



The future of oncology

A focused approach to winning in 2030

Thriving on disruption series

Spiralling costs in research and development (R&D), shorter product lifecycles, fragmented patient markets and an increasing requirement to demonstrate value through a wider range of outcomes, are all limiting the potential return from expensive treatments. Incumbents failing to evolve in line with these trends are in danger of being outmaneuvered by novel entrants. In this paper, we assess how current business and operating models can be adapted to mitigate the effects of a changing oncology paradigm.

Dr. Nicholas Sen
KPMG in the UK

Professor Hilary Thomas
KPMG in the UK

Chris Stirling
KPMG in the UK

Roger van den Heuvel
KPMG in the Netherlands

Global Strategy Group

KPMG International

The end of an era

To date, successful oncology treatments have promised some of the highest returns for pharmaceutical manufacturers; in 2016, oncology assets represented 5 of the top 15 best selling drugs globally.¹ The market is expected to continue to show strong growth, with a forecast CAGR of 10.9% to 2030 for oncology prescription sales, driven by factors such as an aging population and lifestyle changes predisposing to disease.²

However, the industry's status quo and the success of incumbents' business models are both being challenged. Growing budgetary pressures are leading payers to demand a more robust demonstration of value from oncology treatments, increasingly being measured in terms of superiority to standard of care rather than stand-alone efficacy. Outcomes-based arrangements are directly linking drug value to price as healthcare systems seek to hedge their risk and cut costs, a goal at odds with the shift in treatment paradigm towards the greater use of expensive combination therapy regimens. Advances in technology are enabling these changes, with novel platforms expanding the potential for detection of responsive patient subsets, defined by specific immunogenic, genomic, epigenomic, proteomic, metabolomic, microbiomic and phenomic profiles in comparison with hitherto broadly defined tumor types.

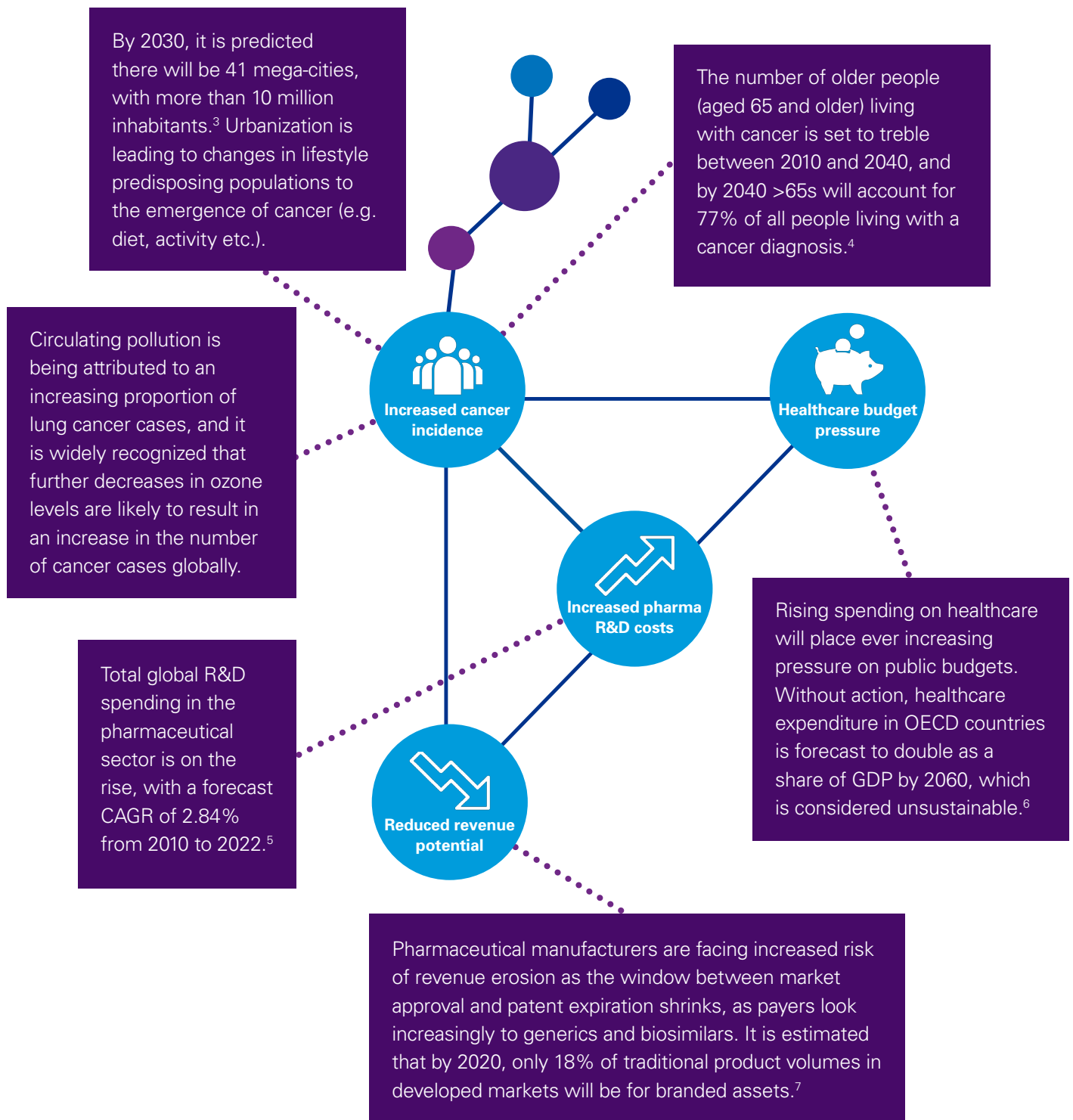
Enter the age of personalized medicine - without a doubt one of the greatest trends to provide substantial

patient and payer benefit for a generation. But capitalizing on this is not without significant challenge for manufacturers. We are already witnessing a dramatic reduction in eligible patient populations for novel treatments, as labels will only be awarded to highly-responding subsets, increasingly linked to companion diagnostics. Additionally we see multiple manufacturers studying similar mechanism of actions (MOAs), creating an intense competitive landscape. Consequently, this confers limitations on the depth of market penetration expected by individual therapies. These facts, in combination with shorter time-in-market and loss of exclusivity, are heavily impacting return on investment and, in an environment requiring increasing R&D spend, threatening profitability.

Pharmaceutical companies will also be required to shoulder increased R&D risk. An asset's value only holds true against an unchanged treatment paradigm, which as the competitive landscape becomes increasingly fragmented is fast vanishing. The age of the 'one-size-fits-all' therapy is ending, and with it the blockbuster model that has for so long driven shareholder value.

