Contents

2 Market insights

10 Tax updates: significant developments

16 Featured articles
   16  Better with age
   22  Australia’s diverted profits tax and the life sciences industry
   26  Building a better customer experience: what life sciences companies in APAC should consider

32 Mergers and acquisitions (M&A)

36 Financing and IPOs

38 Appendix
   38  EY thought leadership
   40  Contacts
To our clients and friends:

Welcome to the third edition of our EY Life Sciences Report for Asia, providing coverage for the key markets in Asia-Pacific, Japan and India.

We continue to receive very useful suggestions from readers on how to further refine the report format and content. A number of you have requested that we include additional, regular tax content highlighting developments applicable to the sector. In response, we have added a new section to the report, Tax updates: significant developments.

We are excited also to include three featured articles in this edition, all written specifically for this publication.

The first article, “Better with age,” explores how the aging population in Japan, and the resulting “silver economy,” provides a unique opportunity for pharmaceutical companies. Japan’s aging population is creating major health care challenges for both the government and society. At the same time, the potential for innovative solutions from pharmaceutical companies to help meet these challenges is robust. But planning for and seizing opportunities for innovation will require fresh thinking, not only in terms of technical possibilities but also in relation to expanding offerings into new areas, seeking unorthodox partnerships and developing unique business models.

The second article, “Australia’s diverted profits tax and the life sciences industry,” explores Australia’s recently proposed diverted profits tax (DPT) and considers the potential implications for multinational life sciences companies operating in Australia with centralized intellectual property hubs. Centralization, while delivering commercial, legal and supply efficiency benefits, has also created significant concerns within the Australian Government and the Australian Taxation Office (ATO) in particular about whether the tax outcomes of such arrangements reflect their economic substance or, instead, are being used inappropriately to divert profits outside of Australia. Given the complexity and potential implications of this new proposed regime, it is vitally important that multinationals quickly understand the potential scope of the DPT and, where relevant, develop a strategy for proactively supporting and defending their legal structures and supply chains.

The third article, “Building a better customer experience: what life sciences companies in APAC should consider,” explores how many life sciences companies are increasing their focus on the customer experience and engagement across multiple channels, and what companies need to consider when embarking on a journey to enhance such experience. While “multichannel” is still relatively new territory for many life sciences companies in Asia-Pacific, customers’ expectations in terms of how they want to be engaged are high and quite diverse across the different markets.

In addition to our featured articles, our Market insights section highlights a number of sector trends and provides brief yet informative updates on various regulatory and legislative developments for a number of key markets in Asia. Our Mergers and acquisitions and Financing and IPOs sections provide helpful summaries of recent global and local trends via charts and short captions, with an increased focus on Asian markets.

We hope you enjoy this issue. You’ll find this report – and much more – at our digital home, Vital Signs (ey.com/vitalsigns), and you can engage with us via Twitter (@EY_LifeSciences) or email.

Rick Fonte
EY Asia-Pacific Life Sciences Tax Leader

Patrick Flochel
EY Life Sciences Global Leadership Team, Japan

Sriram Shrinivasan
EY Global Life Sciences Emerging Markets Leader and EY Global Generic Pharmaceutical Leader
Market insights

In this edition, we highlight key sector, regulatory and legislative trends for the following markets:

- ASEAN
  - Indonesia
  - Malaysia
  - Philippines
  - Vietnam

- Australia
- China (mainland)
- India
- Japan
- South Korea
- Taiwan
Key highlights

- Markets across Asia are continually acting to increase the competitiveness and attractiveness of the life sciences industry for foreign multinationals. For instance, India has undertaken several initiatives, including encouraging public-private partnerships (PPPs) in R&D projects and increasing focus on infrastructure to establish India as one of the world’s major pharmaceutical innovation hubs. Australia and China have implemented sector-focused innovation plans to boost investments, along with reforms to expedite drug approvals. South Korea is working toward becoming a global biotech and medical industry hub with focus on biosimilars, stem cell therapies and 3D printing of medical devices. Meanwhile, Taiwan has dedicated an initiative to enhance its position as a major biomedical market in Asia, and Vietnam has lifted the cap on foreign investments in the pharma sector.

- Malaysia, Australia, India and South Korea are also adopting adequate measures to bring their sector regulations for biosimilars and medical devices to par with international practices.

- Concurrently, many Asian countries are grappling with the problem of counterfeiting and patients’ inadequate trust of the industry. Indonesia and the Philippines are adopting stringent measures to contain the spread of counterfeit medicines, while Australia and South Korea are increasing transparency between pharma-physician-patient relationship through mandatory physician payment disclosures and hefty penalties. Similarly, India is strengthening its pharmacovigilance program by making the Pharma companies take on more accountability for drug safety.

- The life sciences industry in the region is also inching toward digitization, with both industry and government playing an important role. The Government of China is developing a national digital platform that will enable data sharing and is introducing digital medical identification and signatures. At the same time, Pharma companies in India and the Philippines are developing mobile applications to enhance patient experience and to educate different stakeholders.

- Increasing life expectancy is creating a major health care burden for many countries, including Japan and Australia. Japan is revisiting its prescription drug pricing system and continuing its push toward generics. Similarly, Malaysia is considering increasing generics usage, while Australia is trying to expand the list of drugs and devices eligible for price cuts.

China refers to mainland China in this publication.

ASEAN

Indonesia: tightening regulatory pathways to improve affordability and quality of drugs

The Indonesian Government is continually trying to strengthen the country’s pharmaceutical market. However, recent amendments to Indonesia’s intellectual property rights regime have brought about significant changes for the industry players. Prohibiting patent claims for second medical use and allowing import of lower-priced copies of patented products during the exclusivity period have made the regulatory environment more challenging for innovative drug manufacturers.¹

Meanwhile, a major counterfeiting vaccine scandal was exposed in the country, after which Indonesian authorities ordered a major overhaul of the country’s National Drug and Food Control Agency (NA-DFC).² The nationwide scandal has unveiled striking gaps in the distribution chain of the vaccine system and the quality control mechanism adopted by the regulator in the country.³ The Ministry of Health is providing re-immunization for children exposed to fake vaccines.⁴ The NA-DFC overhaul may add further regulatory hurdles for manufacturers.

Malaysia: controlling health care expenditure and strengthening sector regulations

The Malaysian Government is considering or adopting several measures to control rising health care costs. The Consumers Association of Penang has requested the introduction of a national drug pricing control system.⁵ Meanwhile, the government is trying to increase the use of generics and biosimilars in the country. Currently, both generic and branded medicines are being used in equal proportion (by value) in Malaysia.⁶ Further, the country recently saw the launch of its first biosimilar insulin, which will increase the availability of the therapy at an affordable rate.⁷

Concurrently, under the Traditional and Complementary Medicine (TCM) Act 2016, Malaysia is set to have a council for TCM that will regulate the traditional medicine industry and will mandate the registration of TCM practitioners in the country. This should help the government enhance the safety and quality of TCM services provided at hospitals.⁸

On the medical devices front, the Malaysian Medical Device Authority (MDA) has proposed a two-year transition period for medical device manufacturers for complying with new labeling rules detailed in the Sixth Schedule of the Medical Device Regulation 2012. Also, MDA has laid down new guidelines on how medical devices meant for clinical research can qualify for exemption from the registration requirements of the country. Furthermore, MDA has allowed advertisement only for those medical devices that are registered in Malaysia for sale.⁹

March 2017 | 3
Philippines: curbing illegal drug manufacturing via better control and awareness

The Food and Drug Administration (FDA) of the Philippines is tightening its noose for entities involved in the sale of counterfeit drugs in the country. It has cautioned the public and has also advised it to purchase medicines from FDA-licensed establishments only.10 Also, the provincial government has formed a Provincial Building Inspection Team to confirm that no illegal drugs are being manufactured in the territory.11 Further, the government has been successful in its initial efforts to combat fake drugs, with more than 600,000 drug users and manufacturers surrendering to officials.12

In addition, the Philippines is witnessing the launch of several mobile apps to improve awareness among the people and industry players. Examples include:

- App for HIV patients – Johnson & Johnson (J&J), in collaboration with Sustained Health Initiatives of the Philippines, developed an app to help reduce the burden of HIV in the country.13
- Pharmacy app – In association with the Drugstores Association of the Philippines (DSAP), J&J introduced the DSAP Mobile Drugstore app for training and helping DSAP member pharmacists.14

Vietnam: improving the funding support for the sector

Vietnam’s pharmaceutical market is undergoing liberalization, with the Government lifting the 49% cap on foreign ownership in pharma companies. The ongoing reform has increased the appeal of the domestic pharmaceutical sector and has recently led to a boom in inbound M&A deals with foreign pharma giants:15

- CFR International (Chile), a part of US-based Abbott Laboratories, increased its equity share in Domesco to 51.7%.
- Abbott acquired Glomed Pharmaceutical, a leading Vietnamese drugmaker, and propelled itself into the top 10 local pharma companies in the country.
- Taisho Pharmaceutical purchased a 24.5% stake in DHG Pharmaceutical.

Further, as part of its 2020 strategy, the Vietnamese Government intends to meet 80% of its domestic pharmaceutical demand through local drug manufacturers. The policy is having a major impact on the vaccine market, with the country now able to produce 11 of the 12 vaccines included in the national expanded immunization program. The Government is further gearing up to self-finance its vaccine program by reducing its reliance on international funding. The aim is to achieve mass vaccine production in the country through government-supported investments in manufacturing infrastructure and technology.16
Australia

Reforms toward an environment conducive to sector innovation

Australia, currently ranked the second-most attractive pharmaceutical market in Asia-Pacific, is undertaking measures to further boost the sector’s competitiveness through enhanced innovation and better productivity. A 10-year sector revitalization plan introduced by the Medical Technologies and Pharmaceuticals Industry Growth Centre (MTP) is one of the critical steps in this direction. As part of this program, MTPConnect, an organization formed under the federal government’s Industry Growth Centres initiatives, has identified seven growth priorities with focus on specific aspects of the sector value chain. It has already made an announcement to inject US$5.6 million (AUS$7.4 million) in 14 sector-specific projects and is further awaiting US$24 million (AUS$32 million) from various industry partners.

Additionally, the industry is working to bridge the gap between research and successful commercialization. A consortium of pharmaceutical companies that includes AbbVie, Boehringer Ingelheim, Celgene and Novartis has teamed up with Medicines Australia to launch a US$0.76 million (AUS$1 million) educational program, The Bridge Initiative, scheduled to start in 1Q17. The program is expected to run for two years with a target of training 100 people. Further, to encourage real-world application of innovation, the Victorian state government plans to expend US$3 million (AUS$4 million) to build a world-class innovation center, the Medicines Manufacturing Innovation Centre, led by Monash University. The nation has already established a US$380 million (AUS$500 million) Biomedical Translation Fund to aid the development and commercialization of biomedical discoveries.

To further promote innovation, the country is simultaneously expediting the drug approval process. The Australian drug regulator, the Therapeutic Goods Administration, is currently in the process of rolling out reforms over the next 18 to 24 months. One of the major changes includes potential introduction of two expedited pathways for the registration of novel medicines, focusing on drugs that are already approved in countries with comparable regulatory processes.

Legalization of medical cannabis is offering new opportunities to Australian life sciences companies. The Therapeutic Goods Administration has now allowed cultivation of cannabis for medical purposes but under strict government licensing and guidelines.

Australia continues to curtail rising health care costs through tighter regulations and price cuts. In its 2017 price disclosure cycle, the government’s Pharmaceutical Benefits Scheme disclosed the addition of several drugs, particularly biologics, and a deepening of price cuts. The government has also announced reforms to lower the costs of medical devices and prostheses, including a reduction in list cost of cardiac devices and intraocular lenses by 10% and in hip and knee replacements by 7.5%.

Pharma companies in Australia have begun disclosing physician payments under the new code laid by the regulator thus inching toward a more transparent pharma-physician-patient relationship.

---

17 As part of this program, MTPConnect, an organization formed under the federal government’s Industry Growth Centres initiatives, has identified seven growth priorities with focus on specific aspects of the sector value chain. It has already made an announcement to inject US$5.6 million (AUS$7.4 million) in 14 sector-specific projects and is further awaiting US$24 million (AUS$32 million) from various industry partners.

18 Additionally, the industry is working to bridge the gap between research and successful commercialization. A consortium of pharmaceutical companies that includes AbbVie, Boehringer Ingelheim, Celgene and Novartis has teamed up with Medicines Australia to launch a US$0.76 million (AUS$1 million) educational program, The Bridge Initiative, scheduled to start in 1Q17. The program is expected to run for two years with a target of training 100 people. Further, to encourage real-world application of innovation, the Victorian state government plans to expend US$3 million (AUS$4 million) to build a world-class innovation center, the Medicines Manufacturing Innovation Centre, led by Monash University. The nation has already established a US$380 million (AUS$500 million) Biomedical Translation Fund to aid the development and commercialization of biomedical discoveries.

22 Legalization of medical cannabis is offering new opportunities to Australian life sciences companies. The Therapeutic Goods Administration has now allowed cultivation of cannabis for medical purposes but under strict government licensing and guidelines.

23 Australia continues to curtail rising health care costs through tighter regulations and price cuts. In its 2017 price disclosure cycle, the government’s Pharmaceutical Benefits Scheme disclosed the addition of several drugs, particularly biologics, and a deepening of price cuts. The government has also announced reforms to lower the costs of medical devices and prostheses, including a reduction in list cost of cardiac devices and intraocular lenses by 10% and in hip and knee replacements by 7.5%.

