



Sanming: The real story of grass-roots healthcare transformation in China



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Glossary of terms

- NRCMS** – New Rural Cooperative Medical Scheme
- UEBMI** – Urban Employee Basic Medical Insurance
- URBMI** – Urban Resident Basic Medical Insurance
- URRBMI** – Urban and Rural Resident Basic Medical Insurance
- HFPC** – Health and Family Planning Centre

Foreword

China's recent healthcare reform journey has been a remarkable success story, with significant progress towards universal health coverage that many other nations are learning from. Immense challenges remain, however, not least with the quality, efficiency and affordability of hospital care — something that is a problem in a great many health systems in emerging economies. Across Africa and Latin America, Asia and the Middle East a familiar pattern is observable of long waits, inequity, poorly designed incentivized, lack of transparency and under-motivated staff.

This report looks in detail at one such city that had all of these problems and more, yet transformed its hospital system through a 'four-in-one' reform of governance, drug procurement, medical insurance and service providers.

As a result, the city of Sanming has become the most widely discussed – and controversial – reform in China's healthcare debate right now, and is a model that many cities and provinces are following.

KPMG recently spent three weeks conducting in-depth field research with politicians, health service leaders, managers from local drug distributors, clinicians and patients in the city to find out what has happened and what others around the world can learn from this case study.

Of course, all healthcare solutions are necessarily local. Yet it is important to also look globally to see how others have solved similar problems to your own.

Above all, this report stands as a beacon of hope that healthcare transformation is possible, and that even if all problems can't be solved in a single phase, it is possible to simultaneously enhance coverage, quality, affordability and satisfaction on a large scale.



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Executive Summary

This report looks in depth at one of the most successful — and controversial — healthcare reforms currently underway in China, and asks what other emerging countries can learn from its story.

It is likely that you have never heard of Sanming before. Even in China its 2.5 million people makes it a relative minnow among cities — not even in the top 100 urban areas by size. Yet its success in transforming the public hospital system has made it famous and could well become the model by which every province across China seeks to reform.

Over three weeks KPMG China, supported by Sir David Nicholson (former CEO of the NHS in England and Senior Advisor for KPMG), visited Sanming to conduct a field study that would get to the real story behind the headlines and heated policy debate. 10 workshops and over 90 interviews were held with administrators, politicians, doctors, patients and suppliers. The result was a detailed picture of Sanming's transformation, but also of the unfinished agenda and future work that is still needed.

Sanming's problems pre-reform

Despite implementing one of the most successful universal health coverage strategies in the world since 2003, China's public hospital sector faces a multitude of systemic problems, including drug commissions to doctors, inefficiency, a high financial burden on patients and perverse incentives that have made







profiteering and over-prescribing endemic. With nearly a billion citizens gaining health insurance over the past decade there is an urgent need to improve the quality and productivity of public hospitals, which provide more than 90 percent of healthcare activity in China.

Sanming's issues were typical of this picture, until 2011 when it began a radical transformation of the public hospital sector. An economically middling city facing post-industrial decline and an ageing population, the city's social medical insurance scheme for urban employees faced a substantial deficit (14.4 percent of the municipal government's revenue in 2011). In addition to this, stark inequalities existed across the population (especially between rural and urban residents) and drug commissions to doctors existed in public hospitals.

Rather than making the usual cuts to service quality that many would make in this position, in 2012 Sanming's leaders opted to tackle the root causes of its health system's ills. So began a reform package which in 2014 was designated a pilot for national hospital reform, and in 2016 was promoted by China's State Council as the leading healthcare reform model, which many other cities and provinces are now beginning to adopt.

Methodology based on the healthcare ecosystem in Sanming

Interviews and workshops with:

 Government <ul style="list-style-type: none">— 8 Government leaders and architects of the reform	 Providers <p>CEOs of:</p> <ul style="list-style-type: none">— 3 Tertiary hospitals— 4 Secondary hospitals— 4 Primary care facilities— 1 Private hospital	 Patients <ul style="list-style-type: none">— 25 patients with chronic diseases
 Workforce <ul style="list-style-type: none">— 24 doctors— 16 nurses and technicians— 5 others from finance, quality control and health IT	 Suppliers <ul style="list-style-type: none">— 3 Pharmaceutical distributors— 1 Pharmaceutical manufacturer	 Insurers <ul style="list-style-type: none">— 2 Senior officials from Sanming's two public insurance funds— 1 Commercial insurance company

Note: All statistics in the following report were obtained and verified through the Sanming Healthcare Reform Leadership Office and associated local departments.

Executive Summary

The Sanming model was a four-in-one reform package to realign the entire provider system. Drug mark-ups by hospitals were banned and a 'two invoices' system was introduced to streamline drug supply chains, cut down on fraud and expose outlier hospitals and doctors who were likely to be over-prescribing. Combined with centralized procurement, vast savings were generated which were then reinvested in higher salaries for staff, more generous insurance benefits and a centralized management structure that could keep much tighter control over performance.

The Sanming Model

Reform governance

- Establish a single, city-wide integrated management team to replace the weak, fragmented existing leadership
- Establish a performance management system for hospitals, then make this data fully transparent to the public
- Give control of surpluses and hospital savings to central team to reinvest across the reform program

Reform drug procurement

- Centralize procurement for all public hospitals and make purchasing open and price-competitive
- Implement 'two invoices' system to reduce fraud and eliminate drug mark-ups by providers
- Monitor and reduce drug usage, especially of antibiotics and drugs with low clinical outcomes and high commissions

Sanming's 4-in-1 Reform

Reform medical insurance

- Merge two of the three medical insurance funds and 'level up' the benefits of the least generous one
- Centralize management of the funds from county to city level, thereby reducing the number of risk pools from 15 to 2
- Move commissioning arrangement to payment by disease-type and limit the reimbursement price on imported drugs.

