team



PATIENT POOL

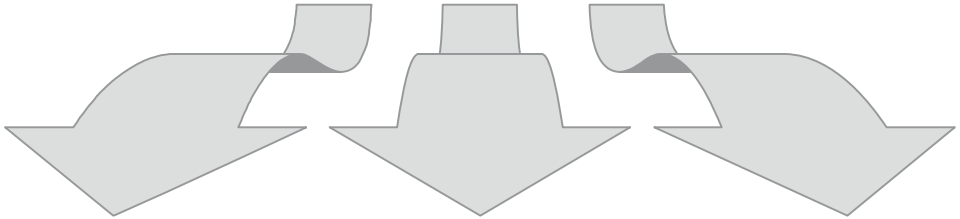
~4,500

PATIENTS

CATCHMENT AREA:

LONDON, WITH UK-WIDE REFERRALS

KEY FEATURES OF CENTRE:



Highly qualified staff

Focal point in a hepatology network

Excellent clinical and research practices

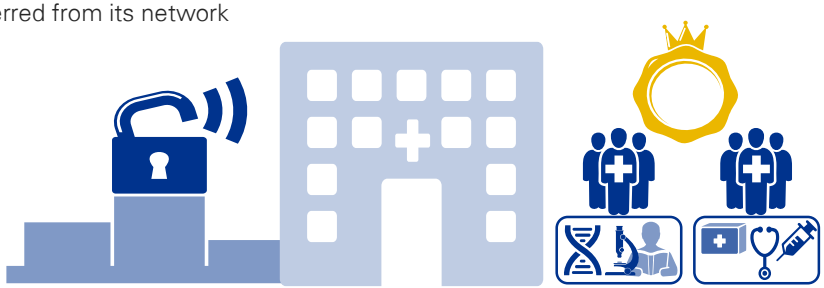
Institute of Liver Studies

WHAT ARE THE STRENGTHS OF YOUR CENTRE?

CLINICAL AND RESEARCH EXPERTISE

Why?

The centre has an excellent reputation for both research and clinical practice. As one of Western Europe's largest liver transplant and hepatology departments, it has unparalleled access to patients referred from its network



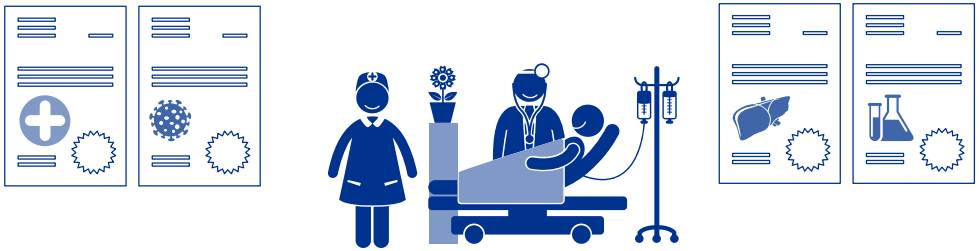
How?

Because of its size and status, the centre has cohorts of every single type of patient, including complex groups such as post-transplant, paediatric, and co-infection, allowing it to conduct studies on such groups, and also involve them in the latest treatments

HIGHLY QUALIFIED STAFF

Why?

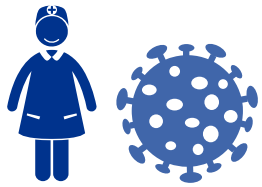
Experienced, qualified staff are able to apply their knowledge to deliver high quality care to patients

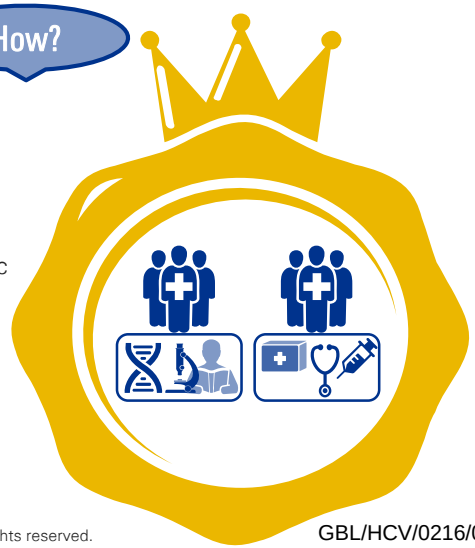


How?