24 Pharma companies in Australia have begun disclosing physician payments under the new code laid by the regulator thus inching toward a more transparent pharma-physician-patient relationship.
China

Easing the regulatory environment, building digital resource sharing capabilities

The Chinese Government is actively involved in boosting innovation and injecting fresh investment in the sector. Announcement of the 13th Five Year Plan (2015–20) has provided further momentum to innovation and reforms in the country, with biomedicine being identified as a key priority. Innovation forms the core strategy of the current five-year plan, alongside a huge focus on improving the quality of innovative drugs. As part of this, the China FDA (CFDA) and the State Council have approved a three-year pilot called “Marketing Authorization Holder” to widen the eligibility criteria for companies applying for drug marketing authorization. The program allows domestic researchers and smaller operations to apply for drug approvals, even without having in-house manufacturing capabilities. The aim of the pilot is to help companies bring drugs to market at a lower cost by leveraging contract manufacturing arrangements.

Simultaneously, China has pledged to create an industrial scale of medical services by 2020 on a national digital platform. The plan is expected to create a digital health trail for citizens. The plan involves establishing:

- National and provincial population health platforms
- Interconnected application platforms for national medicine bidding and purchasing
- 100 regional clinical medicine data demonstration centers
- Digital medical identification and signatures

Sharing of health and medical data resources is likely to accelerate the use of big data applications in health and medical industry management, clinical research and development, and digital health and medical equipment.

In addition, the country is encouraging the use of low-cost methods of selling drugs and medical products to increase competition and slash prices. The CFDA had been attempting to introduce pilot programs for online drug sales. However, due to a deficient tracking system and increased drug counterfeiting, the initiative has been put to a halt and the sale of online prescription drugs has been banned in China.

In the past five years, China has invested approximately US$359 billion (RMB2.2 trillion) to improve medical device regulations and harmonize them with international practices. Recently, the CFDA announced that its priority review and approval procedure for medical devices will be enforced starting 1 January 2017. Moreover, the CFDA has also released an expanded list of devices that stand exempted from clinical trials. In addition, the country has decided to remove tariffs on 201 technology products, including some medical devices. These moves are expected to strengthen the approval systems for drugs and devices and help in meeting clinical demand for medical devices.
India

Continued efforts to elevate India’s reputation and to make strides in digital pharma

In line with the Pharma Vision 2020 document of the Department of Pharmaceuticals (DOP), India has embarked on its journey to become a leading country for end-to-end drug manufacturing and innovation. The Government aims to augment infrastructure through a “Make in India” initiative, improve the quality of the workforce and increase funds for innovation. Specifically, the Government aims to position India as one of the top five pharmaceutical innovation hubs by 2020 and establish the nation as one of the most preferred destinations for clinical trials. Toward this effort, the Drug Controller General of India has removed the maximum limit of three clinical trials and eliminated the restriction on the number of beds to enable smoother entry of pharma companies into research and discovery. The Government is further contemplating investments (of up to 50%) in public-private partnership (PPP) models for undertaking R&D projects, in addition to the existing weighted tax deduction rate of 150% on R&D spend. Simultaneously, the Ministry of Health & Family Welfare (MoHFW) has established eligibility criteria for all personnel employed in any pharma manufacturing to bring the sector up to par with international standards.

Bolstering drug safety by means of pharmacovigilance is another focus area for the industry. With the Pharmacovigilance Program of India already receiving 0.23 million instances of adverse drug reactions, the Health Ministry is continuing to add new adverse drug reaction monitoring centers and is also integrating information received from the pharma companies. The ministry has mandated that market authorization holders (MHAs) establish pharmacovigilance cells in their companies. These cells can either be captive or outsourced but must enable the MHAs to collect, process and forward adverse drug reports to the licensing authorities.

The Digital India initiative is also making a big push in the industry – ranging from e-detailing tools to smartphone apps for understanding patient behavior. Some of the recent announcements in this direction include:

- Sun Pharma’s RespiTrack app for educating asthma patients and enhancing their adherence to therapies
- GlaxoSmithKline India’s use of webinars, video chats, information portals and platforms, such as Viva, for doctors
- Abbott Healthcare India’s educational app, Knowledge Genie, for patients with heart or liver diseases

In addition to these industry efforts, the Government is attempting to digitize medical health records on an Aadhar-linked electronic health record system. To aid this development, it is planning to introduce a bill for creation of a national e-health authority. Additionally, the Government is working on guidelines for regulating e-pharmacies to reduce their misuse.

In the area of medical devices, the MoHFW has released a draft of Medical Devices Rules for further discussion, with an aim to align the industry with global practices on a priority basis. Certain measures of the draft, such as a five-year cap on the shelf life of medical devices, compliance with unique identification norms and allowance for contract manufacturing, are expected to be implemented by early 2017. Additionally, to control the price of stents, the government has added coronary stents to the national list of essential medicines for 2015.

On the biotech front, the Central Drugs Standard Control Organization and the Department of Biotechnology announced a revised biosimilar policy providing a detailed regulatory pathway for manufacturing processes that aims to deliver safety, efficacy and quality. The document also addresses issues concerning pre- and post-market regulatory requirements for similar biologics. The policy is expected to accelerate the Indian biosimilars market size to US$40 billion by 2030.

b Aadhar is a unique identification number issued by the Government of India to all residents of the country to eliminate duplicate and fake identities and to make verification and authentication easy and effective.
Japan

Revamping drug pricing system to reduce the cost burden on government

Japan is currently experiencing low GDP growth along with a huge burden from an aging population. With the situation unlikely to improve soon, the Government of Japan is adopting severe cost containment measures. The Ministry of Finance is proposing a complete overhaul of the prescription drug pricing system through the following changes:42

- Annual revision of drug prices to replace the current system of biennial price changes
- Lower government-sanctioned prices for generic drugs to boost their penetration
- Disclosure of manufacturing costs by drugmakers at the time of filing43

Regulators have already taken a step in this direction by slashing the price of Ono Pharmaceutical Co.’s cancer drug, Opdivo, by 50%, much more than its scheduled price revision. However, these proposed changes are facing strong resistance from doctors and drugmakers, who fear a loss of revenue and increased complexity in pricing.44 Adding to these pressures, the Pharmaceuticals and Medical Devices Agency is contemplating an increase in review fees for drugs and medical devices.45

Concurrently, the health ministry is targeting March 2017 to issue a “blue book” to help push quality generics in the market. The blue book will include information on generic drugs by active pharmaceutical ingredients and can be used by hospitals and pharmacies to decide which generics to stock and dispense.46

In addition, to stabilize the supply of vaccines in Japan, a new earthquake-resistant warehouse is being set up in southwestern Japan. The Ministry of Health, Labour and Welfare has provided funding of US$18.26 million (¥2,157 million)4 for the project, which will help in stocking the vaccinations included in the Preventive Vaccination Law.47

\[C\text{ Converted using spot rate as of 3 January 2017 (1¥ equals US$0.0085), accessed 3 January 2017.}\]
South Korea

Promoting indigenous and novel product development and manufacturing

The pharmaceutical industry in South Korea is transforming from generic drug manufacturing to new drug development, mainly centered on biosimilars and stem cell treatments. The Government has rolled out several measures to develop the nation as a global biotech and medical industry hub by 2020. The comprehensive plan encompasses the following:

- Higher tax benefits and incentives for clinical trials of indigenous drugs and investment in R&D facilities
- Support for local pharma
- Expansion of the Government's R&D budget for medical devices
- Enhancement of exports by improving distribution channels
- Streamlining policies for commercialization of stem cell and precision medicines projects

The Government is also setting up a bio cluster that will serve as a center for pharma companies and universities to collaborate on R&D. To make the investment lucrative, the Korean Research-based Pharmaceutical Industry Association has offered a 15-year corporate tax exemption or a 5% to 15% relaxation for pharma MNCs. In addition, the government is planning to set up high-tech medical industrial clusters by 2018 and foster a culture of innovation.

On the medical devices front, the state has been making strides in 3D printing. South Korea is contemplating the introduction of fast-track approval options for 3D printing of medical devices, along with tax exemptions. Proposed changes include a maximum tax exemption of 30% of R&D for small and medium 3D printing companies and 20% for large companies.

However, human resource availability remains a challenge for the growth of the industry. Industry players, in collaboration with local educational institutes, are working to address this challenge. For example, GE Healthcare Korea is building the first APAC Fast Trak Centre in Songdo with an investment of US$20 million by 2020 to provide training and manufacturing support.

Concurrently, the Korean government has drafted a new anti-graft law to try to stop pharma companies from offering hefty rebates to doctors for prescribing the companies’ medicines, and as a way to press companies to revise their internal codes of conduct. Violators face a penalty of up to US$24,800 (KRW30 million) or a maximum three years’ imprisonment.

Taiwan

Gaining technological experience to improve its competitiveness in Asia

To transform Taiwan into a biotechnology and medical hub in Asia, the Government has approved a budget of US$346.32 million (NTS10.94 million) for 2017. Further, a five-plus-two innovative industries initiative has been started to enhance human resources, finances and intellectual property in the sector. This initiative includes the following measures:

- Establish a north-south biomedical corridor to enrich the research capabilities of the three main science parks of Taiwan
- Expand into the international health care market, particularly in ASEAN countries, by enhancing exports and expanding cooperation on health care education
- Develop precision medicine, specialized clinics and health-related peripheral industries
- Launch 80 niche medical devices, 20 new drugs and at least 10 biotech and health-related flagship brands by 2025
- Advance technological capabilities through arrangements with major biomedical R&D hubs in the US and Europe

\(^5\) Converted using spot rate as of 2 January 2017 (KRW1 equals US$0.00083), accessed 2 January 2017.
In this edition, we highlight significant tax developments and trends that are directly impacting or are likely to impact the sector in the following markets:

- Australia
- South Korea
- China (mainland)
- Indonesia
- Japan
Australia

The pharmaceutical industry has seen a significant increase in government and Australian Taxation Office (ATO) scrutiny in the past two years. In mid-2015, representatives of some of the largest pharmaceutical MNEs operating in Australia were summoned to give evidence before the Senate Inquiry into Corporate Tax Avoidance. Since that time, the ATO has increased the intensity of tax audits and has challenged a number of positions held by pharmaceutical MNEs.

We recently met with members of the ATO’s pharmaceutical working group to discuss their views on and approach regarding the sector.

ATO comments on pharmaceutical sector

The ATO is heavily involved in the pharmaceutical sector and consults broadly with industry players, government, NGOs and professional services firms to increase its understanding. The ATO currently has 19 “active taxpayer cases” in the pharmaceutical industry (which includes audits, risk reviews and the advance pricing agreement processes).

The ATO’s review activity of the pharmaceutical industry is primarily focused on transfer pricing, and it has the following concerns:

- A number of MNEs in the industry may be incorrectly classifying their Australian operations as limited risk distributors (LRDs) and, thus, have adopted inappropriate comparables for benchmarking purposes. The ATO considers that “value-adds,” such as regulatory approval skills and the Australia direct distribution system, mean that the Australian operations are more significant. The ATO is seeking to challenge taxpayers’ “LRD classifications” on the basis that these operations are more appropriately classified as full risk distributors and are entitled to greater returns.

- Due to the difficulty of finding quality benchmark comparables, a number of MNEs are using the Transactional Net Margin Method (TNMM) as a default methodology to establish appropriate transfer prices without considering whether it is the most appropriate methodology. Most Australian pharmaceuticals using the TNMM report margins of between 2% and 10%.

- The transfer of intellectual property from Australia to a foreign entity within the MNE group is a concern from a transfer pricing perspective. The ATO may seek to examine the issue from an anti-avoidance or base erosion and profit shifting (BEPS) perspective.

The ATO economist practice is reviewing the above matters in detail to determine whether risk and value are appropriately allocated to Australian operations. The ATO intends to release guidance on the pharmaceutical industry in 1Q 2017 as either a Taxation Alert (which sets out types of transactions the ATO wishes to investigate further or challenge) or as Practical Compliance Guidelines (which set out a practical administration approach to assist taxpayers in complying with relevant tax laws).

Our observations

The ATO’s time frame to release guidance by 1Q 2017 (before completion of the active taxpayer cases) appears to be driven by the government’s desire to be seen as taking more aggressive action on multinational tax avoidance. In this regard, in our discussions with the ATO on the time frame for guidance, the Senate inquiry was referenced a number of times.

The ATO’s views regarding incorrect classification as LRDs and the inappropriate use of the TNMM are likely part of an overall attempt to increase the profitability level of the sector, having regard to the pharmaceutical MNE’s overall system profits. In this regard, taxpayers should be prepared to see the ATO developing guidance and arguments to support margins at the high end of the current industry range, if not slightly higher. Equally, we expect to see the ATO continuing to develop its thinking on value-added activities and whether such activities should attract a differential return.

Michael Anderson, Oceania Life Sciences Tax Leader, EY; Partner, Ernst & Young (Australia)  michael.anderson@au.ey.com
Craig Jackson, Partner, Tax Controversy, Ernst & Young (Australia)  craig.w.jackson@au.ey.com
China

New requirements for invoicing of medicine and potential VAT impacts

The Chinese Government continues its efforts to control prices for pharmaceutical products and reduce the complexity of the previous system. Accordingly, the China Ministry of Health and other relevant governmental organizations have issued a new requirement related to the issuing of invoices for medicine sold to state-owned medical institutions, named the “Dual Invoice System.” The requirement was released with immediate effect at the end of 2016 and will be implemented across all of mainland China by 2018.

Under this system, only one invoice should be issued by the manufacturer to the distributor and only one invoice from the distributor to the medical institution. While there would be an exemption from the rule for intragroup invoicing, the multi-layer distribution channels that were common in the past need to be consolidated going forward. This requires pharmaceutical companies to strengthen control with respect to VAT management so that invoices are issued only to qualified distributors. The Government has announced strict supervision of compliance with the Dual Invoice System, and non-compliance can lead to exclusion of future bidding processes.

Big data management

For several years, the Chinese tax administration has undertaken efforts to increase its level of efficiency in dealing with (large) corporate taxpayers in terms of information gathering, processing and analysis. Increasingly, the tax administration is relying on technology-based tools to achieve its goals. For example, the recently launched Golden Tax System is an information system connecting the various tax information streams online, including information from the annual income tax return, VAT return, transfer pricing documentation and beyond. Important taxpayer information will be available in one system and eventually will be accessible across the country by tax authorities.