Reform service providers

- Shift incentives from prescribing to medical services, and introduce a salary cap to disincentivize over-treatment
- Increase salary payment to staff and eliminate drug commissions and illegal 'red envelope' income by staff with an increased 'sunshine salary' payment
- Establish annual salary packages for hospital CEOs, with a comprehensive KPI performance management system (6 categories and 40 indicators)

Executive Summary

Over the past four years, the Sanming reform model has demonstrated substantial benefits across the health system.

Reduced:

- Annual growth rate of total healthcare expenditure has fallen by more than a third, from 18% before the reform to 8-10% today
- Reimbursement rate of social medical insurance schemes in Sanming is over 10% higher than the national average, reducing out of pocket payments by patients
- Drug prices reduced by 30 percent and overall use of drugs reduced by 20%, meaning that between 2011 and 2015 the proportion of health spending going towards drugs almost halved, from 47.1% in 2011 to 25.7% in 2015.

Increased:

- Wages of health workers and administrators have more than doubled
- The proportion of hospital revenue from medical services increased by 25%, giving a more sustainable model for future growth
- Reimbursement rates of the two largest insurance schemes increased by 10%, and the deficit in the urban employees insurance fund has shifted to a surplus.

Results from our field study indicate the Sanming Healthcare Reform has been widely supported by key stakeholders, with significant benefits across the system. The only exceptions are pharmaceutical companies, sales representatives and local distributors, which have taken the brunt of efficiencies. The sector is now undergoing significant restructuring locally, and it remains to be seen whether the reforms will have a long-term impact on drug supply.

- **For government:** As a result of a strong leadership team, governance has been streamlined, strengthened and made more transparent
- **For hospitals:** Incentives now reward reasonable activity, not over-prescribing
- **For staff:** Salary doubled and drug commissions eliminated
- **For patients:** Insurance covers a greater share of care costs, and trust has improved
- **For drug manufacturers and distributors:** Lower prices and volumes will lead to industry consolidation, especially among distributors, who will need larger national networks to survive.

Sanming now stands at the center of a fierce debate over the future of China's health system. It is the 'golden child' of those who argue that the state should continue to play an active role in providing care for its people. However, rival groups reject this centrist approach and claim that only a commercial solution to hospital reform can increase access in a way that is affordable over the long term.

The latest statements and policies from China's leaders clearly advocate the Sanming Model be spread to much larger areas, such as Fujian and Anhui provinces (combined population of 100 million). How the model can perform at 50 times the scale, with a different set of leaders and organizations, will be an important test of whether it is scaled up further.

Executive Summary

In the meantime, there remains much further work still to do in Sanming itself. The model is still a work in progress and our field study suggests this unfinished agenda includes:

1. The need to tie payment models more closely to quality, not just quantity of care, which will require far better information systems on outcomes.
2. Ensuring there is greater appreciation of the reforms' benefits by patients.
3. Further developing the drug procurement process to take into account variation in drug quality.
4. Reducing reliance on hospitals by establishing a strong primary care system, and two way referrals between clinics and secondary care

Global lessons from the Sanming story

- **The benefits of coverage at scale:** By increasing the scale at which population coverage is managed, health systems can generate administrative efficiencies, improve their purchasing power and balance out fluctuations in need across a larger number of people.
- **Misaligned incentives can be tackled:** Reforming flawed payment models can have a tangible and significant impact on how and what healthcare is delivered.
- **The power of transparency:** Simply making data on the performance of healthcare providers more transparent can have a dramatic impact on their behaviour, as well as equipping patients to tackle corruption
- **Efficiency always matters:** Sanming's story shows that even low-spending health systems can generate substantial efficiencies to be reinvested into improved services and financial protection.
- **Radical reform is easier if tied to new investment:** Transformation faced far less resistance in Sanming because most of the key stakeholders stood to benefit financially from the changes

The Context Before Reform

National Context

China has made remarkable strides towards universal healthcare coverage for its people in recent years. Since 2003 it has enrolled a billion citizens into its basic medical schemes, reaching more than 95 percent of its population by the end of 2014. This surge in coverage has led to a sharp decline in the share of healthcare spending coming from out-of-pocket sources, from 54 percent in 2004 to 32 percent today — the fastest fall of any major economy over the last decade, and the ninth best of any nation on earth.

However, China still faces a huge unfinished agenda to translate its health investments into true access to quality care for all. The hospital sector is among the biggest challenges, exhibiting a multitude of systemic inefficiencies and inequities:

- **Perverse incentives:** While public in name, since the 1990's China's public hospitals have effectively been profit-driven. With significant revenue coming from drug mark-ups, there is a strong incentive for over prescription and over-treatment, eroding public trust to the point of attacks on medical staff in some provinces.
- **Inefficiency:** In 2013 the average length of stay among Chinese public hospitals was 10 days, compared to 7.8 across the OECD. Poor management, clinical protocols and fee structures are all major causes. Over a billion citizens have gained basic health insurance coverage since 2003, and this has created significant new demand that hospitals have struggled to cope with.
- **Drug commission:** Doctors in China are poorly paid relative to physician wages in equivalent countries, and the profession does not enjoy the

