# Question 1

# Pharmaceutical Industry and Healthcare

# Extract 1: Pharmaceutical industry gets high on fat profits

Throw in widespread accusations of collusion and over-charging, and banking no doubt springs to mind.

In fact, the industry described above is responsible for the development of medicines to save lives and alleviate suffering, not the generation of profit for its own sake. Pharmaceutical companies have developed the vast majority of medicines known to humankind, but they have profited handsomely from doing so, and not always by legitimate means.

Last year, US giant Pfizer, the world's largest drug company by pharmaceutical revenue, made an eye-watering 42% profit margin. Five pharmaceutical companies also made a profit margin of 20% or more - Pfizer, Hoffmann-La Roche, AbbVie, GlaxoSmithKline (GSK) and Eli Lilly. Pfizer was also discussing a possible merger with Allergan, best known for its Botox anti-wrinkle treatment. If the proposed merger goes through, the combination will be a monster among drug companies. As in other lines of business, such deals are a way to cut costs, gain market clout and achieve economies of scale. They also help firms expand to new markets. In pharmaceuticals the cost of developing new products is exceptionally high compared with many other industries. So it is especially tempting for them to seek to extend their product range simply by buying another firm.

Drug companies are also justifying the high prices they charge by arguing that their research and development (R&D) costs are huge. But drug companies spend far more on marketing drugs to ensure demand than on developing them. They have also been found guilty of mis-branding and wrongly promoting various drugs, and have been fined billions as a result.

No wonder, then, that the World Health Organisation (WHO) has talked of the inherent conflict between the legitimate business goals of the drug companies and the medical and social needs of the wider public. Indeed the Council of Europe is launching an investigation into protecting patients and public health against the undue influence of the pharmaceutical industry.

No matter what the outcome of such investigations, however, the pharmaceutical industry is facing fundamental change, as the traditional model of developing drugs breaks down due to rising costs and scientific advances. The cosy world of big pharmaceuticals is under threat like never before.

Source: Adapted from *BBC News*, 6 November 2014

and *The Economist*, 29 October 2015

**Extract 2: High Cost of Diabetes Drugs Often Goes Overlooked**

The problem of drug costs is expected to only get worse as Americans get older and fatter. An estimated 29 million people in the US have diabetes and many of them will take diabetes drugs for the rest of their lives. Cost increases for both old and new drugs are forcing many to scramble to pay for them.

For the fourth year in a row, per person spending on diabetes drugs in 2014 was higher than it was for any other class of traditional drug. "The cost of diabetes treatment has been increasing pretty rapidly," says Dr. Glen Stettin, senior vice president for clinical, research and new solutions at Express Scripts, which manages the pharmacy benefits for many companies.

Diabetes occurs when the body can't control the amount of sugar in the blood because of problems making or responding to the hormone insulin. High levels of blood sugar can cause damage to the heart and blood vessels, nerves, kidneys, eyes and feet, among other things.

About 90 percent of people who have diabetes have type 2 diabetes, which is linked to lifestyle factors such as obesity and inactivity. Type 1 diabetes, once called juvenile diabetes, commonly develops among children.

Insulin was considered a wonder drug when it was discovered in 1921. It remains a mainstay of treatment for millions of patients, and yet decades after its introduction there are still no generic forms of insulin available. The lack of generic insulin has hindered price competition for the key diabetes medicine.

Source: Michelle Andrews, www.npr.org, 18 August 2015

**Extract 3: Healthcare costs cause concern in Singapore**

Singaporeans are rank behind only Japan and Andorra in terms of leading the longest healthy lives in the world. But there are some worrying trends, said Health Minister Gan Kim Yong yesterday, including the ability to sustain the current level of service as the population ages. Costs are of particular concern.

"Many developed countries with ageing populations are facing similar challenges as us," he said. "One important lesson we can learn from their experience is that doing more of the same cannot be the solution."

The Government has already more than doubled its healthcare spending from $4.7 billion in FY2012 to $11 billion this year. The launch of MediShield Life which is a healthcare insurance to cover everyone from birth till death last year has also helped people pay for their healthcare cost. But more needs to be done and he suggested three paradigm shifts:

One of these deals with choosing appropriate care. Some insurance policies for private care provided by Integrated Shield plans pay according to what doctors and hospitals charge. Some people also buy "riders" that do away with the need for the patient to pay anything for major medical treatment. These could lead to a "buffet syndrome" since the cost is paid by someone else, said Mr Gan. "This contributes to rising healthcare costs for everyone and eventually pushes up premiums." This system will have to be studied, he said.