To remain successful in the oncology market, change is now a necessity in order to adapt to this altering market dynamic.

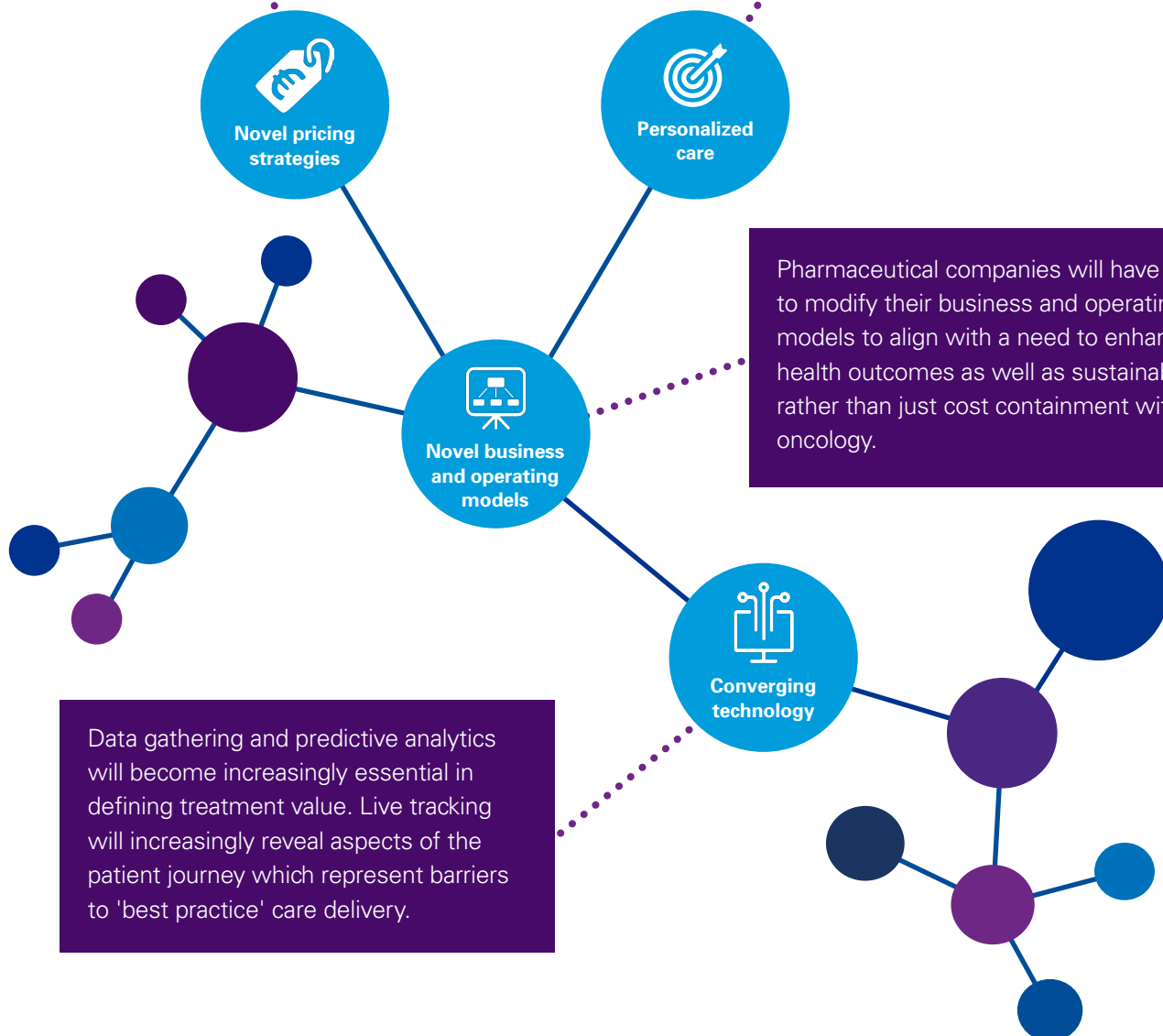
Key drivers of change in the oncology market



Implications for the future oncology landscape

Increasingly payers are seeking to more closely tie the value of a drug to its price, leading to the increasing penetration of outcomes-based payment strategies in the oncology space.

The healthcare industry is shifting away from the 'one-size-fits-all' concept, in the search for the most responsive patient subsets for each therapy or combinations regimen. This approach covers not only treatment but also the prevention of cancer.

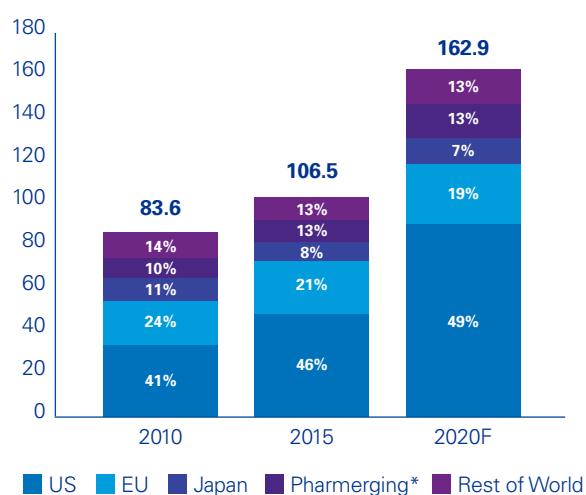


Unsustainable care costs are a driving force for change

Globally the costs associated with oncology care are higher than the treatment costs for any other disease, leading to demands for more robust evidence of treatment success.

Costs associated with oncology care extend beyond the acquisition price of the individual treatments, to include aspects such as expenditure for diagnosis, surgery, hospitalization, and palliative and end-of-life care. In total, oncology spend globally is forecast to rise by 53% from 2015 to 2020. KPMG expects this trend to persist to 2030 and beyond, unless the approach to care is fundamentally altered.

Global Oncology Spend (2010-20, USD bn)⁸



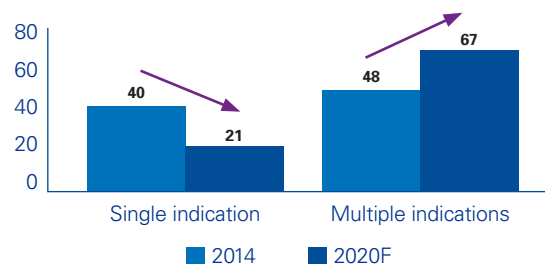
However, the efficacy of treatment has been reported to be as low as 25% across all cancer types.⁹ This low efficacy, along with the very high costs associated with many of these treatments, is representative of a significant wastage in the healthcare system.¹⁰ Consequently, this is driving payers to change the way they approach the procurement of oncology therapies.