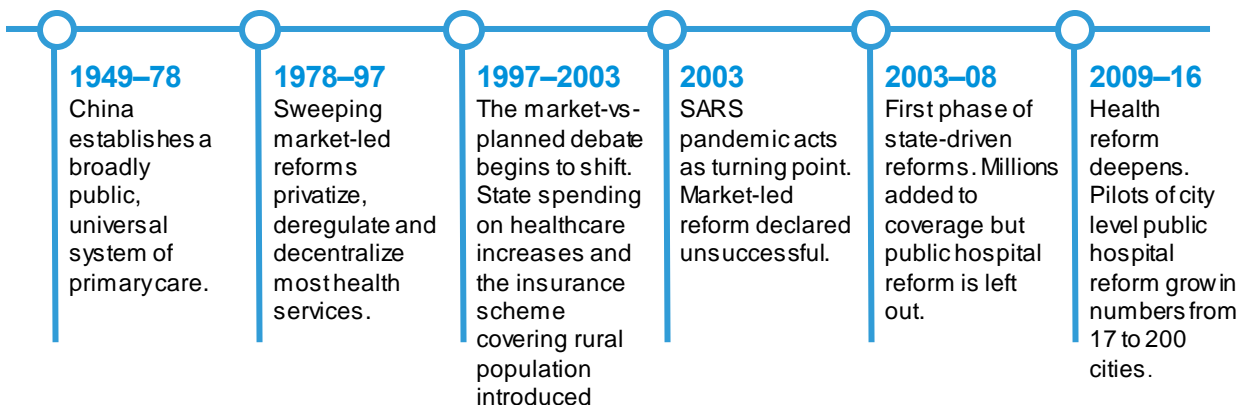
high status that it does elsewhere. Drug commissions to supplement income are common. Some patients also pay “red envelopes” to doctors in exchange of preferable treatment or shortened waiting list.

- **Continued financial burden on patients:** The medical social insurance has a wide coverage but patients still have to pay a percentage of the hospital bill and out patient treatment is often not reimbursed. With the growing cost of medical treatment, the percentage of household spend on health has not dropped, at 11% in 2012 according to China Family Panel Studies 2014 report.

China has attempted to address some of these problems by promoting the growth of the private hospital sector. This has certainly led to an increased capacity, with almost 7,000 private hospitals built since 2008. However, most of these facilities are small, meaning that while public hospitals account for less than 50 percent of the total number in China today, they provide more than 90 percent of the nation's beds and services.

Public hospital reform is therefore an unavoidable phase in China's journey to universal health coverage. Government officials have branded it ‘uncharted waters’ that will constitute the most technically and politically difficult element of their transformation program. The greatest level of controversy surrounds whether reform should promote far greater state control of public hospitals or far less. Throughout the history of China's health system the pro-market and pro-government camps have clashed, and debate continues to this day as to whether the failures of the past are as a result of too much privatization or not enough.

Brief history of Chinese healthcare reform



The Context Before Reform

Local Context

To reach a consensus about the right model to solve these systemic and hotly-contested issues, increasing numbers of city-level pilots were begun across China — from 17 in 2010 to more than 200 today. Sanming was designated as one such pilot in May 2014, although its reforms really began in 2012.

Sanming is a city of around 2.5 million people, whose hospital system serves a population split roughly equally between urban residents and those living in the surrounding 1,735 villages within Sanming's municipal boundary. It lies in the mountainous Fujian Province in the South East corner of China, around 400 miles south of Shanghai.

With a GDP per capita of US\$7,200, Sanming is economically middling by Chinese standards, and is affected by post-industrial decline as workers move to more prosperous cities in the region and beyond. This flight of working age adults means that the population is rapidly ageing, and around 15.7 percent of the population is now over 60.

There are 22 county level and above public hospitals in Sanming. These hospitals account for the vast majority of hospital activity.

In addition to the typical problems facing any public hospital system in China, Sanming's healthcare reform was prompted by an acute financial crisis. Its urban employees basic medical insurance fund was in significant deficit — the city simply couldn't provide the required benefits package for the resources being

provided by central government. The urban employees medical insurance fund has a deficit of US\$30 million in 2011, equivalent to 14.4 percent of the municipal government's revenue in 2011.

Rather than making incremental savings until the fund was back in balance, the city's leaders decided to tackle the root causes and fundamental misalignments at the heart of the provider system. These included drug price mark-ups, opaque and opportunistic pricing of medical services, inequitable coverage and mistrust of healthcare providers at all levels.

Sanming – Key facts

Population	2.5 million
% over 60	15.7%
GDP per capita	US\$7,200
County level & above public hospitals	22
Hospital beds	13,371
Total medical staff	15,121

“Our medical insurance fund deficit was the primary trigger for change, but to solve that took us into underlying issues of inadequate and overly expensive medical services, drug price inflation and over-prescribing.”

Mr. Zhan Jifu,
Head of Sanming Healthcare Reform
Leadership Office

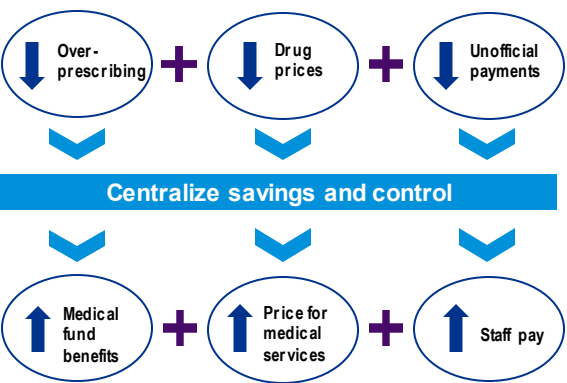


Sanming's Four-in-One Reform

At the root of Sanming's problems were misaligned incentives and a weak leadership structure that was incapable of fixing them. While some pilot cities in China see further privatization of public hospitals into commercial entities as the solution to this, the Sanming model is an unapologetically 'centrist' approach. Its core philosophy was to:

- **First:** centralize and increase government control of public hospitals
- **Second:** identify inefficiencies in drug procurement and insurance fund management from which large cash savings could be realized
- **Third:** Reinvest these savings in better incentives for providers
- **Fourth:** Make these benefits visible to patients through more comprehensive insurance coverage

How the reforms realigned incentives and reinvested the benefits



Sanming's four-in-one reform model



Steps Toward Reform

Stage 1: Reform governance

Why Change?