Our observation is that tax digitalization will become more prevalent, particularly with the implementation of the OECD’s BEPS Actions in China. There will be greater access to information as a result of more disclosure under BEPS. The Chinese tax administration is evaluating how to capture all the information in one place and use the information to identify high-risk taxpayers.

In 2016, the State Administration of Taxation introduced the Thousand Enterprise initiative targeted at large groups in China, and non-financial information. The requirement was for taxpayers to submit the information in an electronic format or for the tax administration to extract the information directly from the entities’ ERP systems. The information required was massive and created significant challenges for companies in terms of data collection, screening and concerns regarding data security.

The selected companies of the Thousand Enterprise initiative were from wide-ranging industries, with a small number from the pharmaceutical industry. An initiative similar to Thousand Enterprise was subsequently launched in Jiangsu province targeting the pharmaceutical industry. Many companies from within the industry received similar requests to those from the Thousand Enterprise initiative. The requests have resulted in further tax and transfer pricing inquiries for a number of taxpayers.

Very recently, the SAT issued an internal Circular outlining their 2017 action plan with respect to the Thousand Enterprise initiative. For 2017, the SAT is planning on performing detailed tax risk analysis on 268 of the 1000 large enterprises for which data was previously requested for tax years 2011-2015. Under this plan, the 5th branch of Beijing STB (SAT’s center for tax risk analysis) will be utilizing tax data analytic tool(s) they have developed to analyse three years of data (tax years 2013-2015) previously received from the 268 selected companies. Such data will be analysed for purposes of identifying potential issues and areas of concern. For most industries, it is expected that the 5th branch of the Beijing STB will prepare an analytics or initial findings report based upon the results of their data analytics review, which they will then submit to provincial level tax authorities for further detailed risk analysis. We understand, however, that for the pharmaceutical industry, given the increased level of focus on the sector, that the 5th branch of the Beijing STB will itself be centrally performing the detailed level review. We expect that the initial tax data analytics exercise giving rise to the analytics or initial findings report will be completed in the next two to three months.

In addition, the circular expands the scope of the Thousand Enterprise initiative with respect to 2017 and forward to include companies with tax payment amounts over RMB100 million as compared to the previous threshold of RMB 300 million. Meaning, in the future, more companies will be subject to this type of data gathering exercise and review process, with the total number of companies for which data is to be requested exceeding the initial 1000.

Given these developments, we believe the SAT will continue to apply a heightened level of audit scrutiny to the pharmaceutical industry going forward. It is also clear that the SAT intends to utilize tax data analytics as a key component of its audit strategy and that it will be expanding the scope and number of companies subject to this level of review. We strongly encourage that all companies, including pharmaceuticals and life sciences more broadly, quickly begin developing a robust China digital/ tax data analytics and risk management strategy if not already in place.

Titus von dem Bongart, Partner, China Life Sciences Tax Co-Leader, Ernst & Young (China) ✉️ titus.bongart@cn.ey.com

Joanne Su, Transfer Pricing Partner, China Life Sciences Tax Co-Leader, Ernst & Young (China) ✉️ joanne.su@cn.ey.com
Japan

2017 Japan tax reform

The Japanese Government has announced its proposals for the 2017 Tax Reform, which are expected to be enacted by 31 March 2017 and in general to take effect from 1 April 2017. The proposals include changes to R&D tax credits, with higher credits available where R&D spending is on an upward trend. There will also be greater scope for deductibility of directors’ compensation in the form of stock, expanded definitions of tax-free reorganizations and a welcome exemption from inheritance tax applicable to foreigners living in Japan for less than 10 years.

The proposal that has attracted the most attention is the reform of the Japanese controlled foreign corporation (CFC) rules. This will affect many Japan-headquartered life sciences companies with overseas subsidiaries. The changes expand the definition of taxable “passive income” and introduce a new classification of “paper companies.” Examples of structures that may be impacted include offshore holding companies in locations such as the Netherlands, the UK, Singapore and Hong Kong; cash and treasury management operations; and where intellectual property has been transferred or licensed offshore. These new, tougher rules will take effect for accounting periods beginning on or after 1 April 2018. We recommend that companies review the potential impact of the new rules and consider restructuring options.

Transfer pricing and UPE requirements

With the 2016 Tax Reform, the Japanese National Tax Agency (NTA) included BEPS Action 13 requirements for country-by-country reporting, master file and local file. Later in 2016, the NTA further introduced the requirement for ultimate parent entity (UPE) notification. The most pressing of the deadlines relates to notification and the local file.

UPE notification

Content and language

The UPE notification is a straightforward form requiring basic information, such as the name and location of UPE and constituent entity (CE). The language of the UPE is not specified, though the form is in Japanese.

Who needs to file?

Companies in Japan, or permanent establishments of foreign companies, which are affiliates of a multinational group with more than ¥100 billion in revenue in the previous fiscal year need to file. If there are multiple entities in Japan in the same group, one may be designated as the representative to file on behalf of the others.

First year and deadline

The UPE notification must be filed via e-tax (the same system used for filing corporate tax returns) by the last day of the fiscal year of the UPE beginning on or after 1 April 2016. Hence, companies whose UPE has a March year-end need to file the UPE notification by 31 March 2017.

Contemporaneous local file

Content and language

The contents of a local file are outlined in Article 22-10 of the Special Provisions for Taxation of Transaction with Foreign Related Parties. The requirements are broader in some aspects than those set out by the OECD, including the requirement for a local market analysis and counterparty segmented profit and loss accounts. The required language of the local file is not specified, but a Japanese translation could be requested for documentation prepared in languages other than Japanese.

Who needs to prepare?

Japanese companies that have transactions with a foreign related party (applied per foreign entity) exceeding ¥5 billion in the preceding fiscal year or intangible transactions exceeding ¥300 million (also applied per foreign entity) must prepare a contemporaneous local file.

First year and deadline

The requirement for the local file is for years commencing on or after 1 April 2017. The local file must be completed by the time of the submission of the tax return. The local file does not need to be submitted itself, but it must be ready in the event of request by a tax examiner. The deadline for submission will be set by the examiner at a maximum of 45 days for those companies that have to meet the contemporaneous requirement. For other companies, the deadline set by the auditor may be up to a maximum of 60 days. The tax authorities have the legal right to use presumptive taxation or secret comparables if these deadlines are not adhered to. In practice, the deadline may be much shorter than the maximums outlined above, for example, if the examiner believes the documentation should already be available.

Tatsuhide Kanenari, Partner, Japan Life Sciences Tax Co-Leader, Ernst & Young (Japan) tatsuhide.kanenari@ey.com

Jonathan Stuart-Smith, Partner, Japan Life Sciences Tax Co-Leader, Ernst & Young (Japan) jonathan.stuart-smith@jp.ey.com

Keith Thomas, Executive Director, Transfer Pricing, Ernst & Young (Japan) keith.thomas@jp.ey.com
South Korea

Controversy trends

Tax audits focused on illegal or improper “sales rebates”
Recently, the Korean tax authority began performing special tax audits investigating the legitimacy of certain companies’ sales and marketing expenditures, in particular, sales rebates, purported to be incurred for stimulating local sales and facilitating relationships with doctors and hospitals. As a result of these audits, the tax authority collected a considerable tax revenue from disallowing deductions claimed with respect to improper or illegal “sales rebates,” which is broadly defined to include a number of different types of payments (e.g., excessive speaker fees paid to doctors, financial assistance for doctors in relation to golf or other entertainment offered at seminars, or special cashback arrangements for customers). Some companies were also criminally charged.

A recent court case (Reference to the Supreme Court 2011 do 13730, 2015.01.29) concluded that the provision of illegal sales rebates shall be regarded as an expenditure for non-business purposes and thus such expenditures shall not be deductible. In addition, the Supreme Court recently stated that the tax authority is authorized to charge pharmaceutical companies with criminal responsibility for the provision of illegal rebates.

Legislative activity

Additional tax relief and support for R&D investments
In 2016, the government legislated special tax relief to promote the development of new drugs, including biomedical products and innovative/smart health care/medical devices. Currently, domestic companies engaging in the life sciences and health care industry can claim a 20% R&D tax credit (30% for small and medium-sized enterprises (SMEs)) upon filing their tax returns. This exceeds the normal R&D tax credit rate of 3% for companies in other industries (25% for SMEs).

The Korean Government is now considering a grant of additional tax relief to further support R&D investments targeting new drug development. Based on a current draft proposal, the tax credit rate for R&D investment in developing new drugs and innovative/smart health care/medical devices would be increased from 20% to 30%.

Special tax credit for a new investment to acquire a venture business
Based on a new tax provision effective from 2016, a domestic pharmaceutical company can claim a special tax credit for new investments (i.e., 10% of the new investment less net book value x 130% x shareholding ratio) when acquiring shares of the venture company that is developing a new drug or innovative/smart health care/medical device.

Recent rulings and precedents

Tax Tribunal ruling (Joshim2015seo 929, 2015.06.18)
The Tax Tribunal ruled in favor of the applicant (i.e., pharmaceutical company) on the issue of the deductibility of meal-related expenses. The applicant’s sales representatives visited health care institutions to provide presentations on prescription drugs. Following the presentation, the participants were provided meals in restaurants located outside the health care institutions, during which Q&A on the prescription drugs was held. The applicant treated the entire amount – for presentation and meals – as a deductible business expense, which the tax authority later disallowed as nondeductible entertainment.

The Tax Tribunal ruled in favor of the applicant, as it viewed the meals provided to medical professionals in restaurants outside of health care institutions as not entertainment in nature, but a necessary sales-related expense incurred in the ordinary course of business.

Jae Cheol Kim, Partner, South Korea Life Sciences Tax Leader, Ernst & Young (South Korea) Jae-cheol.kim@kr.ey.com
Indonesia

New transfer pricing documentation requirements

General overview
The Indonesian Ministry of Finance has issued Minister of Finance Regulation number 213/PMK.03/2016 (PMK-213), titled “The type of additional documents and/or information mandatory to be kept by taxpayers who conduct transactions with related parties and its procedures.” PMK-213 implements in Indonesia the guidance on transfer pricing documentation contained in OECD BEPS Action Plan 13. PMK-213 has immediate effect from its stipulation date of 30 December 2016.

Taxpayers are recommended to consider immediate action steps for compliance. Recommended immediate action includes commencing the preparation of the master file and local file for the 2016 fiscal year, given the tight deadlines for preparation, and considering the potential need to prepare a country-by-country report (CbCR).

Transfer pricing documentation under PMK-213: master file and local file
Indonesian taxpayers are now required to prepare a master file and a local file to the extent they conduct related-party transactions that exceed one or more relatively low thresholds. The established transactional and revenue thresholds are based on the prior fiscal year’s transactional and revenue information.

The contents of a master file are largely consistent with those contained in BEPS Action Plan 13, and there is a detailed list of specified items that are required to be contained in the master file in an appendix to PMK-213. The contents of a local file, while relying on the guidance contained within Action Plan 13, are broader than the suggested contents of a local file as outlined in Action Plan 13. Similar to the master file, there is a detailed list of specified items that are required to be contained in the local file in an appendix to PMK-213.

The master file and local file must be prepared in Bahasa Indonesia, and must be available no later than 4 months after the taxpayer’s fiscal year-end. The implications for not having the files available by this date are not entirely clear. However, there are clear (and severe) implications for not having the files available by the time the tax return is due. The Director General of Tax will track availability by both (i) requiring the taxpayer to file a disclosure form with its tax return stating the date the master file and local file were available and (ii) requiring the taxpayer to provide a statement letter certifying the date the master file and local file were available.

In a change from the prior rules, the prior exemption for documenting domestic related-party transactions has been removed, and once a taxpayer has exceeded the thresholds, it will need to document all of its related-party transactions versus simply those transactions that exceed the prior transactional thresholds.

Country-by-country report
A CbCR may be required to be prepared and filed in Indonesia by both Indonesian taxpayers classified as a Parent Entity of a Business Group and Indonesian taxpayers whose Parent Entities are foreign taxpayers. Such requirement will be dependent upon certain conditions, including revenue thresholds, and certain taxpayers may need to file a CbCR in Indonesia despite not being the ultimate parent entity of an MNE.

The CbCR required to be filed by taxpayers in Indonesia is more detailed than that required to be prepared and filed under the guidance contained in Action Plan 13. In addition, PMK-213 introduces a third report, the “CbCR working paper,” which is required to be submitted as part of the CbCR and is over and above the two reports required to be prepared and issued under Action Plan 13.

Like the master file and local file, the CbCR must be prepared in Bahasa Indonesia. The CbCR must be available no later than 12 months after fiscal year-end. The CbCR must be filed together with the corporate income tax return of the following fiscal year.

Jonathon McCarthy, Partner, Transfer Pricing, Ernst & Young (Indonesia) jonathon.mccarthy@id.ey.com
Better with age

A silver opportunity

Global life expectancy is rising relentlessly, and Japan is leading the way. The average life expectancy at birth in Japan is 83.7 years (WHO, 2015) and is not far behind for highly developed nations, such as Switzerland, Singapore and Australia. In this environment, governments are looking at addressing an array of challenges associated with aging to contain and minimize its financial burden on both the social and health care systems.

Declining birth rates in many developed countries and the rise in life expectancy will rapidly increase the percentage of citizens over 65 years old. As of 2014, 26% of Japan’s population was over 65. With a birth rate of less than 8 per 1,000 inhabitants (2015), the over-65 cohort is expected to rise to 31.6% in 2030 and 39.9% in 2060.16

Chart 1:
Trends in death rates by major cause of death for Japanese aged 65 and over, 1990-2013

Health care budgets around the world are under enormous pressure from rising health care costs. A main driver of this cost escalation is the aging society. The strain on health care budgets has led to cost containment initiatives by many governments, targeting all business stakeholders, including the pharmaceutical industry. The initiatives have put pressure on drug pricing and reimbursement and fueled efforts to accelerate the uptake of generics. Japan recently communicated its aim to increase the use of generic drugs to 80% by 2020, with two Japanese multinationals, Takeda Pharmaceutical Company Ltd. (in collaboration with Teva Pharmaceutical Industries Ltd.) and Daiichi Sankyo Espha (the generics business of Daiichi Sankyo Company Ltd.) already communicating their aims of becoming front-runners in the Japanese generics market.