To alleviate the rising cost pressure, payers are

demanding more robust evidence of treatment success, leading to the stratification of once broad oncology indications.

It is no longer the case that one treatment is necessarily suitable for all patients with a broadly characterized tumor type. Scientific advances are resulting in tumors becoming increasingly well defined, and this is driving the stratification of these once broad indications. Payers are recognizing this trend, and seeking to offer reimbursement only where efficacy is demonstrated within these smaller niches. Therefore, it is forecasted that the number of indications per therapy will rise, as developers resist the narrowing of their potential patient pool, in an effort to maximize return on investment and recoup development costs.

Anticipated number of oncology products with single vs multiple indications (2014-20)¹¹



The likely result of this effort to gain approval in multiple indications per therapy, is an increased data requirement for reimbursement. This will force market players towards specialization within oncology, in turn requiring both incumbents and new entrants to align their business and operating models within this new paradigm.

Note: Pharmerging - This category was coined by IMS Health and a detailed definition can be found in the quoted source. In summary, it includes those emerging markets which were deemed to meet minimum added value criteria for the pharmaceutical and healthcare industries between 2012-2016. There are 21 markets within this category, including China, Brazil, India and Russia

Where is the value?

Cost-constrained healthcare systems and insurers are seeing real potential in value-based pricing, and the high cost of oncology therapies has led the sector to become one of the critical early adopters of this strategy.

There is an increasing perception among payers globally that the cost of cancer drugs is considerably higher than the benefits associated with their use. As a result, value-based, and increasingly, outcomes-based pricing is becoming more prominent in the oncology landscape.¹² The primary goal of this strategy is to match a therapy's price more accurately to its defined value. This value is not restricted to the clinical benefits as has been the case historically, but going forward will include the value to patients (both in clinical outcomes and more patient-related outcome measures (PROMs)), payers and the wider society. In doing so, payers aim to limit cost expansion, increase therapy success rates and enhance access of a wider patient population to effective oncology treatments.

It is important to note that not all payers are necessarily demanding such contracts now. Generally, emphasis is more strongly applied to the simplicity of contracting arrangements, with many payers still favoring standard discount and rebate strategies. This is demonstrated by the considerable variability in rate of implementation of value-based contracts between countries and

healthcare systems. Current advocates display specific characteristics, such as the presence of a rich data infrastructure and a healthcare system amenable to the sharing of patient data. As more countries and systems move towards these characteristics, we expect the uptake of these contracts to increase. However at the current time, it is the view of many in the industry that it is incumbent on pharma companies to push these novel contract designs to mitigate huge pricing pressures.

Evidence of the implementation of outcomes-based schemes within oncology can be seen across a large number of major players, including Celgene (Vidaza, Revlimid), Novartis (Votrient), and Janssen (Velcade).¹³ Outcomes-based strategies have allowed them to overcome specific access hurdles, and gain a favourable share within their respective markets.

It is the introduction of such outcomes-based, risk-sharing agreements that represents the largest market disruptor. Oncology players should consider how they can respond in order to ensure they remain relevant in the 2030 landscape.

Note: In KPMG's white paper, *Value-based pricing in pharmaceuticals: Hype or hope?*¹⁴ we explore further the application of novel value-based pricing arrangements across the pharmaceutical industry

Tech advances will enable a paradigm shift

Advances in science and technology platforms are likely to progress faster in oncology than in other disease areas, due to terminal disease prevalence and the corresponding increase in patients' risk appetite.

The goal of cancer treatment has always been to cure the disease. However current treatments have no guarantee of cure, and it is not possible for physicians to be certain of an outcome following treatment. Consequently, patients require extensive follow-up, and in many instances suffer relapses requiring further, often more expensive, second and third-line treatments.

Panomics* is driving the development of treatments and regimens, enabled by novel technologies, that can potentially lead to personalized therapy and a significantly higher cure rate for many cancers.

Advances in genomics are contributing to this positive future view for oncology patients, with gene-editing techniques enabling this progress. We are increasingly mapping genetic and epigenetic

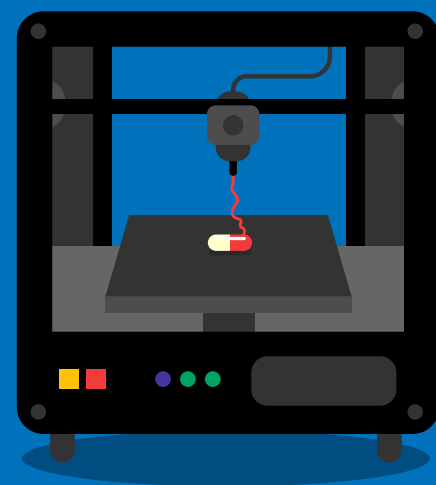
abnormalities contributing to many cancers. It is the development of treatments leveraging this knowledge that represents an increased possibility of real cure.

Metabolomics represents another field of research with huge future promise in the field of oncology. We are becoming increasingly aware that the metabolic phenotype of cells within tumors is highly heterogeneous, and importantly, distinct from that of non-malignant cells. The development of treatments targeting these metabolic differences represents a novel anti-cancer strategy.¹⁵

Immuno-oncology is the fastest growing segment within the oncology field, and will likely continue to grow. It has allowed us to treat cancer in ways that were unthinkable only five years ago. Going forward, techniques

Note: Panomics - The range of molecular biology technologies including genomics, proteomics, metabolomics, transcriptomics, etc. or the integration of their combined use

© 2017 KPMG International Cooperative ("KPMG International"), a Swiss entity. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.



such as Chimeric Antigen Receptor T-Cell (CART) use, advances in checkpoint inhibition knowledge and a better understanding of how to rationally combine these treatments,¹⁶ will drive progress in this segment, enabled by technologies such as 3D cell printing and organoid generation.¹⁷ Immuno-oncology is also being leveraged in combination with genomic techniques to drive personalized treatment of cancer, with personalized cancer vaccines already showing promise in clinical trials.¹⁸

The microbiome is increasingly being linked to the development and response of cancers. Modulation of the microbiome with immuno-therapeutics represents another avenue of treatment advance in oncology.¹⁹

Advances in technology will progress diagnostic and monitoring capabilities, in turn enabling shifts in the oncology treatment paradigm. This combined with the shift in mind-set towards cancer being a chronic disease, will force the paradigm towards more of a survivorship or maintenance mentality, perhaps representing an intermediate step in the push towards real cure of malignancies. Treatments will comprise of a complex cocktail of drugs, dynamically modified as tumor characteristics change to ensure maximal effectiveness.