- Major responsibilities for healthcare divided among at least seven different agencies
- Future stages of reform required strong, resolute leadership
- Assurance needed that savings to be reinvested would be properly spent

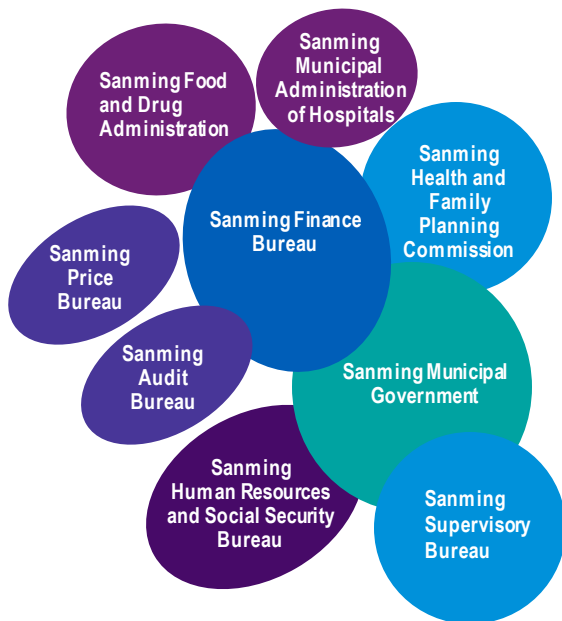
What was done?

- In January 2012, the Sanming Healthcare Reform Leadership Office was established by the city government, unifying functions of the seven different bureaus that previously held responsibility for health
- To cement the authority of this new agency, one of the most senior local officials — the Deputy Mayor — was named as its Director.

- The integrated team holds responsibility for infrastructure and equipment of public hospitals; governance of the medical workforce; management of hospitals, CEOs and drug procurement; social insurance and overall healthcare reform.
- The team also had a high degree of budgetary control, allowing them to direct where savings made through the reforms would be reinvested.
- As a centerpiece of the drive towards greater transparency in governance, the “Healthy Sanming” website was launched. This gave public access to performance data on the 22 largest public hospitals, including medicine prices, insurance entitlements and doctors’ prescribing habits.

Governance structure

Old:



New:



Responsible for:

- Budgets:** for public hospital services, equipment and infrastructure
- Regulation:** of service standards and protocols
- Leadership:** of design and implementation of future reforms
- Management:** of services, including CEO appointments for public hospitals

Steps Toward Reform

Stage 2: Reform drug procurement

Why Change?

- A high proportion of prescriptions were unnecessary
- Drugs prices were being marked up at multiple levels in the supplychain

What was done?

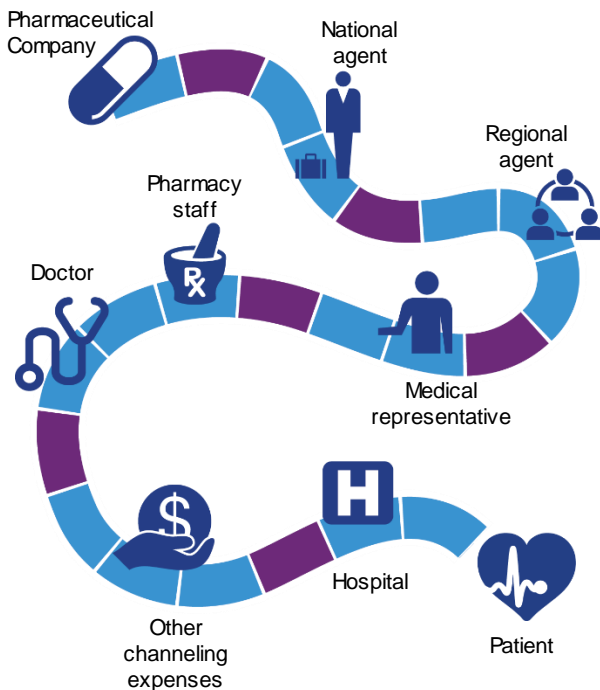
- “Two invoices” system introduced: To ensure that only distributors in Sanming could mark up drug prices, payment for drugs was routed through a central medical insurance fund. The fund would only pay out if “two invoices” were produced: from manufacturer to the distributor, and from the distributor to the hospital. In this way prices could be tracked at each stage of the supplychain.
- Unified central procurement: Once procurement had been centralized in this way, the insurance fund had much higher degree of payer power than individual hospitals. Acting in partnership

with four other cities (Ningbo, Wuhai, Zhuhai and Yuxi) for greater scale, drug procurement was openly tendered and significant savings generated. This was done at the same time as rationalizing drug lists, from 8,361 available medicines to 1,858

- Zero mark-ups at hospital level enforced: To end the financial dependence of hospitals on revenue from prescriptions, public hospitals were no longer permitted to charge mark ups to drug prices. Lost revenue from this would be reinvested into medical services prices at Stage 4 (page 14)
- To enforce the zero mark-ups rule, drug prices were published on “Healthy Sanming” website, so patients could check whether they were being charged the correct price.
- Crackdown on ‘low clinical outcome’ drugs: 129 drugs deemed to be of low clinical value were identified and prescriptions of these closely monitored. Use of antibiotics was also more strictly controlled.

Before — Mark-ups at every level of the chain

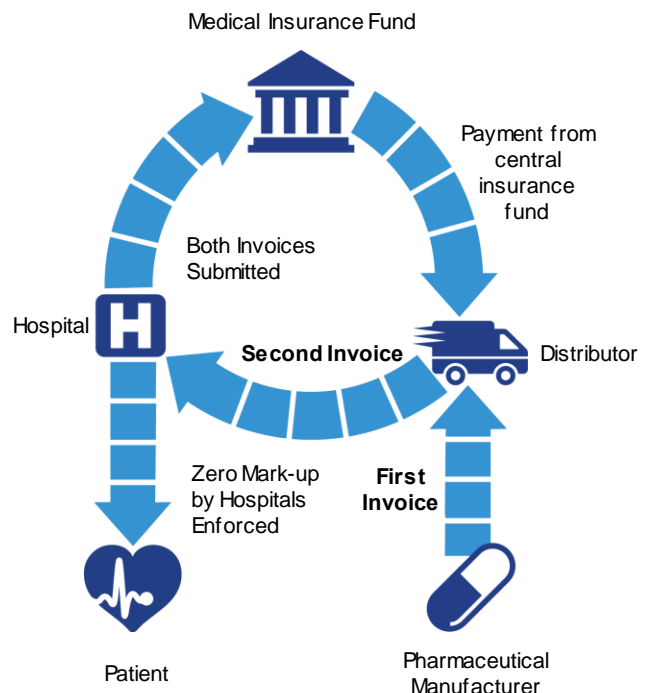
Factory price: **RMB 20**



Patient/medical fund price: **RMB 98**

After — Only logistics companies can mark up price

Factory price: **RMB 20**



Patient/medical fund price: **RMB 22**

Steps Toward Reform

Stage 3: Reform medical insurance

Why Change?