The Japanese government has focused strongly on chronic diseases, where the anticipated cost burden associated with the aging population is highest. Diseases such as dementia, cancer and diabetes, as well as cardio, respiratory and cerebrovascular pathologies lead the way in driving up costs. These morbidities (or comorbidities) require frequent prescriptions, regular interaction with medical staff, and, in many cases, hospitalization, part- or full-time care center support or palliative care.

Over the last half century, there has been great progress in increasing life expectancy. Of primary importance now is reducing the number of years individuals must live with disease.

Japanese men on average live with at least one disease for the final 9 years of their lives, women for 12 years. These numbers have not changed considerably over the last decade or so. Achieving even a seemingly small decrease of 6 to 10 months across the population would have a profound impact on health care and social care budgets.
We see the aging society, or “the silver economy,” as an opportunity for the pharmaceutical industry. We believe innovation for this economy can and will have a lasting impact by improving health and reducing costs in a number of areas, especially the following:

1. Innovation targeting aging and age-related diseases on a molecular level
   a. Therapeutic area-specific molecular innovation
   b. Preventive solutions
   c. Aging biology innovation
2. Innovation targeting aging and age-related diseases with added services
   a. Feedback loops
   b. Other innovative approaches
3. Exploring new territories
   a. Case example: home care

To capture these business opportunities, pharmaceutical companies will need to recognize which innovations are likely to have the biggest impact on reducing the burden of the aging society, but also how they will be reimbursed for their efforts.

1. Innovation targeting aging and age-related diseases on a molecular level

Continued R&D efforts to discover novel molecular treatments for age-related pathologies, such as Alzheimer’s disease, cancer, chronic obstructive pulmonary disease, and cardiovascular and cerebrovascular pathologies, as well as diabetes, will be the industry’s backbone and key to scientific, clinical and commercial success. Beyond traditional R&D, further dedicated efforts in disease prevention and regenerative medicine, which includes gene therapy and tissue engineering, show pronounced promise.

a. Therapeutic-area-specific molecular innovation

F. Hoffmann-La Roche AG (Roche) has been active in recruiting participants over 70 years old for selected geriatric clinical trials, such as the Avastin® trial aimed at treating ovarian cancer. In addition, Roche’s Venclexta®, Mabthera® and Tarceva® have all been tested specifically in individuals over the age of 60, showing the company’s commitment to this side of the age spectrum.

Alzheimer’s disease is an area of great interest. Leading players include Biogen Inc., Eli Lilly and Co., Roche and Takeda/Zinfandel Pharmaceuticals Inc., the latter recently completing recruitment for its TOMMORROW Phase 3 trial with its investigative agent Actos®. This trial is an excellent example of how therapies originally aimed at one specific chronic morbidity (diabetes) may be extended and “repurposed” to address another chronic disease, in this case Alzheimer’s. Additionally in the Alzheimer’s space, Eisai Co. Ltd. (Eisai) has signed and commenced a collaboration with Biogen aimed at discovering new chemical entities.

GlaxoSmithKline plc (GSK), Gilead Sciences Inc., Bayer AG and Daiichi-Sankyo have all conducted, or are currently conducting, trials on novel treatments for patients over 60 – for a wide range of morbidities, including HIV, hypertension, androgen deficiency and hypogonadism.

We will likely see many more such examples as drug manufacturers identify new chemical or biological entities, or revive and retest their current drug repositories, to focus on chronic and age-related diseases.

b. Preventive solutions

On the preventive side, Johnson & Johnson (J&J) has been active. J&J created the Janssen Prevention Center, where dedicated teams work to identify prevention markers, which direct J&J’s search for preventive solutions, such as vaccines, oral drugs and interventions influencing the human microbiome. Measuring, maintaining and extending healthy lives is the stated focus and aim of J&J’s visionary program.
DO-HEALTH\textsuperscript{19}, a five-year clinical trial on preventive measures, sponsored by the University of Zurich (with support from Royal DSM, Roche and Nestlé S.A.) aims to establish whether vitamin D, omega-3 fatty acids and home exercise will help prevent disease at an older age. Further, Takeda\textsuperscript{60} and Daiichi-Sankyo,\textsuperscript{61} together with the Chemo-Sero Therapeutic Research Institute (Kaketsuken), have initiated an expanded Japanese distribution network of seasonal flu shots for the elderly (regular vaccinations are required under the Japanese Preventive Vaccination Law).

Other global leaders in the immunology field include GSK, Sanofi Pasteur MSD and Astellas Pharma Europe Ltd. All have created initiatives on healthy aging.

c. Aging-biology innovation

In the regenerative medicine area, Japan-based Astellas Pharma Inc. recently formed a dedicated research unit\textsuperscript{62} with the goal of delivering cell therapy/transplant innovations aimed at recovering and restoring organ and tissue function lost as a result of aging, among other factors. The company also sees its research in the urology space as crucial, given that treatments for overactive bladder will likely be in increased demand.

Novartis International AG, a leading industry voice and innovator in the field of aging, boasts a wide range of programs focusing on the biology of aging and age-related diseases. Examples include its Afinitor®/everolimus (a rapamycin analogue) anti-aging work on mice and the company’s progress toward addressing various geriatric medical challenges, such as hearing and vision loss. Additionally, Novartis actively researchers ways to address the challenges of osteoporosis and muscle loss/wasting in aged individuals, both major causes of loss of independence in the elderly.

Calico, a company founded by Google Inc. in 2013, also focuses heavily on research into the biology of aging, as well as age-related diseases. Strategic collaboration is a key element of Calico’s business plan, and several agreements have been signed to date – namely with AbbVie Inc., the University of Texas Southwestern Medical Center, the Broad Institute and the Buck Institute for Research on Aging. Calico’s collaboration with the California Institute for Quantitative Biosciences\textsuperscript{63} recently made headlines when animal studies highlighted that adjusting certain protein levels in aged rodents resulted in the mice living significantly longer. First-in-human trials are expected in the future.

In another collaboration, Ascentage Pharma and Unity Biotechnology Inc. have teamed up to develop new and innovative senolytic drugs based on their experience in age-related diseases and cutting-edge technologies, respectively. In Japan, Daiichi-Sankyo recently established a dedicated research unit named Venture Science Laboratories, focusing and collaborating solely on research targets thought to be related to aging.

2. Innovation targeting aging and age-related diseases with added services

While continued advances to molecular therapies are of paramount importance, some recent examples of inventive strategies have opened up alternative pathways to innovation. In many cases, these paths include, or are based on, creating feedback loops through data collection and analysis – arguably the single most critical requirement for health outcomes monitoring and reimbursement in the decades to come. Other innovative approaches include gamification, bioelectronics and artificial intelligence.

a. Feedback loops

A number of business models highlight how preventive medicine and wellness can be taken directly to individuals who have not yet, or might never become, patients. Arivale Inc.\textsuperscript{64} offers customers four health “paths,” one titled Age Optimally. Genetic, blood, saliva, gut microbiome and lifestyle data are collected, analyzed and evaluated, helping individuals make lifestyle and health decisions based on their personal information and scientific data. Personal coaches who interact with physicians in the background are available and support Arivale’s customers to address health risks related to their wellness. Huneo LLC, a start-up company, has specialized in storing vital-sign data of healthy individuals for extensive periods of time, allowing physicians to use the data in the future, if ever needed.
Comnkql, another start-up, helps individuals make decisions about their own and their children’s futures, via pre- or post-conception genetic testing, enabling a potentially healthier future by identifying risks for disease. Established testing for the well-known breast cancer gene (BRCA1) is also available. SkinVision and Neurotrack Technologies also focus on early disease detection — for melanoma and Alzheimer’s, respectively. Further, Health Nucleus, a venture formed by Human Longevity Inc., aims to provide self-paying individuals, as well as up to 200 million South Africans and UK residents insured by health insurer Discovery, with whole exome, whole genome and cancer genome sequencing. The company intends to create the world’s most comprehensive database of whole genome, phenotype and clinical data.

In Japan, Daiichi-Sankyo announced it is looking to obtain real world data on, and therewith insights into, non-valvular atrial fibrillation in the Japanese elderly population (75 and over). The company’s ANAFIE (All Nippon Atrial Fibrillation In Elderly) study is collecting data to investigate the use of anticoagulants and their impact on outcomes, and thus identify issues that are barriers to ideal treatment in this population. The study further aims to identify risk factors for thrombotic and bleeding events to determine the population in which direct oral anticoagulants may provide benefits.

b. Other innovative approaches

Pfizer Inc. has recently shared updates on its double-blind Alzheimer’s study run in collaboration with Akili Interactive Labs, an expert in gamification. Pfizer’s efforts are aimed at early non-invasive detection of Alzheimer’s via interpretation of a combination of digital and chemical biomarkers. Bayer has initiated digital health care activities in the Asia-Pacific region aimed at the elderly population with its Grants4Apps Singapore project, looking for innovative solutions to improve medication adherence in elderly people with chronic medical conditions.

Other innovative approaches to treat disease include the field of bioelectronics, where GSK recently signed a partnership with Verily Life Sciences (Alphabet Inc.’s life sciences unit) to codevelop products for chronic diseases such as arthritis, asthma and diabetes based on bioelectronic medicines.

Artificial intelligence (AI) and deep learning have been used for product development by some life sciences businesses, namely Life Extension, a Florida-based foundation providing nutritional and hormonal supplements. The company recently signed a collaboration with AI and deep learning firm Insilico Medicine Inc. to develop anti-aging technologies.

3. Exploring new territories

In addition to novel molecular treatments, repurposing of drugs, identification of biomarkers and geroprotectors, further innovation in the areas of medical devices, in vitro diagnostics and telehealth will likely have a pronounced impact on the aging society — especially as they impact home care.

a. Case example: home care

The Japanese government has identified home care as a key area with an immediate need for improvement. Research conducted for the Government illustrates that many elderly can maintain their independent lifestyles with only minimal support. Leading Japanese pharmaceutical manufacturers have for years donated dozens of ambulances and wheelchair-friendly vehicles to Japanese communities. While this is an immensely valuable contribution to the health and social care ecosystem and will certainly contribute to decreasing the incidence of long-term disabilities (e.g., fast transport/treatment on board an ambulance greatly reduces the
risk of long-term disability after a stroke or fall), other more radical innovations will be needed to tackle the aging challenge.

IBM Corp., Apple Inc. and Japan Post Holdings (JP) have begun an initiative customized for the senior population, connecting the elderly and their families directly with health care providers via computer tablets and cloud services. The aim is to improve patient quality of life by bringing app-based experiences and services, such as reminders, medication alerts, exercise and diet updates, and local community activity opportunities, to up to 5 million households by 2020. While Apple and IBM provide IT solutions, JP's contribution comes from its nationwide infrastructure. This infrastructure is able to reach many citizens, as illustrated by the company's current service offering to "check in" on the elderly as part of daily mail deliveries. JP has more than 24,000 post offices and financial relationships with millions of customers, largely through providing life insurance services.

Japan's Eisai has identified a similar opportunity and partnered with NTT IT/NTT East (Nippon Telegraph and Telephone) to roll out an interprofessional program for medical treatment and care, allowing the elderly to continue to live in their communities. The collaboration, named "Hikari One Team SP" ("SP" for Solve Problem), aims to use the experience of all parties to deliver a comprehensive solution and give peace of mind and safety to the elderly and their families at home.

Remote monitoring and telehealth provide further opportunities for pharmaceutical businesses to collaborate with non-traditional players to get closer to their customers. Academic institutions such as the University of California, Irvine have conducted pilot studies in remote monitoring of elderly patients using tools such as the university's CardioMEMS sensor, capable of remotely monitoring patient pulmonary artery pressure and heart rate. Japan, a global leader in robotics and AI, has also seen a vast increase in investments into robotics aimed at the home care and nursing home markets. Numerous robots targeting these markets already exist, two examples being Pepper and Paro, which will be part of a US$6 million real-world study by Japan's Agency for Medical Research and Development investigating the therapeutic effects of such devices in nursing homes.

While the pharmaceutical industry will likely remain hesitant to get involved in robotics, these examples show that potential opportunities for portfolio expansions and innovation may come from new and even radical collaborations that at first seem unlikely. In fact, collaborations with robotics and digital assistant manufacturers could become critical, as they may provide pharmaceutical businesses with much-needed outcomes data that will be required for reimbursement of their therapies and services. Further, not only outcomes data are valuable, but the improved understanding of end customers' routines, daily struggles, challenges and concerns are as well.
Business models

The examples and discussion above highlight that the pharmaceutical and life sciences industry has already embraced some of the challenges and opportunities the aging society brings. Businesses often try to identify opportunities within reach of their current therapeutic areas and strategies, but in many cases do not go beyond that. While proven business models are indispensable, collaborating with digital, IT and cutting-edge technology businesses experienced in data collection and interpretation will become not only valuable but essential. Access to data still remains the biggest challenge for pharmaceutical companies attempting to gather health outcomes information. Business models will need to (be allowed to) evolve to include alternative paths to prevention or anticipation of disease. Therapeutic effects and the vectors defining or measuring these will need to be broadened. This can only be done via a collective push and comprehensive alignment of all stakeholders.

The current model of separation between health care and social care will need to be challenged. In a world where health outcomes data is key to physician and (elderly) patient confidence and will trigger reimbursement by payers, health care and social care budgets need to be managed in parallel. Governments and legislators will need to urge and request innovative organizations to show their contributions to both of these systems, and align with businesses as early as during the ideation and design phases of a new product or service. Only once this integration and truly cross-functional approach have been achieved will health outcomes data find its true power.