Despite the rapid advancement in technology in the oncology space, there is the real possibility that by 2030 we will not have achieved the potential offered by these advancements. Our inability to design and implement solutions utilizing such technologies could act as a key limitation.

Novel technologies are potentially enabling curative therapies in the 2030 oncology paradigm

Personalized Cancer Vaccines

This strategy aims to prime the patient's immune response, against specific components of cancer cells, identified via gene sequencing of each patient's tumor cells.²⁰

CRISPR-Cas9

The technique allows highly specific editing of the genome. Recently, it has entered clinical trials in the oncology space²¹ with the aim of reprogramming immune cells to target and destroy tumor cells.

Oncolytic viruses

Potential applications have included tumor lysing treatments, inducers of innate immunity, anti-vascular agents and crucially, gene therapy vectors²² and are being investigated in a range of cancers.²³

Liquid biopsies

A non-invasive technique permitting monitoring of real time changes occurring within the tumor, providing an ideal method to monitor treatment response.²⁴

3D printing

3D printing of cells to create physiological structures termed organoids, e.g. 3D printing of kidney nephrons, mimicking real organ function, can help to better predict the effects of novel treatments in humans.²⁵

Disruption can be mitigated through targeted action now

For pharmaceutical CEOs, now is the time to consider where and how they want to play in this future ecosystem.

While this full shift in the ecosystem will take a number of years to materialize, action now can facilitate this transformation and position players well to both master the impending disruption and successfully continue to deliver real value to cancer patients as the market evolves, and in doing so, continue to drive their own success in the oncology field. Actions to be initiated or scaled up now, which will pay dividends as the market evolves to 2030, will include:



Novel pricing strategies

Experiment with value and outcomes-based pricing models tying drug price to value, and novel patient support programs reducing overall spend



Patient-centricity

Develop a truly holistic viewpoint on care provision from the patient perspective. Inclusion of patient-centric viewpoints and outcomes throughout the development and commercialization process



Growth markets

Oncology therapies have historically experienced limited access in growth (emerging) markets, however as these markets mature they increasingly represent significant opportunities



Preventative therapies

Developing products aimed at preventing disease will increasingly gain value in payer and provider eyes as they seek to reduce spend



Biosimilars

Build or acquire a portfolio of oncology biosimilars. Approximately 70% of oncologists believe payers will mandate the use of biosimilar supportive care instead of branded counterparts²⁶



Curative technologies

Obtain a stake in the development of novel technologies potentially supporting curative therapies, to mitigate the risk of being dramatically marginalized



Big data

Build capabilities targeted towards the generation of real-world evidence, to support use of products in the treatment / management of approved indications



Combination therapies

Gain experience with 'basket' and 'umbrella' trial designs allowing testing of multiple therapy regimens across indications and build portfolios containing combination treatments

Business impacts for current oncology players

Novel treatments will play a major role in oncology care within our 2030 horizon. Their potential will be highly valued by stakeholders, as a result of a lower level of occurrence (due to better prevention), a higher cure rate and reduced risk of expensive follow-up and relapse treatment. However the question of who will be asked to pay for these treatments i.e. prevention, and at what price, is an important one. Many such developments will either be proactive or chronic, requiring current oncology players to reassess how they define and demonstrate treatment value in this space.

Additionally this future shift in the treatment paradigm will directly impact industry top-lines. With this move towards highly targeted, personalized treatments across the cancer landscape, the oncology blockbuster model which has historically delivered such significant revenue streams will cease to exist; individual treatments indicated for highly specific patient sub-sets will deliver significantly smaller volume sales and thus revenues than seen in the current landscape by products such as Avastin or Herceptin.

To mitigate this future downturn in top-line, players seeking to remain in the oncology market will have to drive deep change in their business and operating models. To maintain market position, oncology companies may be required to broaden their offering along the care pathway, addressing the needs of the patient through a more holistic lens, or to focus their portfolios towards priority malignancies rather than targeting the market as a whole. Any of the potential mitigating actions will be associated with significant complexity in terms of design and implementation of




change. In the following pages we define three future business archetypes that are well positioned to deliver revenue in this future ecosystem. Alignment towards one such model today could direct key decisions towards establishing a future-proofed position.

Cancers display highly heterogeneous and complex mutational profiles. Knowing what and where in the tumor genome to target is the elusive key to curing the disease. Our knowledge base is growing and research into gene editing is accelerating. Significant hurdles still exist, however gene therapy techniques are now entering clinical trials and hold huge promise for the future of cancer therapy.

The future paradigm requires fundamental change

There is already evidence of oncology companies seeking and driving change in their business and operating models, taking the first steps towards aligning with a future oncology treatment paradigm.

These shifts mirror principles underlying three future business archetypes hypothesized by KPMG:

-  **Active portfolio company**
-  **Virtual value chain orchestrator**
-  **Niche specialist**

While the requirement for enterprise-wide transformation may not yet be evident, a robust understanding of these underlying principles will allow the oncology players of today to lead the change, helping to shape the market, rather than having to respond to change driven by others.

In a changing world, where innovation enables patients to access information and insights more readily than ever before, they will fast become the most relevant stakeholder in the healthcare ecosystem, thus conferring the need for a change in emphasis from other players in the system – including pharma companies.

Over the following pages we examine how these three business archetypes can be applied specifically within the field of oncology. They do not necessarily represent three distinct models which all players must seek to mirror in their entirety, rather they embody key underlying principles that oncology players will have to recognize and align with in order to be successful as the paradigm shifts.

Note: Three business archetypes detailed in our previous publication, *Pharma Outlook 2030: From Evolution to Revolution*.²⁷

© 2017 KPMG International Cooperative (“KPMG International”), a Swiss entity. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.



Active portfolio company (APC)

Strengths:

- Facilitates agility and flexibility in a changing landscape
- Risk is distributed across a portfolio of subsidiaries

Critical success factors:

- Intelligent decision making and product lifecycle management
- Sharp focus on value for shareholders

APCs rely on being flexible and agile. They move quickly to take advantage of opportunities, constantly optimizing the effectiveness of, and leveraging synergies within, their current portfolio across all stages of the product lifecycle.

Development

Oncology is a rapidly evolving therapy area, with a vast array of novel technologies in the developmental phase which have the potential to alter the treatment paradigm drastically. Such therapies represent a significant potential threat to an incumbent heavily invested in the same therapy area. However, contrary to the historical model employed within pharma, whereby major players seek to drive a significant proportion of early stage development in-house, in the 2030 oncology landscape, APCs may seek to outsource the vast majority, if not all of early-stage development activities.