- Fragmented administration created many small risk pools, leading to deficits in some funds and surpluses in others
- High proportion of costs went on administration
- Highly unequal benefit packages across the three schemes

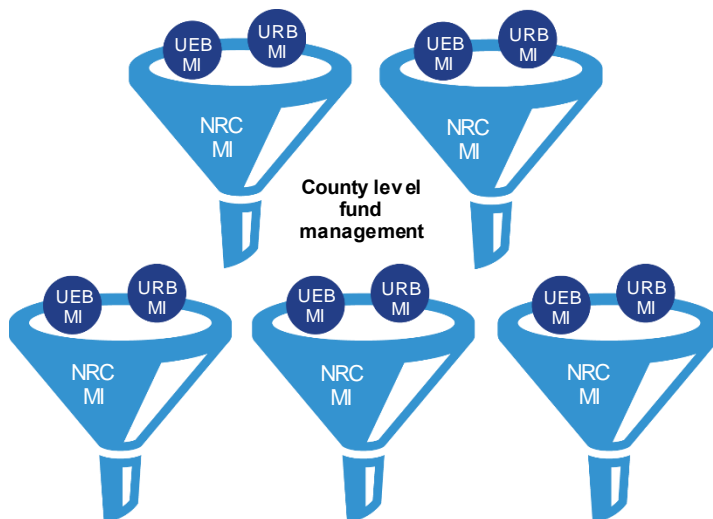
What was done?

- From five counties managing three medical insurance schemes each (for rural residents, urban residents and urban employees), management was shifted to the city level, thus reducing the total number of risk pools and ensuring capital funds are used more efficiently.
- Procurement was integrated across all social medical insurance schemes, increasing payer power.

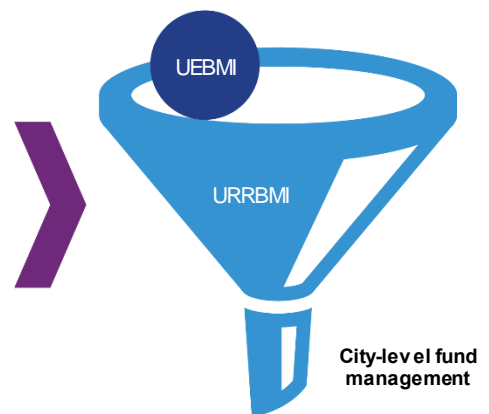
- Using savings from the above, the benefit package of the least generous scheme (NRCMS) was enhanced to the level of the middle one (URBMI), creating a new 'Urban and Rural Residents Basic Medical Insurance' (URRBMI) scheme.
- Multiple other initiatives to reduce the cost of care falling on patients' pockets. These included additional reimbursement rates for the severely ill, improved access to convenient primary care clinics and 100 percent reimbursement for Traditional Chinese Medicine.

Scaling up health insurance schemes, from country-level fund management to city-level

Pre-reform: 15 funds for 2.5 million people



Post-reform: 2 funds for 2.5 million people



- **NRCMS:** New Rural Cooperative Medical Scheme, China's least generous insurance plan for rural residents
- **URBMI:** Urban Residents Basic Medical Insurance — the mid-level insurance for urban residents without formal employment
- **UEBMI:** Urban Employees Basic Medical Insurance — the most generous scheme for urban people employed in the formal sector
- **URRBMI:** Urban and Rural Residents Basic Medical Insurance — Sanming's unique integrated scheme offering the enhanced benefits of URBMI to non-urban citizens as well.

Steps Toward Reform

Stage 4: Reform service providers

Why Change?

- Public hospitals were acting more like commercial profit centers than in the interest of patients
- Low paid workers forced to over-treat in order to receive bonuses and over-prescribe in order to receive drug commissions
- Lack of trust between patients and medical workers leads to conflicts

What was done?

- Established a performance management system for hospital CEOs and public hospitals based on 40 indicators around operations and quality.
- Salaries of hospital CEOs changed so that they are no longer based on revenue of their individual hospital, and instead linked to outcomes according to the above performance management system.
- Prices paid for procedures, diagnostics, consultations, nursing care and bed days were all increased to account for the loss in income from drug mark-ups.
- Salaries of medical workers were increased to account for the loss of drug commissions and other illegal income.
- A DRG-based payment system was introduced, along with multiple caps and other checks to deter overuse of tests, procedures or drugs. Outliers were investigated.
- Investment was directed into primary care across the city and its surrounding villages. To ensure appropriate use of hospitals, Sanming became the first city in China to provide reimbursement to patients accessing village clinics.