Starting with questions

It is clear there is no single solution to effectively address the growing health needs of the aging society. Pharmaceutical professionals will need to address a multitude of questions to be competitive and to adapt to the ever-changing commercial and regulatory environment. The impact of the aging society will need to be evaluated on a regular basis with dedicated teams closely aligned with regulators, governments, academics, payers and even disruptive players. To rise to the challenge and to make the appropriate strategic decisions, the industry may consider questions such as:

1. What are the current needs of the elderly and what will these be in 10 to 15 years?
2. How can these needs be addressed through molecular innovation, services or new approaches?
3. How can new solutions be delivered best, and with which partners?
4. How can we make the case for the value these solutions will provide and to whom? How will they be reimbursed and paid for?
5. Which data can and needs to be collected, and how?
6. What is the optimal portfolio of molecular innovation, services and new approaches to capture the current opportunity while getting ready for the future?
7. What are the innovative technologies or potential partners that are emerging and how can they be used to deliver disruptive services?

In this patient-centric world, likely one of the best places to start is by asking the affected population itself: what are elderly people worried about, what are their struggles and what is it they need?
The centralization of intellectual property (such as patents, licenses and trademarks) and functions (such as procurement, marketing, manufacturing and distribution) into regional or global hubs is one of the main drivers of efficiency and risk management for life sciences multinational enterprises (MNEs).

Such centralization can, however, also give rise to questions of whether the tax outcome of such an arrangement reflects the economic substance of the arrangement and whether the legal form of the arrangement is used to inappropriately divert profits from a higher tax jurisdiction. This has been one of the key themes the base erosion and profit shifting (BEPS) initiative of the Organisation for Economic Co-operation and Development (OECD) has sought to address.

In light of these concerns, Australia has recently announced its intent to introduce, from 1 July 2017, the Diverted Profits Tax (DPT) regime to facilitate increased scrutiny, more efficient dispute resolution and a tighter focus on economic substance over legal form in relation to MNEs with Australian operations. The DPT broadly aims to achieve these objectives by:

- Further strengthening Australia’s anti-avoidance provisions
- Imposing tax at a higher rate than the corporate income tax rate where it applies
- Applying where the profits recognized by each entity in the supply chain are not reflective of the economic substance of the arrangement
- Compressing the fact-gathering stage in a DPT tax dispute to 12 months
- Imposing evidentiary restrictions on any information or documents not volunteered to the Australian Taxation Office (ATO) within the 12-month fact-gathering period

With the increased focus by the ATO on transactions within the life sciences sector, it is important to consider how to manage the technical and procedural issues arising from the DPT.
DPT rules

Broadly stated, the DPT will apply where an MNE enters into a scheme involving a low tax jurisdiction for a principal purpose of obtaining a tax benefit (i.e., reducing its Australian tax liability) and achieves this outcome. There must also be a mismatch between the outcome of the scheme and the economic substance of the scheme. More specifically, all of the following requirements must be met for the DPT to apply:

- The MNE has a global turnover equal to or greater than AU$1 billion and Australian turnover of greater than AU$25 million.
- There is a scheme (which can include several steps or just a single step) involving foreign associated entities located in jurisdictions with a corporate tax rate less than 24% (less than 80% of Australia’s corporate income tax rate).
- The Australian entity in the MNE receives a tax benefit in connection with the scheme. The tax benefit is determined by comparison to a hypothetical alternative tax calculation (i.e., what might reasonably be expected to have happened absent the scheme).
- The principal purpose of the MNE in entering into the scheme was to obtain a tax benefit. This is an objective test and can apply even though the overall purpose of the transaction is commercial.
- The result of the scheme does not reflect the economic substance of the scheme's participants.

The DPT has a similar operation to the second limb of the UK's DPT regime (the first limb covered by Australia's Multinational Anti-Avoidance Law, which applied from 1 January 2016) in that both sets of rules target arrangements with related foreign entities in low-tax jurisdictions where there is insufficient economic substance. However, the Australian DPT does not currently incorporate blanket carve-outs for certain common transactions (such as financing arrangements).

The ATO has seven years after an income tax assessment is issued to apply the DPT to that income year. The DPT will override the operation of Australia’s double tax agreements to the extent that it applies to the MNE’s circumstances, and Mutual Agreement Procedures under the relevant double tax agreement will not be available to provide relief to tax imposed under the DPT.

If the DPT applies to an MNE, the Commissioner may impose a penalty tax at 40% of profits diverted from Australia (compared to the 30% Australian corporate tax rate). Challenging the application of the DPT is complicated by administrative and procedural rules that have the effect of requiring payment of the DPT liability up front and imposes a period of 12 months in which no appeal can be lodged to challenge the application of the DPT.

During this 12-month period, the MNE will be required to provide information on its position to the ATO, and any information not provided will be inadmissible in an appeal. The bar on admissibility applies regardless of whether the ATO had requested the information. Specifically:

- From the time the ATO informs the MNE of its intention to apply the DPT, the MNE has 60 days to make submissions before the final DPT assessment is issued.
- Payment of the DPT amount is due within 21 days of the ATO issuing a DPT assessment.
- There is a 12-month review period in which an MNE may provide the ATO with further information (this period may be shortened in some circumstances).
- During the review period, the MNE cannot appeal the DPT assessment to obtain a refund of the DPT amount paid. After the review period, the MNE can only appeal to the Federal Court (instead of either the Federal Court or the Administrative Appeals Tribunal) and has a shortened window in which to file an appeal.
- Any evidence not provided to the ATO in the 12-month period is inadmissible in court proceedings to challenge the DPT assessment.
Considerations for the life sciences sector

Life sciences MNEs typically have a number of cascading license and service agreements throughout various jurisdictions, with the effect of centralizing the ownership of intellectual property (IP) in one or more jurisdictions from which the development, enhancement, maintenance, protection and exploitation (DEMPE) of those IP rights are managed. Consider the following example.

Following a third-party acquisition of an entity with valuable IP, the legacy IP is transferred (at market value) by the newly acquired entity to an MNE’s IP hub, which then charges the transferor for access to or benefits in respect of the legacy IP. While legal and financial risk in respect of the legacy IP is transferred to the IP hub, this entity may not have the full capacity to manage, make decisions or oversee all of the risks associated with the DEMPE activities (or its corresponding impact on the IP), instead relying on the originating entity (or other related parties) to support it in this regard. In such a case, a question arises as to whether the IP hub should be entitled to all residual of profits or should in fact only be entitled to a lesser return and, consequently, whether any of the charges paid or payable by the legacy transferor for access to or the benefits of the legacy IP could be considered excessive and subject to the DPT.

For the purpose of the DPT, life sciences MNEs will need to consider the profits generated at each stage of their supply chain and consider whether that reflects the economic substance of the arrangement as a whole (similar to applying the profit-split methodology in transfer pricing). In many instances, there also may not be a simple chain of bilateral agreements but rather a multilateral web of various contractual relationships between members of the MNE. This would further complicate the analysis that needs to be carried out.

Further evidence will also need to be gathered on which reasonable hypothetical counterfactual may apply (which goes to whether there is a requisite tax benefit) and whether the principal purpose of the arrangement was to obtain that tax benefit or to obtain a tax benefit and a reduction in a foreign tax liability (whether of the payer or another entity related to or connected with the arrangement).

Challenging a DPT assessment

Before challenging a DPT assessment, taxpayers will need to consider:

- Cash flow considerations in relation to paying the DPT amount up front
- Legal form vs. economic substance on a whole-of-supply-chain basis
- Whether the hub entity can operationally manage the totality of commercial risks faced in the business (as opposed to just taking on financing risk)
- Which evidence to provide the ATO during the review period in order to preserve admissibility on appeal
- The short time frame for gathering the necessary evidence and seeking legal advice
- The cost/benefit of settling on a transfer pricing basis or obtaining an advance pricing agreement vs. the risk of paying tax at 40%
- Potential reputational risk arising from tax avoidance litigation

Conclusion and recommendations

The Australian Government introduced the DPT legislation into Parliament on 9 February 2017, with the intention of the DPT applying to income years commencing on or after 1 July 2017. We recommend that taxpayers begin to consider their organizational structures and supply chains from the perspective of economic substance as far as they may be relevant to the DPT. If the ATO does impose a DPT assessment, there will be an extremely compressed time frame in which to consider one’s position and gather the necessary evidence to support an appeal.

In the interim and if not already under review, consideration should be given to either the feasibility of obtaining an advance pricing agreement (a choice, we acknowledge, that will require consideration and discussion with the ATO of overall system profits) or reviewing and refreshing current transfer pricing arrangements and documentation for defense against the DPT and for the changes introduced more broadly with BEPS Action Items 8 through 10.
In every industry, customers are more informed and empowered than ever. They compare prices, check online reviews and are increasingly selective about the brands they choose. They form impressions from every interaction with a company and share their opinions within their networks and communities. They compare customer experience across brands, companies and industries. Today, a product’s features are rarely enough to drive a sale, as the customer will choose a product based on the overall total experience derived from interacting with the brand or company.

This shift in buying behavior and expectations presents significant challenges, as well as opportunities, for companies in all industries.

In response, companies are redefining the customer experience, threatening disruption of mainline businesses.

The potential for disruption is just as high in the life sciences sector: customer experience has become the new battleground. To survive and thrive today, life sciences companies must engage the right customers with the right messages through the right channels at the right time. And since health care delivery is so highly regulated, they must also engage in the right way.

What does this mean specifically for life sciences companies operating in APAC?

**Figure 1: Customer experience is the new battleground**

Different engagement channels are used to...
- target the right customers...
- with the right message/content...
- through the right channels...
- in the right format...
- at the right time...
- in the right way (compliant).
External market conditions

Life sciences companies have three primary customers towards whom they direct their marketing efforts: health care practitioners, payers (both public and private) and patients. In the US and Europe, companies have started to engage with these different customers in different ways, emphasizing enhanced experiences. The situation in APAC, however, is still evolving. Part of the reason is APAC’s complexity: every country has different laws and regulations, cultures and languages, as well as economies and government structures. These dynamics need to be considered on a market-by-market basis when life sciences companies seek to establish integrated cross-channel customer engagement opportunities in APAC, so as to limit risk exposure, including capital, reputational and operational risks.

In addition, different markets show different levels of digital maturity, and the extent to which they provide favorable environments for digital transformation varies. Singapore tops the Economist Intelligence Unit’s Asian Digital Transformation Index due to its well-developed digital infrastructure, but the country lags behind when it comes to providing the right skills and capabilities. Furthermore, customers’ readiness for and receptiveness to technology in these markets varies widely, which affects the development and deployment of tactics that involve multiple channels, including traditional and digital ones that are increasingly integrated and supporting one another.

Data such as in Figure 2 may provide insights into what needs to be considered in each market in terms of customer engagement. For example: are customers more likely to use their mobile phones than their personal computers for shopping? Do they like to be engaged via social networks, or do they prefer a phone call?

Depending on a country’s digital maturity and customers’ preferences, there may be limited alternatives to the traditional face-to-face customer engagement approach, at least for the time being. But companies need to be ready to revise their practices quickly given the potential for rapid technological and customer change. After all, South Korea, Singapore and Hong Kong now have some of the fastest internet connections in the world (see Figure 3). There is no question that connectivity will change how health care providers deliver care to patients. At the same time, connectivity means that customers have better access to information, which will heighten their expectations for better disease treatment outcomes.

Change is happening fast at the broadest level, and rising customer expectations will be a reality in the near future, even in markets that seem more nascent today. Again, a market-by-market customer engagement approach is required to adapt to local dynamics and enhance the local customers’ experience while benefiting the patient.

Figure 2: Channel penetration rate by Asia-Pac market
Customer preferences for channel use vary across APAC markets. The majority of the markets have a higher social media penetration rate (via mobile) than the global average. Such dynamics need to be considered when developing multichannel strategies.
In addition to dealing with varying levels of digital maturity, life sciences companies working in APAC must understand the disparate and rapidly evolving health care systems of the region. Individual markets have undertaken reforms addressing a range of concerns, including streamlining the drug approval process, promoting health care accessibility, putting downward pressure on product pricing and encouraging innovation. Based on a given country’s digital readiness and its other health policy objectives, it may be difficult to drive the adoption of digital technology in a meaningful way. Finally, as in other nations, life sciences companies operating in APAC struggle to keep up with the multitude and diversity of stakeholders and decision-makers that may or may not need to be considered as customers.

In many APAC countries, regulations prohibiting promotional interactions prevent companies from interacting directly with patients, who are not only the consumers but very often also the direct payers. Hence in many APAC markets, physicians are considered the primary customer and the traditional sales model still holds; face-to-face interactions between the physician and the sales representative are believed to be the sole effective source of revenue generation. This requires companies to have sales teams with strong relationships with the physician. However, competition for talent means many life sciences players struggle with high sales force turnover. This turnover limits the ability of a company to gain in-depth customer insights through its sales force and requires companies to think about how they can obtain such information in other ways.

Bribery scandals in China and elsewhere have also left deep scars, fundamentally increasing the compliance risk associated with interacting with physicians. As a result, companies have had to completely redefine how they approach physicians. These new practices sometimes conflict with traditional culture in which it might be normal to provide customers with gifts as a token of appreciation of the relationship. Additionally, because of the perceived risks, the compliance measures create barriers to adopting more creative ways to engage with customers, including “pull” that allows tailored engagement based on the needs and preferences of the customer.

**Internal challenges**

Some life sciences companies in APAC have only recently introduced medical affairs and market access as functions with customer-facing personnel. While these functions continue to outline their roles and responsibilities as part of the customer-facing organization, their activities are often defined by tasks to be done rather than customer need. Coordination in relation to customers remains difficult, especially with the introduction of additional channels. Multiple channels mean customers can have “multiple identities” and be targeted by various entities inconsistently. While many companies have started to collect customer data, they still struggle to make sense of it. Aspects like data quality and the ability to get a holistic view of the customer across different functions continue to pose challenges and will need to be addressed to master multichannel marketing.
New technologies for customer engagement are typically being evaluated based on their suitability for US and European markets. As a consequence, rollout in APAC countries is sometimes done half-heartedly, either because the new technology does not bring any perceived value to the country or because local people have not been trained to deploy and use it. In addition, IT teams in some APAC markets are still primarily concerned with providing the business with stable internet access and can’t be bothered to roll out new tools that are not being supported by existing broadband speed. As a result, some of the new channels used to engage customers in other parts of the world are not being used in every APAC country. At the same time, there are unique solutions being offered in select markets that address local needs – for example, WeChat has been widely used in China to communicate with customers, including physicians.