Both clinical and research staff have excellent reputations within their field, and are able to leverage the Institute's access to the most complex patients in their work

Nursing staff are HCV specialists, allowing them to offer a high degree of disease-specific care





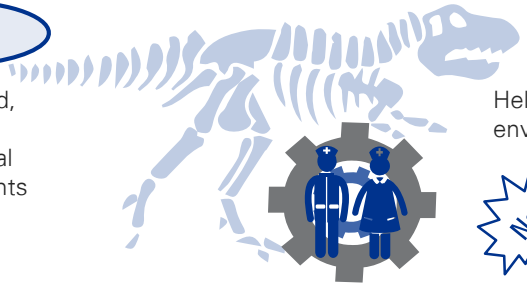
Institute of Liver Studies

HOW COULD YOU IMPROVE HCV CARE AT THE CENTRE?

ADAPT NURSES' ROLES IN LINE WITH NEW TREATMENTS

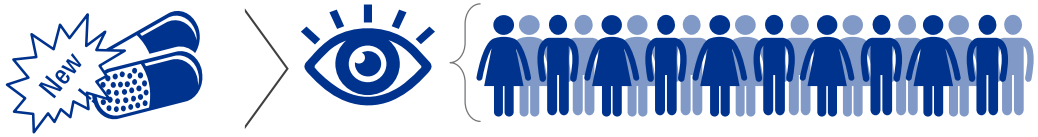
Why?

Many nurses, despite being capable and well qualified, are still operating in the same model as when they were delivering interferon-based treatment. The arrival of all oral DAAs should allow them to see more patients in the same period of time



How?

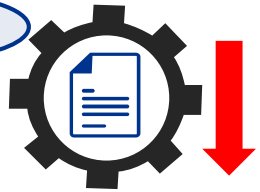
Helping nurses to reconfigure and refocus the way in which they operate in a post-interferon environment can lead to optimising the process of seeing patients



MORE STREAMLINED PATHWAY

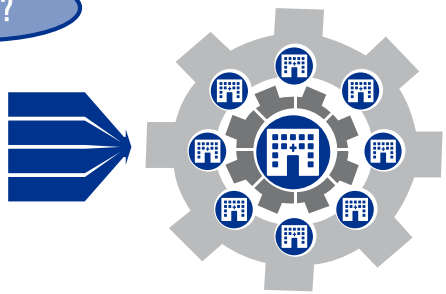
Why?

The current referral process for patients and the administrative systems involved are suboptimal, resulting in a loss of efficiency and focus



How?

Developing a more systematic, streamlined system, not just at the Institute but across the entire network, can lead to a smoother delivery of care

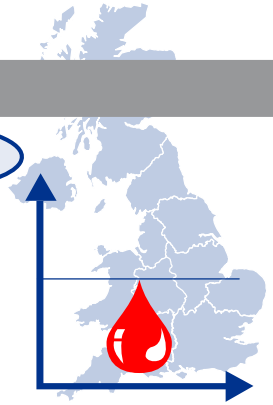


HOW CAN HCV CARE BE IMPROVED AT A COUNTRY-LEVEL?

INCREASED SCREENING

Why?

Currently there is an unsatisfactory level of screening for blood borne viruses (including Hepatitis C). Since the disease is often asymptomatic, screening is an essential part of the effort to eradicate the disease



How?