Example improvements to CEO and doctor salary levels

Changes to Hospital CEO annual salaries

	Pre-reform (RMB)	Post-reform (RMB)
CEO of top tier grade A hospitals	200,000	350,000
CEO of top tier grade B hospitals	150,000	300,000
CEO of 2 nd tier grade A hospitals	120,000	250,000
CEO of 2 nd tier grade B hospitals	110,000	200,000

Changes to doctors' salaries

	Pre-reform (RMB)	Post-reform (RMB)
House Officer	50,000	100,000
Registrar	68,000	150,000
Associate consultant	88,000	200,000
Consultant	110,000	250,000

Data source: Sanming City Health Planning Commission, KPMG analysis, 2016

Achievements

The Sanming reforms have simultaneously overcome a number of the Chinese hospital sector's most difficult challenges:

- Controlling overall growth of healthcare expenditure to manageable levels
- Tackling over-prescribing and profiteering in the drugs market
- Increasing salaries for medical staff
- Reducing out-of-pocket cost burden on the patient
- Aligning hospital performance management closer to quality care
- Turning health fund deficits into surplus

Our field research with the reforms' many different stakeholders confirmed the win-win results achieved for payers, providers, patients and government. The response among pharmaceutical manufacturers was more mixed, however, and the reduction in revenues in that sector is likely to lead to restructuring — especially if the Sanming model spreads to other cities.

For patients

For patients, the main improvements noticed were the raising of reimbursement rates (especially for rural residents) and the new website which gave access to trustworthy information about prices and providers.

Compared to national averages, Sanming's reimbursement rates for patients are now around 10 percent higher, and disparities between those in the urban and rural residents' schemes have closed.

Average prescription costs for inpatients and outpatients have also fallen sharply, and are now the lowest of all cities in Fujian Province. The average cost per admission is now 35 percent lower than the provincial average.

The fall in treatment costs and increase in reimbursement has had a direct impact on out-of-pocket spending data.

“For rural residents, the increased reimbursement rate has improved people's ability to pay for care.”

Patient interviewee (June 2016)

For health workers

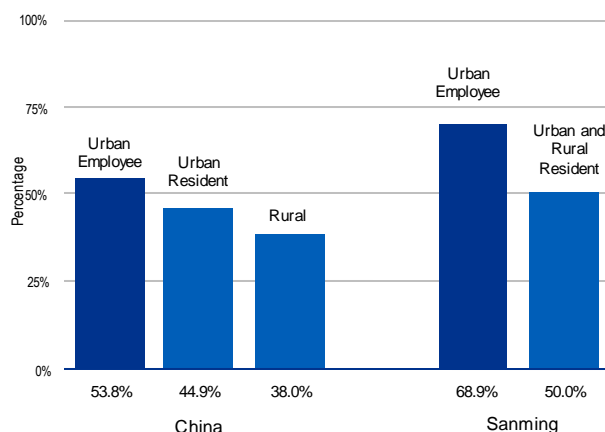
Income for medical workers has more than doubled since the reform, and currently stands at 1.8 times the national average. This has led to tangible improvements to staff satisfaction and motivation, as well as eliminating drug commissions and 'red envelope' payments across the public hospital system. Most clinical interviewees said they were satisfied with their current income - a rare achievement in China.

The average income for medical staff in public hospitals increased from US\$6,300 in 2011 to US\$13,200 in 2015. Average hospital CEO income rose from US\$15,400 in 2011 to US\$39,300 in 2015, with the highest tier of CEOs paid US\$61,000.

“Our incomes have significantly increased, which has improved what we're able to do and also our satisfaction.”

Medical interviewee (June 2016)

Reimbursement Rate in Sanming Compared to the National Average



Achievements

For hospitals

The whole revenue model for public hospitals in Sanming has flipped, from 47 percent pharmaceuticals and 39.9 percent medical services in 2011, to 25.7 percent drugs and 64.8 percent services in 2015. This trend is expected to continue further, with a target of hitting 20 percent of revenue from drugs in the next year or so.

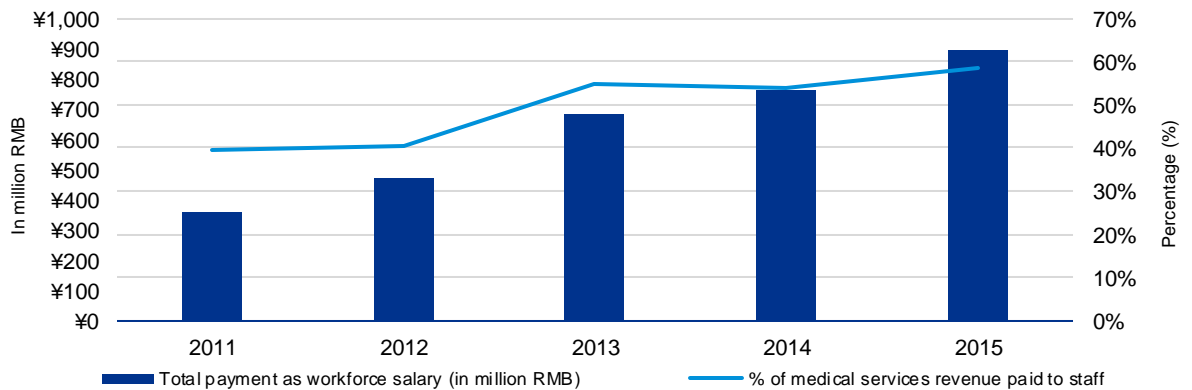
Overall drug revenue earned by public hospitals fell from US\$120 million to US\$ 90 million between 2011 and 2015 (a US\$ 30 million loss).

However, this reduction was more than made up for by increases to medical services prices, whose revenue grew from US\$102 million to US\$ 229 million over the same period (a US\$127 million gain). The net difference between these two figures is accounted for by drug savings in the system through the “two invoices” system.