While affiliates are beginning to interact with their customers through multiple channels, these channels are often not integrated. This results in a fragmented landscape, where stand-alone technology solutions arise that are difficult to integrate and maintain. Furthermore, these solutions are not set up to facilitate cross-country insights, so they are soon abandoned by marketing teams who see them as having limited value.

Finding the right talent

With technologies evolving rapidly, it can be difficult to hire people capable of supporting their rollout and maintenance. This is especially true in markets where digital is nascent. Without the right skill sets to support the technology side of the business, customer engagement through digital channels will be patchy and will not be integrated across channels. Unfortunately, in some APAC markets, the right skill sets are very hard to find.

At the same time, it’s not always clear who in the organization “owns” new digital technologies and this is by no means an APAC-specific phenomenon. In APAC, brand teams have launched multiple technology initiatives, but it’s not always clear who can help deploy the new tools successfully to get the most out of them. Sales and marketing teams in APAC will have access to local IT support, but the IT team frequently lacks the required knowledge or bandwidth. Digital as a function is still not widely represented due to budget constraints in an economically challenging environment, lack of acknowledgment by the local business leader of the importance of such capabilities and difficulties in finding people with the right skills.

As companies integrate more kinds of data, using multiple channels to precisely target and interact with different customers is the ultimate goal. At the moment, data management and use in many APAC markets is still emerging – in some instances, employees still prefer to use their own spreadsheets to collect data instead of entering them into an integrated system. In many markets, sales teams are not using existing CRM systems consistently to track customer data, thereby missing out on insights that might change business practices and performance. Also, for compliance reasons, different functions sometimes lack access to the same data within the CRM system, limiting its use as a true relationship management tool.

Figure 4: Internal and external challenges slowing the adoption of multichannel in APAC markets

Many challenges are “homegrown” and can be overcome with the right measures.

<table>
<thead>
<tr>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Understanding and addressing customer needs and expectations as opposed to delivering product-focused messages</td>
<td>▶ Complexity of APAC as a market with a wide range of digital maturity levels</td>
</tr>
<tr>
<td>▶ Uncertainty about correct customer engagement practices after bribery scandals</td>
<td>▶ Evolving health care and regulatory systems</td>
</tr>
<tr>
<td>▶ Siloed thinking and lack of collaboration across different functions</td>
<td>▶ Vast diversity of customers with different behaviors and needs</td>
</tr>
<tr>
<td>▶ Difficulty translating business needs into technology features</td>
<td>▶ Consumerism setting new expectations for pharma</td>
</tr>
<tr>
<td>▶ Lack of the necessary skill sets and capabilities</td>
<td>▶ Poor data quality and management limit the use of data to generate customer insights</td>
</tr>
<tr>
<td>▶ Belief in traditional face-to-face selling approach</td>
<td>▶ High turnover of sales force limiting data/knowledge transfer</td>
</tr>
</tbody>
</table>
What is next?

Despite challenging market conditions, life sciences companies in APAC need to first tackle their internal challenges – they need to drive the customer engagement transformation journey by moving away from being product-focused and becoming customer-centric. In traditional sales lingo, that means moving from a push model to a pull model.

Considering the different maturity levels of customer engagement capabilities in countries across APAC, teams will need to define their own ambitions in terms of where they want to be within a particular time frame so that they can develop and deploy the right initiatives. Not every affiliate in APAC needs to become a master at multichannel marketing – some may need to focus on fixing the base (see Figure 5). That alone will be sufficient to help them deliver their customer promise and achieve their vision in the short term. Companies will need to think through which markets to prioritize for investments.

Once a vision has been set, it is imperative to put strong governance in place. Different companies will have different ways to drive multichannel efforts within their APAC market regions – it will help to have a dedicated, central “customer lead” for each region, sponsored at the regional or global level, to at least initiate the transformation and drive change across affiliates. This lead can promote leading practices and make sure solutions across affiliates are deployed in ways that comply with legal and regulatory requirements. At the same time, this project manager should work with counterparts in other regions to learn what is working, and what is not, and avoid reinventing processes or investing in approaches that are suboptimal.

In each market, teams must move away from simply targeting historically high-prescribing physicians to understanding their customers across all possible dimensions. Insights on customers should be collected and analyzed across the entire organization, and each customer relationship must be viewed individually. To create an optimal experience, multiple business functions must drive the customer encounter; in addition to commercial teams, the field force and back-office functions, including IT and finance, have important roles to play. For example, think about the impact a terrible invoicing experience between your finance team and your largest hospital customer’s procurement team may have on your revenues. Affiliates need to define new areas that can lead to customer insights. For example, while different teams may be sending multiple emails to their respective customers, not many markets will be tracking whether these emails are opened and read.

Technologies and systems need to be integrated to support multichannel activities. Data will need to be collected and analyzed across multiple dimensions to support fast learning and generate

---

**Figure 5: Setting your ambitions**

To design a road map for your journey, affiliates should first verify their current level of digital capability.
insights that can enhance customer experience. As part of these efforts, companies must also continue to understand how their customers now define value, and how they will do so in the future, so that they can develop products and services that meet the changing expectations.

It’s becoming more important to identify trends early, while at the same time understanding which ones will last. Local customer insights should also be used to inform drug development to appeal to an APAC patient base. For example, with approximately 1.3 billion people in China using traditional Chinese medicine as their primary approach to treat and manage diseases, further insights on patients’ preferences may help improve the development of “Western” medicine in such a way as to appeal to a Chinese audience. Considering local practices, cultures and tastes in their product portfolios has made multinationals in many industries extremely successful in APAC.

At the same time, life sciences affiliates need to change the mindset of all their employees to become more customer-centric and embed “what they want to stand for” in every interaction they have with customers (again, this also holds true for the finance team that is issuing an invoice to your largest customer). This transformation needs to be driven both top-down and bottom-up. It may even require reorganizing the commercial organization, hiring new talent and adjusting KPIs to measure customer engagement and experience, not just product sales.

Finally, a culture of failing fast and learning by doing needs to be infused into the organization. In today’s fast-paced and dynamic environment, it’s sometimes very hard to predict successful initiatives or estimate ROI. Companies need to create an environment that allows teams to experiment, piloting different initiatives and moving quickly. This includes venturing into new partnerships with local companies to further drive the ambition of providing customers with a great experience.

While multichannel is still new territory for many life sciences companies in some APAC markets, customers’ expectations are increasing directly with digital use.

Digital health is today’s reality. Life sciences companies must stay abreast of new innovations or lose market share. To rise above the competition, life sciences companies in APAC need to focus on what matters most to their customers and deliver a best-in-class experience to them despite some of the complex and unique challenges that arise because of regulatory demands and market variabilities in APAC.

---

**Search engines**

<table>
<thead>
<tr>
<th>Of doctors in APAC use search engines (including Google) as a clinical decision support tool</th>
<th>~90% of Australian physicians regularly use search engines for professional purposes</th>
</tr>
</thead>
</table>

**Emails**

In India, **one in two** prefer emails for engaging with pharma companies

HCPs in China and India prefer **>4 emails a month**

**Smartphones**

~50% of HCPs in China access medical information through their mobile phones, which is double the usage trend among the HCPs in the US

**Networking apps/social media**

80% of physicians use WeChat on a daily basis in China

More than 50% of Chinese physicians use social media regularly

**E-detailing**

In China, HCPs are **two times** more inclined toward online detailing over face-to-face detailing using tablets

---

Sources:
1. Clinical Search – AI1 understanding of healthcare professionals’ attitudes, needs and challenges, GGM
2. Indegene survey on The Digital Sawy HCP 2015
3. 2012 DXY survey of Chinese physicians
4. Taking the Pulse Global 2016

---

March 2017 | 31
2016 saw the cancellation of what was potentially the largest-ever life sciences transaction, the Pfizer-Allergan deal, due to regulatory changes by the U.S. Treasury Department aimed at reducing the attractiveness of tax-inversion deals. The changes have led to a decline in deal value over the last two years, with 2014 now the peak year for M&A over the last five years, thanks to two mega-ticket tax inversion deals involving Covidien and Allergan.

Total global deal value in life sciences was approximately US$265 billion in 2016, down nearly 6% year over year (YOY), despite a more active 1H compared to 1H2015. The decline was due primarily to a significant drop in US M&A activity resulting from uncertainty surrounding the outcome of the US presidential election. Months after the election, US companies still appear to be waiting for clarity on regulations of drug pricing and the fate of Obamacare. In addition, the pool of suitable targets has shrunk due to the high pace of M&A activity in the last two years, thus forcing multiple potential acquirers to target the same company. This has, in turn, led to a decline in deal count for all but small deals, as well as a slowing of the deal process.

Deal volume witnessed a slight increase of 4% from 2015, thanks to a higher number of small-value transactions. There were 39 deals valued at US$1 billion or more in 2016, down from 50 such transactions in 2015. Compared to other sectors, life sciences was fifth in total deal value, following technology, diversified industrial products, oil and gas, and consumer products and retail.
The medical devices subsector appears to be going through another phase of consolidation, owing partially to healthy revenue growth in 2015 following the high level of M&A in the subsector in 2014. The acquisitions of St. Jude Medical and Toshiba Medical Systems Corp. by Abbott Laboratories and Canon, respectively, illustrate this trend. The two deals made the medical devices subsector the biggest gainer in terms of total deal value in 2016: the subsector registered a staggering 123% YOY rise, while all other subsectors recorded declines. Among all subsectors, pharmaceuticals accounted for the largest share of life sciences deal value in 2016, at 54% (down from 69% in 2015). Medical devices contributed 29% (up from 12% in 2015).

The Shire-Baxalta deal was completed in 2016, after the initial offer in August 2015 was declined. Baxalta had earlier spun off from its parent, Baxter International, in July 2015, and it was soon targeted by Shire with an offer of US$35 billion. Shire expects the completed deal to catapult the company to global leader status in rare disease drugs with a portfolio worth US$20 billion in 2020. The deal is one of the 10 biggest takeovers by a UK-listed company.

2016 also saw the second major asset swap deal involving big pharma, in the form of the yet-to-close transaction between Sanofi and Boehringer Ingelheim. Sanofi is trading its ill-fitting animal health business, Merial, for Boehringer Ingelheim’s consumer brands, creating a win-win for both firms. Big pharma was also engaged in bolt-on acquisitions, including Pfizer’s acquisition of Medivation and Anacor Pharmaceuticals to bolster specific portfolios of oncology, and inflammation and immunology, respectively.
Mergers and acquisitions — Asia

In line with the global picture, Asia deal value slowed in 2016, declining 14% YOY to US$49.4 billion. However, the number of deals increased to 801 from 786 in 2015. Asia accounted for 36% of global industry dealmaking by count. By value, however, the region’s contribution stood at 19%, implying a significant difference in average deal size between Asia and the rest of the world.

Regional M&A value grew at a 32% CAGR during 2012–16, with volume growing at a 10% rate. These strong figures highlight the importance of the region in the global life sciences industry.

By subsector, dealmaking in Asia witnessed a similar trend to the global picture in 2016. Medical devices recorded the highest YOY growth in deal value, 39%, due largely to Canon’s acquisition of Toshiba Medical Systems. By contrast, the remaining three subsectors reported declines in deal value.

Still, deal value CAGR since 2012 was positive for all subsectors. Medical devices posted the highest rate, 40%, followed by pharmaceuticals at 33%.
Asia life sciences M&A by target market, 2016

China (including Hong Kong) alone accounted for as much as 64% of the total regional life sciences deal value in 2016. This was driven by four deals worth more than US$1 billion each out of the total eight such deals recorded in Asia in 2016. This 64% figure represents a significant decline from 2015, when China accounted for more than 80% of the region’s M&A value — a sign of the growing importance of other markets in Asia. Japan was a bright spot, with total deal value roughly quadrupling and its total contribution to the region rising from 5% in 2015 to 20% in 2016. South Korea was a distant third, accounting for 8% of Asian deal value.

As in 2015, China M&A deals in 2016 were largely domestic consolidation and included many sub-billion-dollar deals. A majority of the deals were within Asia. Continuing consolidation signals the maturation of domestic players. Competition for assets will only increase, limiting the M&A window for multinationals.