Meanwhile, the ministry has set up an Agency for Care Effectiveness (Ace) to look into the use of high-cost treatments and technologies "to ensure that the outcomes from these technologies are commensurate with these costs". Not all medical tests and treatments are necessary or useful, he said. Countries like the United States, Britain and Japan have launched "Choose Wisely" campaigns to educate people on low-value tests and treatments. This will help patients, caregivers and physicians make more informed treatment decisions and avoid over-provision of services that will drive up costs."

The third push is to increase the years of healthy life for people here, which stood at 70.8 years for men and 73.4 years for women in 2013. Unfortunately, with longer lives, the number of years people here live in ill health has also gone up, and in 2013 stood at 8.9 years for men and 10.6 years for women.

Dr Lily Neo (Jalan Besar GRC) and Dr Chia Shi Lu (Tanjong Pagar GRC) had asked about what Singapore is doing about diabetes, which is fast becoming a major global healthcare burden. To them, Mr Gan said his ministry will be waging a multi-year war against diabetes, a disease which costs Singapore more than $1 billion a year. These include measures to encourage Singaporeans to eat right, exercise more and go for health screenings.

With rising healthcare cost, Singapore is finding it harder to retain its title as the region's top medical tourism hub as patients eye cheaper options elsewhere. It was also noted that the challenges will only intensify as improved standards in neighbouring cities test the price premiums in Singapore, which are further exacerbated by a strong Singapore dollar. It is noted that the Singapore dollar has risen 24 per cent against the Indonesian rupiah over the past two years. This has had significant ramifications as the Indonesian market accounted for 56 per cent of total medical tourism revenues in 2013. This in turn puts multinational drug-makers in Singapore at risk, as medical tourism has been a strong source of demand for high-value medicines.

Source: Adapted from *The Straits Times*, 8 May 2015 and 14 April 2016

**Table 1: Health care data for Singapore (current US$), 2010-2014**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 | 2013 | 2014 |
| Total Health spending per capita | 1842 | 2086 | 2310 | 2532 | 2752 |
| Government spending on health per capita | 968 | 1008 | 1158 | 1392 | 1689 |

Source: World Bank Group

**Table 2: Value of Singapore Dollar (S$ per 100 units of Indonesian Rupiah)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2010 | 2011 | 2012 | 2013 | 2014 |
| 0.0143 | 0.0142 | 0.0127 | 0.0104 | 0.0106 |

Source: Monetary Authority of Singapore

**Questions**

**(a) (i)** Using Table 1, compare the trends of total health spending per capita and government

spending on health per capita in Singapore between 2010 and 2014. [2]

**(ii)** Identify a reason for the difference in the trends observed in (a)(i). [1]

**(b)** Explain the type of market structure that pharmaceutical companies are likely to operate in. [2]

**(c)** Explain whether the high price of pharmaceutical drug is caused by demand or supply factors. [4]

**(d)** “The lack of generic insulin has hindered price competition for the key diabetes medicine.”

Explain the likely effect on the profits earned by the producer of insulin following the entry of

generic insulin. [3]

**(e)** Discuss the factors that will influence the US government’s decision to approve the merger

between two larger pharmaceutical firms such as Pfizer and Allergan. [8]

**(f)** Discuss whether the Singapore government’s policies in the healthcare market can be

justified. [10]