This will be achieved primarily through the establishment of partnerships/licencing arrangements, such as milestone-based agreements, with niche specialist players driving novel developments with potential synergies to the APC's current portfolio. The primary advantage conferred by this strategy is the sharing of risk between the owner of the novel technology (i.e. the niche specialist) and the APC. Should the early-stage development become commercially viable, the APC gains rights to commercialization, maintaining its leading position within the oncology indication. Should the development fail, the APC is only liable for the magnitude of its current milestone investments to date. An additional benefit is the potential to share the cost of R&D with the owner of the development, depending on the nature of the arrangement agreed.

In the future 2030 oncology landscape, the increase in this approach to novel R&D by APCs will lead to a highly active deals/licencing environment. These players will compete to keep a stake in the latest, revolutionary therapy or cure, without leveraging their own resources and shouldering the significant risk associated with pursuing these opportunities in-house.

Portfolio lifecycle management

In much the same fashion as an APC would approach development of new treatments within an oncology space, the same strategy would be applicable to the commercialized portfolio as a whole. Indeed, this approach would most likely be applied at a franchise level, rather than a product-specific level, although in trading complete franchises between APCs, anti-trust legislation may force some divestments of specific products.

This portfolio-transfer strategy will form the foundation of product lifecycle management for APCs, allowing them to strengthen and divest as goals for different franchises change. This will be driven in part through the changing impact of the oncology landscape on their currently commercialized assets, in addition to the results from individual development programs. In effect, the adoption of this model opens up the ability to react extremely quickly to dynamic internal and external pressures, reducing the risk of being burdened by non-priority asset groups.

One method by which they can do this is asset swaps. While asset swaps in pharmaceuticals are not new at the franchise level, as business models migrate towards this future state, the trend is likely to accelerate, supplementing traditional M&A, and moving the deal environment to a more active state.

Asset swaps are highly complex to negotiate and execute successfully. As such, this will require the development of capabilities that many pharmaceutical companies do not possess. Not least, the implementation of a truly modular organization, allowing franchises to be incorporated and divested with minimal disruption and in the shortest time period possible.

Virtual value chain orchestrator (VVC)

Strengths:

- Lowered financial risks and costs
- Easy to adapt strategy
- Simple scale-up

Critical success factors:

- Intelligent technology systems to drive effective decision making
- Flat operating model to streamline information flow

Virtual value chain orchestrators (VVC) represent the most novel of the three business models, relative to the current breadth of oncology players. It will likely include players beyond the traditional pharma and biotech scope, and could potentially bring significant growth into the market. However, this archetype represents the most significant disruptor to the landscape and will take a significant share of the 2030 oncology market.

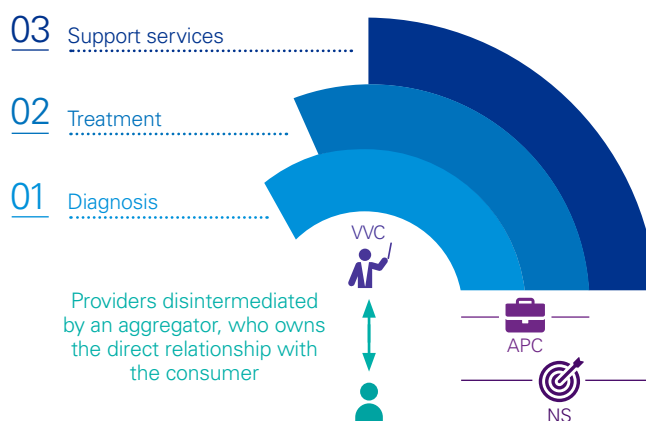
The drivers for entrants representing this archetype derive in part from the growing 'consumerist mind-set' towards healthcare, and in part from the increased need to demonstrate the value of novel oncology treatments to payers. Both of these factors are supported by a significant requirement for patient and disease data, potentially beyond the capabilities of current healthcare systems and players.

VVC players will drive the introduction of 'digital solutions' into the oncology landscape, across all states of consumer health and throughout the R&D process.

VVC players could 'own' the consumer relationship

The ambition of VVC players may be to own the customer relationship, providing a primary point of contact for oncology patients through potentially novel digital monitoring and communication platforms. In doing so they could seek to represent 'one-stop' platforms for oncology patients. In this sense, VVC players would function in the role of service aggregator, bringing APC and niche specialist (NS) services and products to relevant consumers, directed through live data collection and predictive analysis, in a timely fashion.

Due to the significant tech-capability requirements here, this archetype could invite the entry of non-traditional players into the oncology space. A number of large multi-national technology corporations have already made inroads into the health space, and this market could represent a key business goal for such companies in the future.



VVC players will be essential partners in R&D

This group will represent key partners to pharmaceutical and biotech companies (both APC and NS) throughout the development process, ensuring treatments are developed in line with patient and payer expectations, maximizing the potential for success. The value they hold will be derived from:

1. Ownership of data around the consumer journey, allowing stakeholders to understand the issues more closely, and to aid them in embedding 'patient-centricity' into their values
2. Ownership of data around patient subsets, outcomes and specific tumor characteristics (both rare tumors and all relevant sub-categories of common tumors). This will help provide a robust demonstration of value to payers, maximizing the potential of obtaining favorable reimbursement status in a healthcare system where contracts all conform to new outcomes-based pricing models
3. Ownership of data around treatment decisions and resulting outcomes, aiding the development of treatment guidelines and ensuring quality of care is delivered effectively

Niche specialist (NS)

Strengths:

- Sharply focused strategy highlights commitment and strengthens brand
- Facilitates a lean and agile model

Critical success factors:

- Strong specialist expertise
- Internal alignment on growth strategy

The niche specialist category comprises of predominantly smaller entities, focused on a specific therapy area or disease, often with the realistic possibility of being funded through partnership, or being acquired by an active portfolio player.

Due to advances in technology and the rapid expansion in our knowledge of the pathology of cancers, the research and discovery process has experienced a significant acceleration in recent years. The characteristics which define the niche specialist archetype expose it, more than the other two, to the increased threat of new entrants. This is likely to act as a major contributor to the expected further fragmentation of the oncology market. The niche specialist group can be divided into two sub-categories, a vertical or horizontal niche specialist.

Vertical niche specialist

Players in this category are focused on a single therapy area or disease. Within oncology this would probably represent a specific category of tumors, or a subtype of a common tumor.