Top 10 Asia life sciences M&As, 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Target</th>
<th>Acquirer</th>
<th>Value (US$m)</th>
<th>Deal description/rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>China*</td>
<td>3Q</td>
<td>Toshiba Medical Systems Corp</td>
<td>Canon Inc.</td>
<td>3,648</td>
<td>Canon agreed to acquire the entire share capital of Toshiba Medical Systems Corp.</td>
</tr>
<tr>
<td>Japan</td>
<td>4Q</td>
<td>Yunnan Baiyao Holding Co.</td>
<td>New Huddu Industrial Group Co.</td>
<td>1,246</td>
<td>Yunnan Baiyao Holding to sell a 50% stake in Yunnan Baiyao Group to fund its buyback program.</td>
</tr>
<tr>
<td>Japan</td>
<td>4Q</td>
<td>Wako Pure Chemical industries</td>
<td>Fujifilm</td>
<td>1,109</td>
<td>Fujifilm agreed to acquire a 70% stake, including the 35% stake sold by Takeda, in Wako Pure Chemical.</td>
</tr>
<tr>
<td>China*</td>
<td>2Q</td>
<td>Chongqing Pharmaceutical Group</td>
<td>Chongqing Jianfeng Chemical Co.</td>
<td>1,260</td>
<td>Chongqing Jianfeng Chemical to acquire a 96.6% interest in Chongqing Pharmaceutical from multiple entities.</td>
</tr>
<tr>
<td>India</td>
<td>3Q</td>
<td>Gland Pharma</td>
<td>Shanghai Fosun Pharmaceutical Group Co.</td>
<td>1,260</td>
<td>Shanghai Fosun Pharmaceutical definitively agreed to acquire an 86% interest in India-based Gland Pharma.</td>
</tr>
<tr>
<td>South Korea</td>
<td>3Q</td>
<td>LG Life Sciences</td>
<td>LG Chem</td>
<td>1,246</td>
<td>LG Chem agreed to merge with LG Life Sciences in a stock swap transaction.</td>
</tr>
<tr>
<td>China*</td>
<td>2Q</td>
<td>Shandong Weigao Orthopaedic Device Co.</td>
<td>Zhuzhou Winbase International Chemical Tank Terminal Co.</td>
<td>1,109</td>
<td>Zhuzhou Winbase International Chemical Tank agreed to acquire the entire share capital of Shandong Weigao Orthopaedic Device from its joint venture partners.</td>
</tr>
<tr>
<td>China*</td>
<td>4Q</td>
<td>Wako Pure Chemical industries</td>
<td>Wako Pure Chemical Industries</td>
<td>829</td>
<td>Takeda agreed to divest its 35% stake in Wako Pure Chemical.</td>
</tr>
<tr>
<td>China*</td>
<td>4Q</td>
<td>Zibo Qixiang Tengda Chemical Co.</td>
<td>King Vision Group</td>
<td>765</td>
<td>King Vision Group launched a mandatory tender offer for a 45.3% stake in Zibo Qixiang Tengda Chemical.</td>
</tr>
<tr>
<td>China*</td>
<td>4Q</td>
<td>Beijing Berry Genomics Co.</td>
<td>Chengdu Tianxing Instrument &amp; Meter Co.</td>
<td>654</td>
<td>Chengdu Tianxing agreed to acquire the entire share capital of Beijing Berry Genomics Biotechnology.</td>
</tr>
</tbody>
</table>

In 2016, there were eight M&A deals worth more than US$1 billion and 14 worth more than US$500 million. This was a big decline from 2015, when there were 12 deals valued above US$1 billion and 29 deals valued above US$500 million. Of the 14 deals worth more than US$500 million in 2016, 12 involved both target and acquirer domiciled in the same nation. China was responsible for 5 of the 10 largest deals in the year.

In the largest deal of 2016, Canon acquired Toshiba Medical Systems as part of Canon’s strategic transformation program aimed at expanding new businesses and growing its health care business alongside safety and security segments. Acquisition of Toshiba will help Canon reinforce this strategy and will give a boost to its medical equipment business both in Japan and globally.
Asia IPOs

IPO activity in Asia continued to gain momentum in 2016, particularly in terms of capital raised. 2016 alone accounted for 38% of the capital raised since 2012. Thirty-nine Asia-headquartered companies raised a total of US$5.5 billion in IPOs in 2016, a 28% YOY increase and a 51% CAGR since 2012. However, the number of IPOs dropped from 54 in 2015 to 39 in 2016, implying a greater number of big-value IPOs.

Source: Capital IQ
Of the total 39 IPOs, 10 each were raised by Chinese and South Korean companies in 2016. Eight Australian companies also completed public offerings during the period; however, none of these IPOs generated more than US$10 million in capital. Three Indian companies and two firms each based in Vietnam, Japan and Malaysia closed IPOs. The remaining two IPOs were by Indonesian and Bangladeshi companies. Average capital raised per IPO was highest among companies headquartered in China, followed closely by South Korea.

While the IPO window in the US and Europe showed signs of closing in 2016, it was thrown wide open in Asia. Despite a significant decline in the number of IPOs completed across all the subsectors in Asia in 2016, total capital raised witnessed a steep climb in pharmaceutical and life sciences tools and services with respect to 2015. This was primarily spurred by two of the three biggest IPOs globally being completed in Asia in 2016.

In 2016, pharmaceutical companies accounted for nearly 48% of the total capital raised. Life sciences tools and services companies raised 40% of the capital in the quarter, while the remaining two subsectors contributed only 12%.

Of the total 39 IPOs, 10 each were raised by Chinese and South Korean companies in 2016. Eight Australian companies also completed public offerings during the period; however, none of these IPOs generated more than US$10 million in capital. Three Indian companies and two firms each based in Vietnam, Japan and Malaysia closed IPOs. The remaining two IPOs were by Indonesian and Bangladeshi companies. Average capital raised per IPO was highest among companies headquartered in China, followed closely by South Korea.

A total of six IPOs raised more than US$100 million each in 2016. South Korea-based life sciences tools and services firm Samsung Biologics, listing on the Korean Stock Exchange, was the largest Asian IPO and the largest global IPO of the year. The company garnered total capital of nearly US$2 billion. This was followed closely by a Hong-Kong-based pharmaceutical company, China Resources Pharmaceutical, which raised more than US$1.8 billion.

Top 10 Asia life sciences IPOs, 2016

<table>
<thead>
<tr>
<th>Issue company</th>
<th>Headquarter country</th>
<th>Subsector</th>
<th>Amount raised (US$m)</th>
<th>Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samsung Biologics Co.</td>
<td>South Korea</td>
<td>Life sciences tools and services</td>
<td>1,950.5</td>
<td>KOSE</td>
</tr>
<tr>
<td>China Resources Pharmaceutical Group</td>
<td>Hong Kong (China)</td>
<td>Pharmaceutical</td>
<td>1,810.9</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Shandong Buchang Pharmaceutical Co.</td>
<td>China</td>
<td>Pharmaceutical</td>
<td>575.6</td>
<td>Shanghai</td>
</tr>
<tr>
<td>SillaJen</td>
<td>South Korea</td>
<td>Biotech</td>
<td>128.4</td>
<td>KOSDAQ</td>
</tr>
<tr>
<td>ST Pharm Co.</td>
<td>South Korea</td>
<td>Life sciences tools and services</td>
<td>117.5</td>
<td>KOSDAQ</td>
</tr>
<tr>
<td>PT Prodia Widyahusada</td>
<td>Indonesia</td>
<td>Life sciences tools and services</td>
<td>114.5</td>
<td>Jakarta</td>
</tr>
<tr>
<td>Biobio Diagnostics Co.</td>
<td>China</td>
<td>Medical devices</td>
<td>92.1</td>
<td>Shanghai</td>
</tr>
<tr>
<td>Rayence</td>
<td>South Korea</td>
<td>Medical devices</td>
<td>86.3</td>
<td>KOSDAQ</td>
</tr>
<tr>
<td>Jacobson Pharma Corp.</td>
<td>Hong Kong (China)</td>
<td>Pharmaceutical</td>
<td>84.6</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Shanghai Kindly Enterprise Development Group</td>
<td>China</td>
<td>Medical devices</td>
<td>73.5</td>
<td>Shanghai</td>
</tr>
</tbody>
</table>

Source: Capital IQ
EY thought leadership

**EY perspective on life sciences**
The following is a sample of recent life sciences-related thought leadership produced by EY. Please visit ey.com/vitalsigns for EY’s full library of industry insights and reports.

---

**EY M&A Outlook and Firepower Report 2017**
Payer pressure is growing across a wide spectrum of the health care sector. Price increases have been blunted by election-year rhetoric and competition in key global pharmaceutical markets. Continued portfolio rationalization, a professed preference for bolt-on deals and lower target company valuations continue to sharpen global appetites for acquisitions into 2017. A distinct firepower advantage combined with suddenly friendly political and tax climates in the US should allow big pharma to seize the M&A agenda.

---

**Pulse of the industry: EY medical technology report 2016**
Despite a buoyant mergers and acquisitions (M&A) market and a solid performance in venture capital financing, other financial metrics suggest the global medtech industry is struggling to grow as significant changes in technology and reimbursement combine with the greater empowerment of consumers to reshape health care.
The new innovation imperative: reshaping biopharma business models

New technologies, customers and competition are forcing — and enabling — biopharmaceutical companies to find novel ways to create and capture value. Technological, economic, competitive and consumer-driven pressures are forcing fundamental changes in how pharmaceutical and biotechnology (biopharma) firms do business.

Capital Confidence Barometer - Life Sciences | 15th edition

In EY's 15th Capital Confidence Barometer survey of life sciences executives, we found that M&A expectations, although not quite back to the penultimate high of October 2015, have continued at near-record levels. In fact, despite the economic and political uncertainties at the time of this survey, 54% of life sciences executives expect to pursue deals in the next 12 months, up from 45% six months ago.

Multichannel is about customer experience. We've got that! Now what?

For years, there has been talk about how best to evolve the commercial model to move from push-based to pull-based models. What it takes to win in markets has fundamentally changed. Customer leaders (such as Uber, Alphabet and Apple) have fundamentally redefined what customers expect across all industries. More than ever, customers are shaped by their experiences in dealing with companies in all walks of life.

Cash on prescription 2016

Cash on prescription is part of our annual series of industry reports, based on EY research on working capital (WC) management. Among the findings in our latest Cash on prescription, we report that pharma companies have between US$22 billion and US$47 billion of cash unnecessarily tied up in WC processes.
Contacts

EY Life Sciences sector leaders

**Pamela Spence**  
Global Life Sciences Industry Leader  
London  
pspence2@uk.ey.com  
+44 207 951 3523

**Rick Fonte**  
Asia-Pacific Life Sciences Tax Leader  
Singapore  
richard.fonte@sg.ey.com  
+65 6309 8105

**Sriram Shrinivasan**  
Global Emerging Markets Leader and  
Global Generic Pharmaceutical Leader  
Mumbai  
sriram.shrinivasan@in.ey.com  
+91 22 6192 0380

**Patrick Flochel**  
EY Life Sciences Global Leadership Team, Japan  
Tokyo  
patrick.flochel@jp.ey.com  
+81 3 3503 1542

**Andrew Chen**  
Asia-Pacific Life Sciences Transactions Co-Leader  
Shanghai  
andrew.chen@parthenon.ey.com  
+86 21 2228 3939

**Abhay Bangi**  
Asia-Pacific Life Sciences Transactions Co-Leader  
Singapore  
abhay.bangi@sg.ey.com  
+65 6309 6151

**Hugo Walkinshaw**  
Asia-Pacific Life Sciences Advisory Leader  
Singapore  
hugo.walkinshaw@sg.ey.com  
+65 6309 8098

EY Life Sciences Report: Asia
Greater China

Titus von dem Bongart
Greater China Life Sciences Co-Leader
Shanghai
titus.bongart@cn.ey.com
+86 21 2228 2884

Felix Fei
Greater China Life Sciences Co-Leader
Shanghai
felix.fe@cn.ey.com
+86 21 2228 2586

ASEAN

Sabine Dettwiler
ASEAN Life Sciences Leader
Singapore
sabine.dettwiler@sg.ey.com
+65 9028 5228

Gamini Martinus
Oceania Life Sciences Leader
Sydney
gamini.martinus@au.ey.com
+61 2 9248 4702

South Korea

Sung Yeon Cho
South Korea Life Sciences Leader
Seoul
sung-yeon.cho@kr.ey.com
+82 2 3787 6844

Hironao Yazaki
Japan Life Sciences Leader
Tokyo
yazaki-hrn@shinnihon.or.jp
+81 3 3503 1566

India

Hitesh Sharma
India Life Sciences Leader & Tax Partner, Ernst & Young LLP
Mumbai
hitesh.sharma@in.ey.com
+91 22 6192 0620
# EY Life Sciences service line leaders

## Greater China

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Contact Name</th>
<th>Position</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>China (Mainland)</td>
<td>Felix Fei</td>
<td>Assurance</td>
<td>Shanghai</td>
<td><a href="mailto:felix.fei@cn.ey.com">felix.fei@cn.ey.com</a></td>
<td>+86 21 2228 2586</td>
</tr>
<tr>
<td></td>
<td>Titus von dem Bongart</td>
<td>Tax Co-Leader</td>
<td>Shanghai</td>
<td><a href="mailto:titus.bongart@cn.ey.com">titus.bongart@cn.ey.com</a></td>
<td>+86 21 2228 2884</td>
</tr>
<tr>
<td></td>
<td>Joanne Su</td>
<td>Tax Co-Leader</td>
<td>Beijing</td>
<td><a href="mailto:joanne.su@cn.ey.com">joanne.su@cn.ey.com</a></td>
<td>+86 10 5815 3380</td>
</tr>
<tr>
<td></td>
<td>Steve Au Yeung</td>
<td>Advisory</td>
<td>Shanghai</td>
<td><a href="mailto:steve.auyeung@cn.ey.com">steve.auyeung@cn.ey.com</a></td>
<td>+86 21 2228 8888</td>
</tr>
<tr>
<td></td>
<td>Andrew Chen</td>
<td>Transactions</td>
<td>Shanghai</td>
<td><a href="mailto:andrew.chen@parthenon.ey.com">andrew.chen@parthenon.ey.com</a></td>
<td>+86 21 2228 3939</td>
</tr>
</tbody>
</table>

| Hong Kong/ Macau | Cary Wu            | Assurance                | Hong Kong     | cary.wu@hk.ey.com            | +852 2849 9122  |
|                  | Karina Wong        | Tax                       | Hong Kong     | karina.wong@hk.ey.com        | +852 2849 9175  |
|                  | Edward Chang       | Advisory Co-Leader        | Shanghai      | edward.chang@cn.ey.com       | +86 10 5815 2321 |
|                  | Judy Tsang         | Transactions              | Hong Kong     | judy.tsang@hk.ey.com         | +852 2846 9016  |

| Taiwan          | Lin Tu             | Assurance Co-Leader       | Taipei        | lin.tu@tw.ey.com             | +886 2 2757 8888 ext. 88810 |
|                 | KyKy Lin           | Assurance Co-Leader        | Hsinchu       | kyky.lin@tw.ey.com           | +886 2 2757 8888 ext. 88856 |
|                 | Ann Shen           | Tax                       | Taipei        | ann.shen@tw.ey.com           | +886 2 2757 8888 ext. 88877 |
|                 | Jon Huang          | Advisory                  | Taipei        | jon.huang@tw.ey.com          | +886 2 2757 8888 ext. 88862 |
|                 | Audry Ho           | Transactions              | Taipei        | audry.ho@tw.ey.com           | +886 2 2757 8888 ext. 88898 |