**Question 1: Pharmaceutical Industry and Healthcare**

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| --- | --- | --- | --- | --- |
| **(a)** | **(i)** | Using Table 1, compare the trends of total health spending per capita and government spending on health per capita in Singapore between 2010 and 2014. | | **[2]** |
|  |  |  | |  |
|  | Suggested answer**:**  Both the total health spending per capita and government spending on health per capita increased between 2010 and 2014.  Government spending on health per capita rose at a faster rate than the increase in total health spending per capita.  Other accepted answer:  Total health spending per capita is increasing at a decreasing rate while government spending on health per capita is increasing at an increasing rate. | | | |
|  |  |  | |  |
| **(a)** | **(ii)** | Identify a reason for the difference in the trends observed in (a)(i). | | **[1]** |
|  |  |  | |  |
|  | Suggested answer**:**  Singapore is facing an ageing population and government would be giving more subsidies for aged patients, resulting in faster increase in government spending on health per capita than total health spending per capita. OR  With the introduction of MediShield Life, government would be giving more subsidies for people to purchase it, resulting in faster increase in government spending on health per capita than total health spending per capita. | | | |
|  |  |  | |  |
| **(b)** | Explain the type of market structure that pharmaceutical companies are likely to operate in. | | | **[2]** |
|  |  |  | |  |
|  | Suggested answer**:**  The market structure that pharmaceutical companies are likely to operate in is oligopoly.  In the pharmaceutical industry, there are high barriers to entry such as high innovation cost/ high cost of developing new medicine, ability to reap economies of scale (EOS) and the existence of patents. These high barriers to entry could result in few large firms producing a drug with large market share. OR  The mutual interdependence between the pharmaceutical companies results in collusion or mergers to reduce competition and uncertainty. These are the typical behaviour in an oligopolistic market structure. | | | |
| **(c)** | Explain whether the high price of pharmaceutical drug is caused by demand or supply factors. | | | **[4]** |
|  |  |  | |  |
|  | Suggested answer**:**  According to extract 1, the high price of pharmaceutical drug could be caused by high research and development (R&D) cost which is a supply factor. High R&D cost raise cost of production which shifts supply curve leftwards, leading to increase in price.  Pharmaceutical companies also market/advertise their drugs to ensure demand. Such marketing influences taste and preferences which increases demand, shifting demand curve rightwards, leading to increase in price.  Demand factor likely to be the main factor causing high price of pharmaceutical drug as the cost of innovation is mainly fixed cost rather than variable cost, thus supply does not rise by large extent. | | | |
|  |  | | | |
| **(d)** | “The lack of generic insulin has hindered price competition for the key diabetes medicine.”  Explain the likely effect on the profits earned by the producer of insulin following the entry of generic insulin. | | | [3] |
|  |  | |  |  |
|  | Suggested answer**:**  The entry of generic insulin increases the number of substitutes available. This reduces the market share of the producer of the original insulin and demand falls, also making the demand becoming more price elastic. The equilibrium price and quantity falls, leading to fall in total revenue. Assuming ceteris paribus, fall in total revenue leads to fall in profits. | | | |
|  |  | |  |  |
| **(e)** | Discuss the factors that will influence the US government’s decision to approve the merger between two larger pharmaceutical firms such as Pfizer and Allergan. | | | [8] |
|  |  | |  |  |
|  | Suggested answer**:**  US government has the objective of maximizing society welfare and will thus consider the impact on society when making the decision.  In terms of costs, consumer welfare may fall as the merger of Pfizer and Allergan will give the merged firm significant market share in the pharmaceutical industry, granting them higher market power which makes their demand more price-inelastic. This allows the merged firm to raise price to earn higher total revenue, leading to lower consumer welfare. With fewer firms in the market, there is also greater ability to collude informally via price leadership. There will be less price competition taking place, leading to consumers facing higher prices and lower consumer surplus. The higher price above MC worsens allocative inefficiency and causes welfare loss to society. Furthermore, the merged firm being able to earn greater supernormal profits in the long run, also worsens income distribution between producers and consumers.  In terms of benefits, there exist some benefits to consumers. According to extract 1, the merger allows the merged firm to cut cost and reap economies of scale. This is so as the merged firm would have larger market share and hence producing on a larger scale. This allows the merged firm to enjoy cost savings from large scale production. AC and MC falls, leading to the fall in equilibrium price and quantity increases, raising consumer welfare. The supernormal profits earned by the merged firm will also increase their ability to pay for high cost of innovation. New drugs could be produced as a result, increasing consumer welfare and also leading to greater dynamic efficiency in the economy.  There are also some unintended consequences arising from the merger. The merger will mean less resource will be devoted for marketing and advertising purposes, leading to less wastage of resources. There could also possibly be less mis-branding taking place, reducing the market failure that arises from imperfect information. Thus from the microeconomic perspective, the merger provides some advantages.  Evaluation  Thorough long term cost-benefit analysis is necessary to decide whether to approve the merger between Pfizer and Allergan. In particular, the US government has to consider whether the medical needs of patients would be compromised due to the merger. If the merger goes through, mitigating policies such as healthcare subsidy to lower-income households should be implemented to ensure pharmaceutical drugs/medicines remain affordable to patients. | | | |