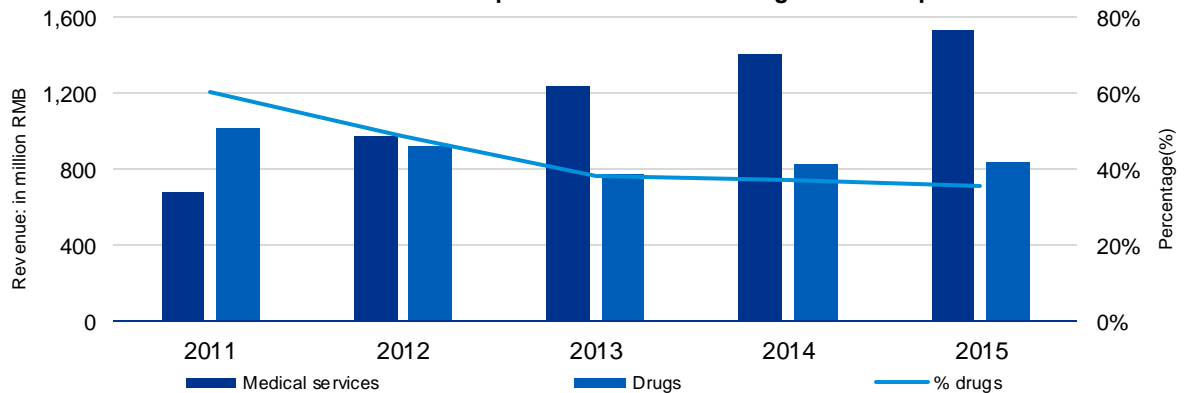
“We’ve seen an increase in surplus, which has helped us improve quality of our services, as well as making our growth model more sustainable.”

Hospital CEO interviewee
(June 2016)

Total Pay and Proportion of Medical Services Revenue Paid to Staff in 22 Sanming Public Hospitals (2011 - 2015)



Distribution of Public Hospital Revenue in Sanming Public Hospitals



Note: Based on the data available, except Sanming outside the latest data as of 2014 in this report.
Data source: Sanming HFPC, Sanming Health & Social security fund management center, KPMG Analysis

Achievements

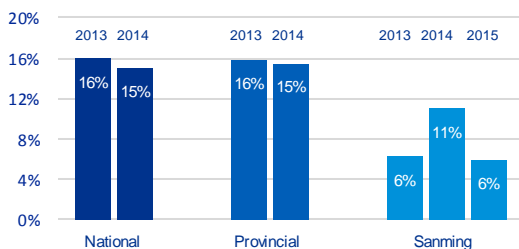
For government

For government, the reforms achieved both of their central ambitions:

- The growing deficit facing the urban employees medical insurance fund shifted from a US\$ 31.5 million annual loss in 2011 to a US\$ 19.5 million surplus in 2015. This continues to improve as further savings are generated across the system.
- Further progress was made towards universal coverage, as beneficiaries of the least generous rural residents scheme had their entitlements 'levelled up' to those of urban residents.

At the same time, the overall annual growth rate of total healthcare expenditure has fallen from 15 percent before the reforms, to a more modest 8-10 percent now. This is lower than both the provincial and national averages (which still stand at 15 percent). Measured cumulatively, savings from the reforms have already totaled almost RMB 1 billion, and are expected to reach over RMB 2 billion by 2020.

Growth Rate of Total Healthcare Expenditure



Data source: China Health Statistic Yearbook, Sanming Statistic Report, Sanming HFPC, KPMG Analysis

* The "2020" calculation of this report is 2020 year, non cumulative results.

“We have reduced the cost burden on government to the extent where the health fund now generates a surplus... At the same time, the reputation of government locally has improved.”

Government Official interviewee
(June 2016)

For the pharmaceutical sector

Between 2011 and 2015, the overall price of drugs fell by 30 percent, with price falls as high as 90 percent in some cases. Total usage also fell by 20 percent, with the quantities of antibiotics and 'low clinical value' drugs all declining substantially.

There is no denying that the Sanming reforms resulted in a major shock to the local pharmaceutical market. According to interviews with manufacturers and distributors, the savings generated from their sector have set back sales and profit growth by around 10 years.

The effects were not felt uniformly across the sector, however. While three of Sanming's 11 local distributor companies have already gone bust following the substantial loss in business, another third gained significantly through being awarded additional contracts following competitive tendering, enjoying annual revenue growth of between 13 and 18 percent in 2014/2015. The results of the reform are being seen more in terms of restructuring and 'survival of the fittest' rather than a punitive environment for those in the drug supply chain.

Future Phases of Reform

Sanming's achievements have made it the most hotly-discussed reform model in China, with much debate about whether the same results could be achieved at a national level. 11 provinces and cities have recently been selected to pilot 'comprehensive' reform models similar to that of Sanming. Several other areas are also implementing selected elements of the model, such as the "two invoices" system, integrated insurance and salary system for hospital CEOs. In April 2016 the State Council — one of China's most important policymaking bodies — announced six major tasks that all public hospital reforms should complete, all of which were closely based on those of Sanming.

An unfinished agenda

Our field research showed that those closest to the reforms still view them as a work in progress, however. This unfinished agenda will form the rationale for a next phase of reform across the city, principally to tackle the following four areas:

- 1. The need to tie payment models more closely to quality:** While various salary and activity thresholds have been put into place, Sanming's leaders accept that over the long term there is a risk of moving from a 'rewarding over-prescribing' model to a 'rewarding over-treatment' one. There is a need over the next few years to develop more sophisticated payment systems that reward the quality care, not just the quantity. In addition, there is a need to establish a system to capture data to monitor the impact of the reform on health outcomes.
- 2. Greater appreciation of the reforms' benefits by patients:** While patient interviewees generally responded positively when asked about the reforms, it was clear that they found it hard to identify specific benefits. Data analysis shows that Sanming now significantly outperforms other cities for insurance coverage, catastrophic spending and treatment costs. However, local citizens are unlikely to have this comparative view, so a 10 percent decrease in price, for example, is likely to go unnoticed by many, and a patient has no way to know that they have avoided an unnecessary prescription. Because further reform requires political support, it is important for Sanming's leaders to find ways of making their achievements more visible.

“I used to spend 6 RMB for the appointment and 20 RMB on a prescription. Now I'm spending 20 RMB on the appointment and 6 RMB on a prescription. So it's hard to see the difference.”