## Oceania

<table>
<thead>
<tr>
<th>Country</th>
<th>Gammini Martinus</th>
<th>Assurance</th>
<th>Sydney</th>
<th><a href="mailto:gammini.martinus@au.ey.com">gammini.martinus@au.ey.com</a></th>
<th>+61 2 9248 4702</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Michael Anderson</td>
<td>Tax</td>
<td>Sydney</td>
<td><a href="mailto:michael.anderson@au.ey.com">michael.anderson@au.ey.com</a></td>
<td>+61 2 9248 5555</td>
</tr>
<tr>
<td></td>
<td>Denise Brotherton</td>
<td>Tax</td>
<td>Melbourne</td>
<td><a href="mailto:denise.brotherton@au.ey.com">denise.brotherton@au.ey.com</a></td>
<td>+61 3 9288 8758</td>
</tr>
<tr>
<td></td>
<td>Milan Milosevic</td>
<td>Advisory</td>
<td>Sydney</td>
<td><a href="mailto:milan.milosevic@au.ey.com">milan.milosevic@au.ey.com</a></td>
<td>+61 2 9248 5028</td>
</tr>
<tr>
<td></td>
<td>Jason Wrigley</td>
<td>Transactions</td>
<td>Sydney</td>
<td><a href="mailto:jason.wrigley@au.ey.com">jason.wrigley@au.ey.com</a></td>
<td>+61 2 9248 5303</td>
</tr>
</tbody>
</table>

| New Zealand     | Jon Hooper       | Assurance                | Auckland      | jon.hooper@nz.ey.com        | +64 9 300 8124  |
|                 | Aaron Quintal    | Tax                      | Auckland      | aaron.quintal@nz.ey.com     | +64 9 300 7059  |

## South Korea

| South Korea     | Sung Yeon Cho    | Assurance                | Seoul         | sung-yeon.cho@kr.ey.com     | +82 2 3787 6844 |
|                 | Jae Cheol Kim    | Tax                      | Seoul         | jae-cheol.kim@kr.ey.com     | +82 2 3770 0961 |
|                 | Yong Sik Kim     | Advisory                 | Seoul         | yong-sik.kim@kr.ey.com      | +82 2 3787 6600 |
|                 | Hyo Suk Han      | Transactions             | Seoul         | hyo-suk.han@kr.ey.com       | +82 2 3770 0907 |

## ASEAN

<table>
<thead>
<tr>
<th>Singapore/ Brunei</th>
<th>Swee Ho Tan</th>
<th>Assurance</th>
<th>Singapore</th>
<th><a href="mailto:swee.ho.tan@sg.ey.com">swee.ho.tan@sg.ey.com</a></th>
<th>+65 6309 8238</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ching Khee Tan</td>
<td>Tax</td>
<td>Singapore</td>
<td><a href="mailto:ching-khee.tan@sg.ey.com">ching-khee.tan@sg.ey.com</a></td>
<td>+65 6309 8358</td>
</tr>
<tr>
<td></td>
<td>Sabine Dettwiler</td>
<td>Advisory</td>
<td>Singapore</td>
<td><a href="mailto:sabine.dettwiler@sg.ey.com">sabine.dettwiler@sg.ey.com</a></td>
<td>+65 9028 5228</td>
</tr>
<tr>
<td></td>
<td>Abhay Bangi</td>
<td>Transactions</td>
<td>Singapore</td>
<td><a href="mailto:abhay.bangi@sg.ey.com">abhay.bangi@sg.ey.com</a></td>
<td>+65 6309 6151</td>
</tr>
</tbody>
</table>
# ASEAN (cont’d)

## Indonesia
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter Surja</td>
<td>Assurance</td>
<td>Jakarta</td>
<td><a href="mailto:peter.surja@id.ey.com">peter.surja@id.ey.com</a></td>
<td>+62 21 5289 4012</td>
</tr>
<tr>
<td>Peter Ng</td>
<td>Tax</td>
<td>Jakarta</td>
<td><a href="mailto:peter.ng@id.ey.com">peter.ng@id.ey.com</a></td>
<td>+62 21 5289 5228</td>
</tr>
<tr>
<td>Sabine Dettwiler</td>
<td>Advisory</td>
<td>Singapore</td>
<td><a href="mailto:sabine.dettwiler@sg.ey.com">sabine.dettwiler@sg.ey.com</a></td>
<td>+65 9028 5228</td>
</tr>
<tr>
<td>Bernard Ng</td>
<td>Transactions</td>
<td>Jakarta</td>
<td><a href="mailto:bernard.ng@id.ey.com">bernard.ng@id.ey.com</a></td>
<td>+86 21 2228 2005</td>
</tr>
</tbody>
</table>

## Thailand/Myanmar
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saifon Inkaew</td>
<td>Assurance</td>
<td>Bangkok</td>
<td><a href="mailto:saifon.inkaew@th.ey.com">saifon.inkaew@th.ey.com</a></td>
<td>+66 2 264 9090</td>
</tr>
<tr>
<td>Su San Leong</td>
<td>Tax</td>
<td>Bangkok</td>
<td><a href="mailto:su-san.leong@th.ey.com">su-san.leong@th.ey.com</a></td>
<td>+66 2 264 9090</td>
</tr>
<tr>
<td>Sabine Dettwiler</td>
<td>Advisory</td>
<td>Singapore</td>
<td><a href="mailto:sabine.dettwiler@sg.ey.com">sabine.dettwiler@sg.ey.com</a></td>
<td>+65 9028 5228</td>
</tr>
<tr>
<td>Abhay Bangi</td>
<td>Transactions</td>
<td>Singapore</td>
<td><a href="mailto:abhay.bangi@sg.ey.com">abhay.bangi@sg.ey.com</a></td>
<td>+65 6309 6151</td>
</tr>
</tbody>
</table>

## Philippines/Guam
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ana Lea C Bergado</td>
<td>Assurance</td>
<td>Makati City</td>
<td><a href="mailto:ana.lea.c.bergado@ph.ey.com">ana.lea.c.bergado@ph.ey.com</a></td>
<td>+63 2 894 8354</td>
</tr>
<tr>
<td>Francis Ricamora</td>
<td>Tax</td>
<td>Makati City</td>
<td><a href="mailto:francis.j.ricamora@ph.ey.com">francis.j.ricamora@ph.ey.com</a></td>
<td>+63 2 891 0307</td>
</tr>
<tr>
<td>Joseph Ian Canlas</td>
<td>Advisory</td>
<td>Makati City</td>
<td><a href="mailto:joseph.i.an.m.canlas@ph.ey.com">joseph.i.an.m.canlas@ph.ey.com</a></td>
<td>+63 2 891 0307</td>
</tr>
<tr>
<td>Abhay Bangi</td>
<td>Transactions</td>
<td>Singapore</td>
<td><a href="mailto:abhay.bangi@sg.ey.com">abhay.bangi@sg.ey.com</a></td>
<td>+65 6309 6151</td>
</tr>
</tbody>
</table>

## Malaysia
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoon Hoong Hoh</td>
<td>Assurance</td>
<td>Kuala Lumpur</td>
<td><a href="mailto:yoon-hoong.hoh@my.ey.com">yoon-hoong.hoh@my.ey.com</a></td>
<td>+60 3 7495 8608</td>
</tr>
<tr>
<td>Janice Wong</td>
<td>Tax</td>
<td>Kuala Lumpur</td>
<td><a href="mailto:janice.wong@my.ey.com">janice.wong@my.ey.com</a></td>
<td>+60 3 7495 8223</td>
</tr>
<tr>
<td>Sabine Dettwiler</td>
<td>Advisory</td>
<td>Singapore</td>
<td><a href="mailto:sabine.dettwiler@sg.ey.com">sabine.dettwiler@sg.ey.com</a></td>
<td>+65 9028 5228</td>
</tr>
<tr>
<td>Abhay Bangi</td>
<td>Transactions</td>
<td>Singapore</td>
<td><a href="mailto:abhay.bangi@sg.ey.com">abhay.bangi@sg.ey.com</a></td>
<td>+65 6309 6151</td>
</tr>
</tbody>
</table>

## Vietnam/Cambodia/Laos
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ernest Yoong</td>
<td>Assurance</td>
<td>Ho Chi Minh City</td>
<td><a href="mailto:ernest.yoong@vn.ey.com">ernest.yoong@vn.ey.com</a></td>
<td>+84 8 3824 8210</td>
</tr>
<tr>
<td>Thinh X Than</td>
<td>Tax</td>
<td>Ho Chi Minh City</td>
<td><a href="mailto:thinh.xuan.than@vn.ey.com">thinh.xuan.than@vn.ey.com</a></td>
<td>+84 8 3824 8360</td>
</tr>
<tr>
<td>Sabine Dettwiler</td>
<td>Advisory</td>
<td>Singapore</td>
<td><a href="mailto:sabine.dettwiler@sg.ey.com">sabine.dettwiler@sg.ey.com</a></td>
<td>+65 9028 5228</td>
</tr>
<tr>
<td>Abhay Bangi</td>
<td>Transactions</td>
<td>Singapore</td>
<td><a href="mailto:abhay.bangi@sg.ey.com">abhay.bangi@sg.ey.com</a></td>
<td>+65 6309 6151</td>
</tr>
</tbody>
</table>

## Japan
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hironao Yazaki</td>
<td>Assurance</td>
<td>Tokyo</td>
<td><a href="mailto:yazaki-hrn@shinnihon.or.jp">yazaki-hrn@shinnihon.or.jp</a></td>
<td>+81 3 3503 1566</td>
</tr>
<tr>
<td>Jonathan Stuart-Smith</td>
<td>Tax Co-Leader</td>
<td>Tokyo</td>
<td><a href="mailto:jonathan.stuart-smith@jp.ey.com">jonathan.stuart-smith@jp.ey.com</a></td>
<td>+81 3 3506 2426</td>
</tr>
<tr>
<td>Tatsuhide Kanenari</td>
<td>Tax Co-Leader</td>
<td>Tokyo</td>
<td><a href="mailto:tatsuhide.kanenari@jp.ey.com">tatsuhide.kanenari@jp.ey.com</a></td>
<td>+81 3 3506 1364</td>
</tr>
<tr>
<td>Tetsuro Sano</td>
<td>Advisory</td>
<td>Tokyo</td>
<td><a href="mailto:tetsuro.sano@jp.ey.com">tetsuro.sano@jp.ey.com</a></td>
<td>+81 3 3503 1490</td>
</tr>
<tr>
<td>Takayuki Ooka</td>
<td>Transactions</td>
<td>Tokyo</td>
<td><a href="mailto:takayuki.ooka@jp.ey.com">takayuki.ooka@jp.ey.com</a></td>
<td>+81 3 4582 6422</td>
</tr>
</tbody>
</table>

## India
<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Location</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravi Bansal</td>
<td>Assurance</td>
<td>Mumbai</td>
<td><a href="mailto:ravi.bansal@in.ey.com">ravi.bansal@in.ey.com</a></td>
<td>+91 22 6192 0460</td>
</tr>
<tr>
<td>Rahul Patni</td>
<td>Tax</td>
<td>Mumbai</td>
<td><a href="mailto:rahul.patni@in.ey.com">rahul.patni@in.ey.com</a></td>
<td>+91 22 6192 1544</td>
</tr>
<tr>
<td>Murali Nair</td>
<td>Advisory</td>
<td>Mumbai</td>
<td><a href="mailto:murali.nair@in.ey.com">murali.nair@in.ey.com</a></td>
<td>+91 22 6192 0380</td>
</tr>
<tr>
<td>Krishnakumar V</td>
<td>Transactions</td>
<td>Mumbai</td>
<td><a href="mailto:krishnakumar.v@in.ey.com">krishnakumar.v@in.ey.com</a></td>
<td>+91 22 6192 0950</td>
</tr>
</tbody>
</table>


Ibid.


http://data.worldbank.org


Have you visited EY's Vital Signs?

For one-stop access to EY’s breadth of materials published on the life sciences industry – reports, research, articles, guest perspectives, blog posts, presentations, infographics, surveys, charts and analysis – visit Vital Signs (ey.com/vitalsigns).

Browse the easy-to-use navigation to quickly find the latest insights and perspectives on the topics most important to pharmaceutical, biotech, medtech and specialty pharma companies.

While visiting Vital Signs, click on subscribe to receive once-a-week email alerts (eAlerts) when new publications are posted on Vital Signs.

ey.com/vitalsigns
About EY
EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

How EY’s Global Life Sciences Sector can help your business
As populations age and chronic diseases become commonplace, health care will take an even larger share of GDP. Scientific progress, augmented intelligence and a more empowered patient are driving changes in the delivery of health care to a personalized experience that demands health outcomes as the core metric. This is causing a power shift among traditional stakeholder groups, with new entrants (often not driven by profit) disrupting incumbents. Innovation, productivity and access to patients remain the industry’s biggest challenges. These trends challenge the capital strategy of every link in the life sciences value chain, from R&D and product supply to product launch and patient-centric operating models.

Our Global Life Sciences Sector brings together a worldwide network of 11,000 sector-focused professionals to anticipate trends, identify their implications and help our clients create competitive advantage. We can help you navigate your way forward and achieve sustainable success in the new health-outcomes-driven ecosystem.

© 2017 EYGM Limited.
All Rights Reserved.

EYG no. 01063-174Gb1
1612-2139246

ED None

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax or other professional advice. Please refer to your advisors for specific advice.

ey.com/lifesciences