Companies would seek to gain a deep understanding of

the disease, viewing the patient through a truly holistic lens and providing an end-to-end service. Additionally companies would seek to leverage new technologies to expand the currently defined patient pathway, and in doing so extend their business proposition to prospective patients (e.g. upstream extension of the patient pathway through novel awareness campaigns, such as app based interaction, or novel screening techniques, such as genetic screening, to bring more patients into care at an earlier stage). The holistic viewpoint would extend beyond the initial treatment of the symptoms, instead considering all aspects from disease prevention, to patient support and curative therapy. Companies will aim to meet the complete needs of consumers within the therapy area, in essence, seeking to represent a 'one-stop-shop' within that specific malignancy.

These companies are, by definition, highly patient-centric developing a deep understanding of patient needs.

Horizontal niche specialist

All cancers represent disease states with a significant degree of genetic linkage. As a consequence of this, biotech with a focus on the development of specific, novel technologies may initially target a specific cancer subtype, but will usually have broader ambitions for their platform, extending across a wider oncology scope or even beyond. Due to the focus on one specific technology, e.g. oncolytic viruses, these players would still fall into the niche specialist category, and share many of the same business and operating model features of the vertical niche specialist.

Niche specialists will drive therapeutic innovation

While funding may be driven through venture streams or active portfolio companies, often early-stage, paradigm shifting developments will be driven by niche specialists.

Active portfolio groups may aim to hedge risk through licencing / milestone deals with niche specialists, often looking to acquire the asset in late stage development or even just before commercialization.

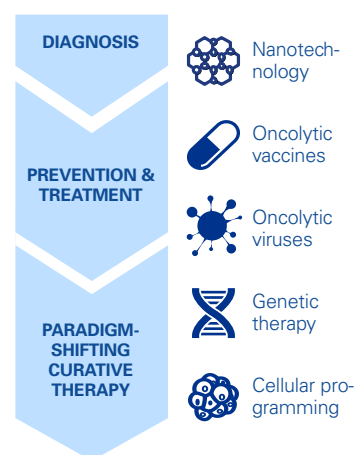
Within oncology, niche specialists already exist and are developing a number of new technologies across the patient journey, which have the potential to revolutionize the oncology treatment landscape.

Niche specialists will drive the development of holistic solutions within oncology



















Such developments will address the needs of patients and their families 'beyond-the-pill' and are increasingly perceived as having significant value to the treatment paradigm. Examples include:

Prostmate: developer of a personalized support system for those dealing with prostate cancer, allowing progress tracking before and after treatment.²⁸

Litebook®: developer of a light therapy device aimed at reducing fatigue and increasing quality of life for patients undergoing chemotherapy.²⁹



Comparison of the three future archetypes

	 Active Portfolio Company	 Virtual Value Chain Orchestrator	 Niche Specialist
Consumer identity	Hospital payers	Active portfolio companies, niche specialists, hospital payers, consumers, and regulators	Hospital payers, patients / consumers
Portfolio size/nature	Large, modular portfolio, highly dynamic in nature	Portfolio is data-based, potentially across multiple indications, driven through direct stakeholder engagement (patients, regulators etc.)	Portfolio focused on one therapy area / indication, but providing value throughout the entire patient journey (holistic focus)
Clinical development role	Focused on late-stage clinical development. May fund early-stage development through partnership / licencing agreements with niche specialists	Provides data capabilities and resources throughout the clinical development process, and aids design and implementation of complicated late-stage development plans	Focused on driving the discovery and early stage clinical development processes, often looking to partner with APCs to fund/drive late stage development and commercialization
Patient journey focus	Focused on the treatment stage of the patient journey, with limited presence in patient support activities pre / post treatment	Owning the consumer relationship and aggregating services from suppliers throughout the patient journey	Focus is truly holistic in nature, seeking to address needs throughout the full patient journey
Digital capability & data ownership			
Risk appetite			
Speed/Agility			
Partnering capability			
Asset stage/type			
Major challenges	Regulatory hurdles, anti-trust law ³⁰ , implementation of modular organization to ensure seamless integration/divestment processes	Funding, development of holistic understanding of patient needs, building reputation as a partner in patient care throughout their healthcare journey ³¹	Unclear regulatory environment, data sharing restrictions ³² , design and implementation of consumer interface and uptake of this novel platform

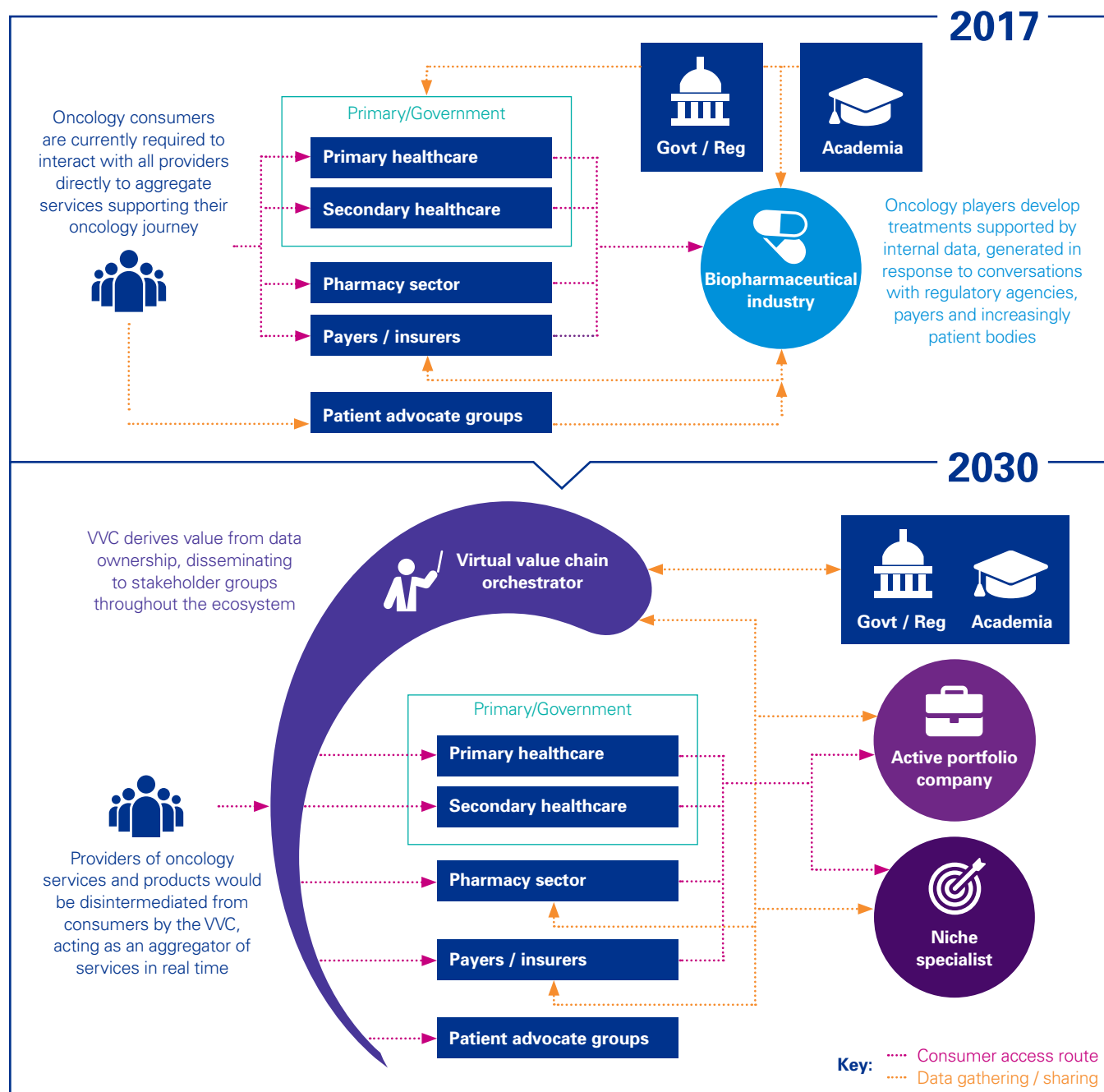
Asset stage:



© 2017 KPMG International Cooperative ("KPMG International"), a Swiss entity. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.

Oncology 2030 ecosystem

The implementation of these models will create a dynamic and differentiated ecosystem, where the different players and stakeholders will join together to combat cancer effectively and provide end-to-end support for patients.



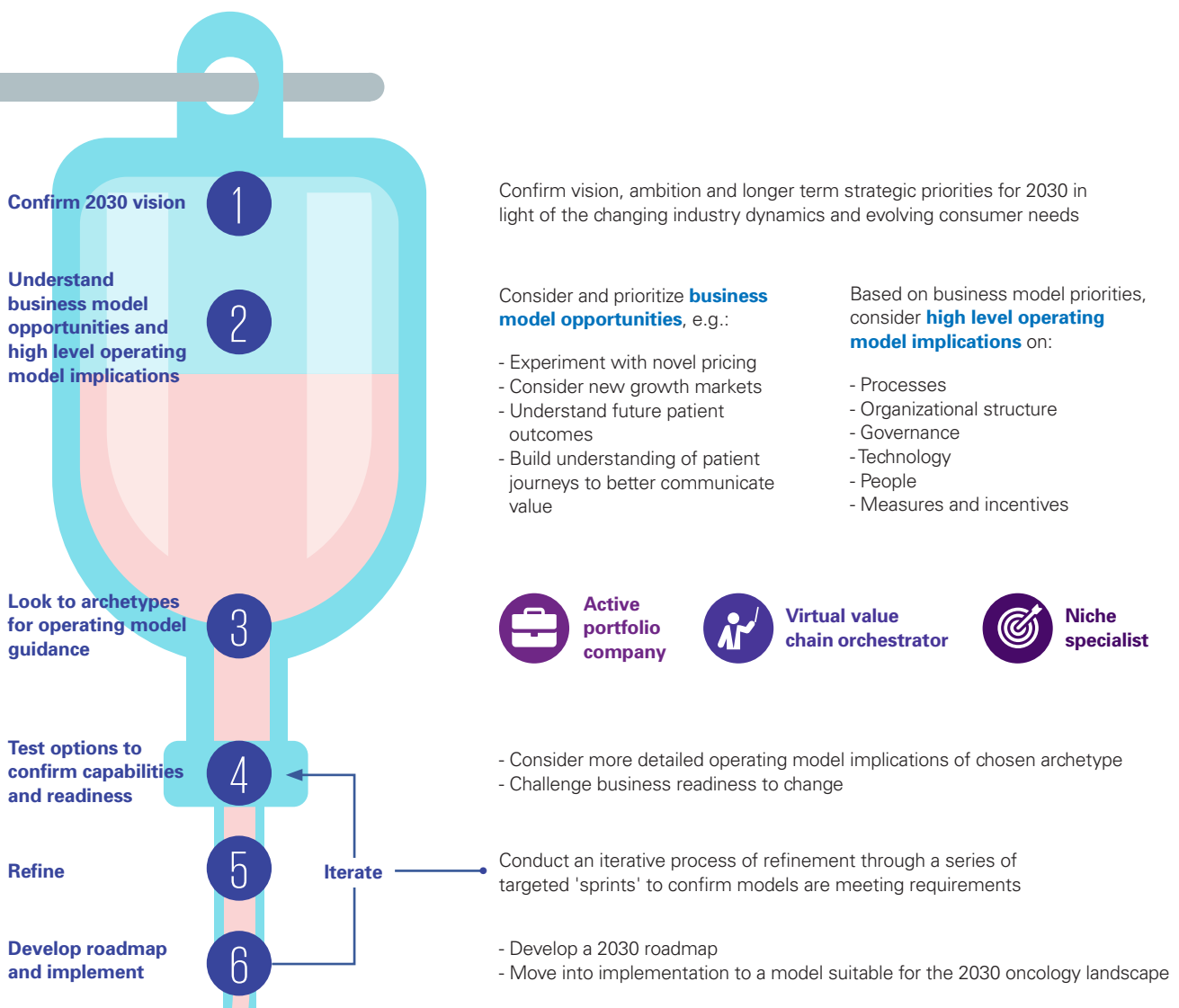
© 2017 KPMG International Cooperative ("KPMG International"), a Swiss entity. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.

Where to go from here?

Winning providers should look to the three archetypes for guidance and tailor their own business and operating models accordingly.

Fully adopting one of these three models will require enterprise-wide transformation. This will involve prioritizing business model opportunities in light of operating model capabilities and business readiness to change. Once a model has been tested and agreed

upon, change will need to be initiated in an iterative manner to ensure that the model implemented is capable of delivering the 2030 vision and desired role within the future oncology ecosystem.