Patient interviewee (June 2016)

- 3. Quality and availability of medicines:** Sanming's competitive tendering for drugs led to dramatic falls in prices locally, however the contracting process was entirely based on price. Because the quality of medicines varies widely in China, Sanming would like to improve their tendering process to take this into account. However, with more than 5,000 pharmaceutical manufacturers and 135,000 wholesalers in China, achieving this will be a significant challenge that may be best tackled nationally or provincially. Furthermore, the public hospital system has experienced a higher incidence of drug supply shortages since the reforms. It is believed that market consolidation will eventually resolve these issues as well as taking contractors' ability to deliver a consistent supply into account at the tendering stage.
- 4. Reduce reliance on hospitals by establishing a strong primary care system:** All villages across Sanming are now equipped with local health centers and access to medical insurance. However, due to a lack of medical workers at the primary level, care quality — and hence public trust — are relatively low. Improving the capacity of primary care, and then establishing a two-way referral system between clinics and hospitals is a priority across China. Sanming has yet to give this challenge its full attention, but it will be one of its main goals for the next phase of reform.

Global Lessons

While some of Sanming's problems are unique to the Chinese healthcare system, many emerging markets around the world face a similar set of challenges in their public healthcare systems, including inefficiency, inequity and corruption. Some of the globally applicable lessons from Sanming's experience include:



The benefits of coverage at scale.

- Fragmentation of insurance schemes and risk pools is inefficient and wasteful. By increasing the scale at which population coverage is managed, health systems can generate administrative efficiencies, improve their purchasing power and balance out fluctuations in need across a larger number of people.

Misaligned incentives can be tackled.

- Flawed payment models lie at the heart of many inefficient and inequitable patterns of care in high, middle and low income countries. Reforming these payment models can have a tangible and significant impact on how and what healthcare is delivered. Models based on quality of care are preferable to those based on quantity, but this change can be managed in stages over several years.

The power of transparency.

- In addition to reforming payment models, simply making data on the performance of healthcare providers more transparent can have a dramatic impact on their behaviour— especially poor performers. Sanming's information website also showed the potential of informing patients as a means of challenging corruption.

Even low spending healthcare systems can generate efficiencies.

- China only spends around US\$400 per person on healthcare, less than a tenth of the OECD average. Given this, some might assume that all the money it spends is necessary, and that meaningful improvements can only be generated from more resources. Sanming's experiences shows this is not the case, and that even resource-constrained health systems can generate substantial efficiencies that can be reinvested into better services.

Radical reform is easier if tied to a new investment.

- Having generated significant efficiencies to reinvest, future new investments should be tied to reform priorities. Transformation faced far less resistance in Sanming because most of the key stakeholders stood to benefit financially from the changes.

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Mark has dedicated his professional life to healthcare and has led organizations at local, regional, national and global levels. He was CEO of high-performing University Hospitals in Birmingham and master-minded the largest new hospital build in the NHS. He also ran the NHS from Oxford to the Isle of Wight before joining the NHS Management Board as a Director-General. He developed High Quality Care for All with Lord Darzi and published his first book *'In Search of the Perfect Health System'* in October 2015. @markbritnell



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Jenny Yao has over twenty years of international management experience in the healthcare industry. Before joining KPMG, Jenny was an Associate Director of Operations at Brighton and Sussex University Hospitals NHS Trust, in the UK. Jenny was involved in setting up a new hospital in Shandong Province before completing her MBA at Imperial College London.

Jenny has led several healthcare reform studies, including one for a global pharmaceutical/medical devices firm and more recently for the 'Sanming Model' in China. She has successfully completed a strategy and planning project for the Shandong Development & Reform Commission, and has led several comprehensive China market feasibility studies. She has supported a number of domestic and global healthcare investment clients with healthcare market research and operational reviews of potential targets in China and overseas, and has supported some of China's top private healthcare groups on management improvement. Some of her most notable projects in the UK include a partnership with the Department of Health and Monitor in the UK to develop a quality indicator scorecard approach cited as a 'best practice' by the UK's Department of Health, and also piloting the LEAN service improvement model at London Chest Hospital (the largest cardiac center in Europe), delivering £5.9 million in savings.

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Sir David Nicholson KCB CBE provides advice and guidance to both governments and individual organisations interested in improving health and healthcare, enabling progress towards universal healthcare coverage.

Over the last 12 months he has worked in China, Brazil, the USA, Europe and the Middle East, independently, and in association with the World Health Organisation, and World Bank. Sir David has also recently been appointed Chair of the Universal Health Coverage Forum of the World Innovation Summit for Health. In addition, he is adjunct Professor of Global Health at the Institute of Global Health Imperial College, Senior Health Advisor to Project Wellbeing by the Abraaj Group and Lancet Commissioner to Global Surgery.

Previously, Sir David had been the Chief Executive of the National Health Service in England for 8 years. The NHS is recognised as one of the largest and most successful integrated healthcare systems in the world. Prior to that he held many senior positions in the NHS, running hospitals and healthcare systems in major cities including London and Birmingham.



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Prior to joining KPMG, Jonty was Policy Director for the All Party Parliamentary Group on Global Health in the UK parliament, and held various advisory and research positions in the English National Health Service and Ministries of Health in Botswana and the Philippines. He trained at the Judge Business School, University of Cambridge, and has an MSc in Public Health from the London School of Hygiene and Tropical Medicine.

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Rachel's expertise lies in healthcare policy analysis. Within China, she has focused continuous attention on drug reform and social health insurance system reform. Prior to joining KPMG, Rachel worked as a project manager and assistant researcher for 5 years. She participated in many projects related to health financing and the health insurance system. She is familiar with major international health insurance models and the complicated health insurance system in China. In her current role, she is leading a hospital acquisition CDD project for a well-known public healthcare group and was the leader of a high-profile healthcare reform project, giving her a deep understanding of the city's reform on drug procurement, social health insurance and medical service providers. Rachel has conducted a number of healthcare market research projects for cities across China and has participated in a provincial strategy and planning project focused on elderly care.

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