|  |  | |  |  |
| **(f)** | Discuss whether the Singapore government’s policies in the healthcare market can be justified. | | | [10] |
|  |  | |  |  |
|  | Suggested answer**:**  Singapore government’s policies in the healthcare market can be justified.  Singapore government has implemented MediShield Life, setting up the Agency for Care Effectiveness (Ace) and moral suasion via campaigns to encourage Singaporeans to adopt healthy living and to go for regular health screenings. These policies can be justified.  MediShield Life was meant to help Singaporeans with rising healthcare costs as well as because of Singapore’s ageing population. MediShield Life is a healthcare insurance policy that offers protection for everyone, even the very old, for life. MediShield Life pays for more of patient’s hospital bills and patients will have to pay less, helping Singaporeans cope with rising healthcare costs. Such policy which covers the elderly also aim to help elderly in Singapore sustain the level of healthcare service that they can enjoy, aiding them in enjoying longer healthy lives. MediShield Life is also intended to address inequity issues by ensuring everyone is covered and no one is left behind. With this policy, PMB could also increase and converge with SMB and the external benefits of healthcare can then be internalized.  Ace was set up to reduce imperfect information. Patients and physicians may have viewed certain medication to have higher perceived benefit than actual benefit, possibly due to the mis-branding by pharmaceutical companies. This leads to the divergence between perceived PMB and actual PMB, leading to overconsumption/over-provision of the medication, leading to deadweight loss (DWL) as shown by the shaded area in Figure 1 below.  Qe  Qs  Cost/Benefit ($)  Perceived PMC = Actual PMC = SMC  (Assuming EMC = 0)  Actual PMB = SMB Perceived PMB2  Perceived PMB  Quantity  Figure 1  Ace will plug the information gap and fill patients and physicians with more accurate information on medication, allowing them to make more informed treatment decisions. Such policy will shift perceived PMB to perceived PMB2 which coincides with actual PMB, eliminating DWL and market failure arising from imperfect information. This policy also complements MediShield Life in terms of lowering healthcare cost as Ace is meant to help patients get the most out of what they are paying for their medication.  Singapore government is also adopting moral suasion on healthier living and more regular health screening to combat diabetes. Diabetes is a disease which is linked to lifestyle factors and patients may have to take the diabetes medicine for life. Furthermore, according to extract 2, diabetes can in turn lead to damages to heart, kidney and blood vessels. It is thus a costly disease for patients as well as for the government. It is intended that with moral suasion, Singaporeans can make better lifestyle choices and allow perceived PMB of healthcare services such as health screening to rise and converge with actual PMB, addressing imperfect information. Singaporeans will then adopt healthier lifestyle habits, preventing the incidence of diabetes. This reduces the healthcare burden on Singaporeans and also on the government.  The policies adopted are not without limitations. With MediShield Life being a healthcare insurance policy, it could possibly lead to ‘buffet syndrome’ (perceived PMC < actual PMC), where patients consume healthcare more than what they required, as most of the cost is paid by insurance company. Overconsumption of healthcare procedures results. Such healthcare insurance policy could potentially cause moral hazard issues as well. Patients, knowing that they are covered by insurance, may take risker behaviors, such as unhealthy lifestyle habits. They now have less incentive to take care of their health, knowing the healthcare costs will be borne by insurance company and not by themselves.  Campaigns on healthy living are costly and can put a strain on limited government resources. In addition, success of moral suasion depends a lot on the mindset of Singaporeans and their commitment level in wanting to change their lifestyle habits. Singaporeans’ mindset may be rigid due to cultural and social norms. It also takes a long time to see the result of the policy.  In view of Singapore’s ageing population, rising healthcare costs and market failure due to imperfect information, the three policies adopted by the Singapore government are justified. In particular, it is important that the Singapore government cushions the rise in healthcare cost as it is affecting medical tourism. Other than the above policies, more can also be done to ensure Singapore medical hub provides quality medical treatments that are better than neighbouring countries such that medical tourists continue to come to Singapore, boosting Singapore’s export revenue (X). Optimistic outlook for medical tourism also attract greater investments by pharmaceutical firms into Singapore, increasing investment (I). Increase in X and I increase aggregate demand (AD), leading to higher real GDP for the Singapore economy. | | | |