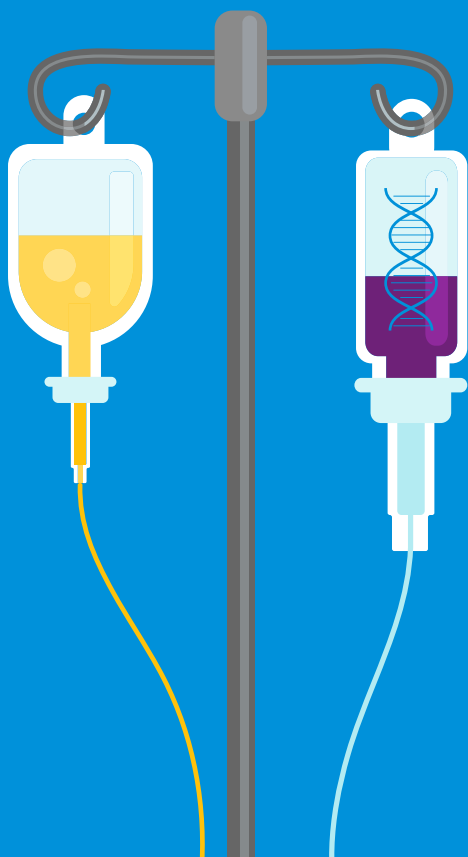


Now is the time to determine which of the three future archetypes your financial ambitions and current capabilities most closely align with, and thus understand how you want to play in the 2030 oncology landscape.

Reader comments

Actions:

Share with:



© 2017 KPMG International Cooperative ("KPMG International"), a Swiss entity. Member firms of the KPMG network of independent firms are affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.

1. The top 15 best-selling drugs of 2016, [Genetic Engineering & Biotechnology News](#) website, accessed on 22 May 2017
2. Global Oncology Prescription Sales, Evaluate Pharma, accessed on 29 August 2016
3. The World's Cities in 2016, United Nations, 2016
4. Macmillan Statistics Fact Sheet, Macmillan Cancer Support, 2015, <http://www.macmillan.org.uk> accessed March 2016
5. Total global pharmaceutical R&D spending from 2008 to 2022, [The Statistics Portal](#) website, accessed on 22 May 2017
6. The future of health and long-term care spending, OECD Journal, 2014
7. Global Medicines Use in 2020; Outlook and Implications, IMS Institute for Healthcare Informatics, November 2015
8. Global Oncology Trend Report: A Review of 2015 and Outlook to 2020, IMS Institute for Healthcare Informatics, June 2016
9. The Pathologist in Drug Development, Presentation at the Edinburgh Pathology Conference (C. Womack), June 2013
10. Market access challenges in the EU for high medical value diagnostic tests, Personalised Medicine (I. Miller et al), 2011
11. Developments in Cancer Treatments, Market Dynamics, Patient Access and Value: Global Oncology Trend Report 2015, Quintiles IMS Institute, May 2015
12. Risk-sharing agreements in the EU and considerations for moving forward, [PharmTech](#) website, accessed on 19 July 2017
13. Ibid.
14. Value-based pricing in pharmaceuticals: Hype or Hope?, KPMG International, 2016
15. Cancer metabolism: a therapeutic perspective, Nature Reviews Clinical Oncology (U. E. Martinez-Outschoorn et al.), February 2017
16. Immunotherapy of cancer, Australian Family Physician (J. Trapani), April 2017
17. Organoids as a Model for Colorectal Cancer, Current Colorectal Cancer Reports (M. Young), October 2016
18. An immunogenic personal neoantigen vaccine for patients with melanoma, Nature (Ott. PA et al), 547(7662), July 2017

19. Anticancer effects of the microbiome and its products, Nature Reviews Microbiology (L. Zitvogel), May 2017
20. Personalized cancer vaccines show glimmers of success, [Nature](#) website, accessed 3 August 2017
21. PD-1 Knockout Engineered T Cells for Advanced Esophageal Cancer (NCT03081715), [ClinicalTrials.gov](#), accessed on 22 May 2017
22. Oncolytic Viruses: Therapeutics With an Identify Crisis, EBioMedicine (C. J. Breitbach et al), July 2016
23. Viruses for tumour therapy, Cell host Microbe (J. Bell & G. McFadden), March 2015
24. Liquid biopsy leads to a paradigm shift in cancer treatment, Gastrointestinal Cancers Symposium poster (K. Suzuki et al), 2016
25. Scientists have 3D-printed heart and liver “organoids” that could save your life, [TechRadar](#) website, accessed 30 May 2017
26. All Global Oncology Study, [Kantar Health](#) and Lightspeed All Global website, accessed 26 May 2017
27. Pharma outlook 2030: From evolution to revolution, KPMG International 2016
28. Prostmate provides personalised specialist online support for men with prostate cancer, [Prostmate](#) website, accessed 22 May 2017
29. Astellas Oncology Selects Five C3 Prize Finalists to Pitch Ideas for Changing Cancer Care, Astellas Press Release, September 2016
30. A return to republican antitrust policies for pharma, [Law360](#) website, accessed 23 May 2017
31. Pharma’s reputation improved slightly, but still has a ways to go, [StatNews](#) website, accessed 23 May 2017
32. Google given access to healthcare data of up to 1.6 million patients, [The Guardian](#) website, accessed 20 May 2017

Authors

Dr. Nicholas Sen
Assistant Manager
Life Sciences, Global Strategy Group

KPMG in the UK

E: nicholas.sen@kpmg.co.uk

T: +44 (0)20 7311 3696

Chris Stirling
Partner
Global Chair, Life Sciences

KPMG in the UK

E: christopher.stirling@kpmg.co.uk

T: +44 (0)20 7311 8512

Professor Hilary Thomas
Partner
Global Life Sciences Sector Team Chief Medical Advisor

KPMG in the UK

E: hilary.thomas@kpmg.co.uk

T: +44 (0)20 7311 4154

Roger van den Heuvel
Partner
Head of Life Sciences, Global Strategy Group

KPMG in the Netherlands

E: vandenheuvel.roger@kpmg.nl

T: +31 206 567044



About KPMG's Global Strategy Group

KPMG's Global Strategy Group works with private, public and not-for-profit organizations to develop and implement strategy from 'Innovation to Results' helping clients achieve their goals and objectives. KPMG Global Strategy professionals develop insights and ideas to address organizational challenges such as growth, operating strategy, cost, deals and transformation.

Contacts

Peter Gilmore
Principal
Global Strategy Group

KPMG in the US

E: pgilmore@kpmg.com

T: +1 703 343 2392

Dr. Christoph A. Zinke
Partner
Head of Global Strategy Group in China and Asia Pacific

KPMG in China

E: christoph.zinke@kpmg.com

T: +85 221 402808

Dr. Adrienne Rivlin
Director
Global Strategy Group

KPMG in the UK

E: adrienne.rivlin@kpmg.co.uk

T: +44 (0)20 7694 1992

kpmg.com/strategy



The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

© 2017 KPMG International Cooperative ("KPMG International"), a Swiss entity. Member firms of the KPMG network of independent member firms affiliated with KPMG International. KPMG International provides no client services. No member firm has any authority to obligate or bind KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.

The KPMG name and logo are registered trademarks or trademarks of KPMG International.

OLIVER for KPMG | OMG00304 | August 2017