Financial restraints are currently a key barrier increased screening programmes; encouraging health authorities to invest more in developing and promoting screening services would help to address the issue

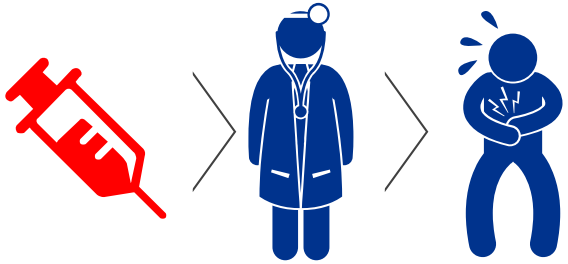
Institute of Liver Studies

WHAT IMPACT WILL THE ARRIVAL OF THE NEW THERAPIES HAVE ON YOUR CENTRE AND DAY-TO-DAY ACTIVITIES?

What is the status quo?

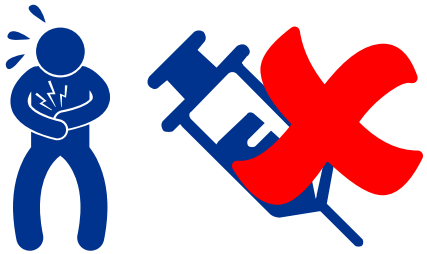
INCREASED INVOLVEMENT OF NURSES

Because of the complications associated with interferon-based regimens, doctors had to take the lead in the administration of treatment and manage patients closely



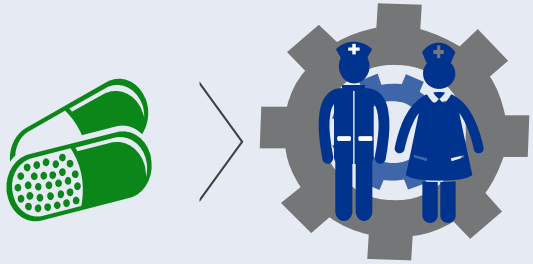
INCREASED DEMAND

Many of the centre's most severe patients, such as those who had undergone liver transplants, could not tolerate interferon-based treatment

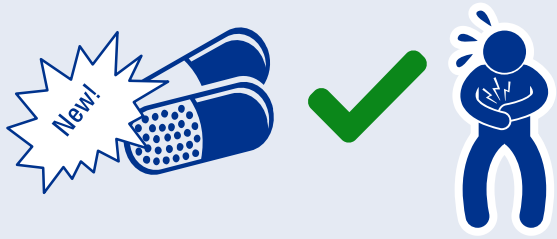


How could this change?

With the introduction of all oral DAAs, nurses can now take a more active and independent role in treatment, although staff acknowledge that this will require a shift in the current culture of delivery at the centre



The arrival of new therapies has now opened up the possibility of treating some of the centre's most acute patients who were not previously able to undergo interferon-based treatments



GLOSSARY

Glossary

Community care definition: Care delivered in a community setting, rather than at a specialist centre. Can be delivered via primary care providers, in addition to specialists working outside of tertiary centres

Primary care definition: A patient's main source for routine medical care, e.g. a GPs or family physicians

AHA – Australasian Hepatology Association

BBV – Blood-borne virus

CDC – Centers for Disease Conrol

CHP – Community Health Partnership

DAAs – Direct-acting antivirals

DBST – Dried blood spot tests

DPS – Drug and Problems Service

ECDC – European Centre for Disease Prevention and Control

EMR – Electronic Medical Record

GP – General Practitioner

HBV – Hepatitis B Virus

HCC – Hepatocellular carcinoma

HCP – Healthcare professional

HCV – Hepatitis C Virus

HIV – Human immunodeficiency virus

IV – Intravenous

MCN – Managed Care Network

MC – Medical Centre

MDT – Multidisciplinary team

MSM – Men who have sex with men

NAFLD – Non-alcoholic fatty liver disease

NGO – Non-governmental Organisation

NHS – National Health Service

ODN – Operational Delivery Network

OST – Opiate Substitution Therapy

OTN – Ontario Telemedicine Network

PWID – People who inject drugs

QE – Queen Elizabeth Hospital, Birmingham

RNA – Ribonucleic Acid

STI – Sexually Transmitted Infection

SVR – Sustained virologic response

RCP – Réunion de concertation pluridisciplinaire

WHO – World Health Organization

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