

Report to the Legislature

# Manufacturing Generic Drugs

December 2019

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and Legislative Relations



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## Executive Summary

People in the United States are dying because they cannot afford their medicine. This is due to vast price increases for prescription drugs. In 2017, Alec Smith<sup>1</sup> and Shane Patrick Boyle<sup>2</sup> rationed their insulin to save money and died from diabetic ketoacidosis. A recent study found that 7.8 percent of Americans could not afford to take their medicines as prescribed.<sup>3</sup>

In 2019, at the request of the Washington State Legislature, the Department of Health (the department) conducted a study on the state's ability to produce generic drugs with a priority on insulin. See Engrossed Substitute House Bill 1109, § 221(38). Prioritizing insulin production makes sense - the price of insulin has risen by approximately 450 percent over inflation in the last 20 years, resulting in tragic deaths for some who could not afford it.<sup>4, 5</sup>

Prescription drug spending increased significantly during the last decade.<sup>6</sup> A 2016 study showed that the cost of prescription drugs increased from \$354 billion to an estimated \$535 billion from 2009 to 2018 – a staggering 50 percent increase.<sup>7</sup> After adjusting for 17 percent inflation from 2009 to 2018, the cost of prescription drugs still increased by over \$100 billion. In addition, estimates predict the costs of prescription drugs will continue to outpace inflation.<sup>8</sup>

Policies to address high-price drugs are rapidly evolving. The prices of prescription drugs appear set by the market instead of the value they provide, or the cost of production.<sup>9, 10</sup> State legislatures are responding to the increasing prices of medicine and the subsequent access issues.<sup>11, 12</sup> Colorado was the first state to cap the cost-share of insulin at \$100 per month for insured patients.<sup>13</sup> The U.S. federal government is also exploring solutions for this vexing problem.<sup>14</sup>

After an extensive literature review and interviews of experts, the department made the following findings:

- There is limited public data about the manufacturing costs of generic prescription drugs.
- There are challenges for any entity that attempts to produce generic prescription drugs.
- Increased diversity and competition in generic drug manufacturing can potentially lead to significant decreases in list prices and consumer costs.
- Additional research is required to determine whether other options of generic drug production are feasible.

## Purpose

This report provides information to consider if Washington State decides to produce generic prescription drugs. Since this is a rapidly emerging issue and the political and social landscape is quickly changing, this report can only capture this brief moment in time. The department hopes the information in this report is useful for policy makers while exploring options to ensure Washingtonians have affordable access to prescription drugs. Before discussing the state's production of generic prescription drugs, we must first understand the bigger picture of the complex pharmaceutical industry in the United States.

## Background

This section provides an overview of current market news, the generic drug approval process, the role of pharmacy benefit managers, and industry cost drivers.

### Current Market News

Prescription drugs can do miraculous things when people have access to them. Unfortunately, people in the United States frequently skip or take partial prescription doses because they cannot afford their prescription. The price of prescription drugs in the United States has risen significantly over the past decade. Prices are not only rising for new drugs, but also for generic versions when the market allows manufacturers to raise prices. Monopoly-like conditions often exist where only one generic manufacturer controls the market. This happens when manufacturers consolidate or leave an unprofitable market, resulting in less competition.

People in the United States are dying because they cannot afford their medicine. This is due to vast price increases for prescription drugs. Diabetics may wait until their blood sugar spikes dangerously before giving themselves insulin.<sup>15</sup> For example, in 2017, Alec Smith<sup>16</sup> and Shane Patrick Boyle<sup>17</sup> died from diabetic ketoacidosis because they were rationing their insulin until their next paychecks.

These tragic stories are borne out in the data. A 2015 survey by the National Center for Health Statistics revealed that 7.8 percent of American adults do not take their medicines as prescribed because they can't afford the prescription or the insurance cost-share.<sup>18</sup> Among adults aged 18 to 65, 6.1 percent with private insurance skipped medicines to save money, compared to 10 percent of those with Medicaid, and 14 percent of those with no insurance.<sup>19</sup> Deviation from prescribed drug treatment can lead to higher risks of morbidity and mortality.

The costs of prescription drugs are skyrocketing. A 2016 study showed that the cost of prescription drugs increased from \$354 billion to an estimated \$535 billion from 2009 to 2018 – a staggering 50 percent increase.<sup>20</sup> Unfortunately, for patients, the prices of prescription drugs are likely to continue to outpace inflation.<sup>21</sup> As an example, the price of insulin increased approximately 450 percent above inflation over the past 20 years.<sup>22</sup> Facing increased criticism and scrutiny, manufacturers are beginning to reign in prices, and insulin manufacturers lowered the cost for uninsured Americans.<sup>23, 24</sup>

Prices are not only rising for new drugs and therapies, but also for generic versions. People often think that generic drugs are less expensive than brand-name versions. Although generic drug manufacturers can operate closer to the margin due to less “sunk costs” than brand manufacturers (e.g. cost of pre-approval trials or drugs that never come to market), this price advantage is lost when there is little competition. The lack of competition in the market enables generic manufacturers to increase their prices.<sup>25</sup> For example, between 2012 and 2013, the price for captopril, a generic drug to treat high blood pressure and heart failure, increased from \$0.01 per pill to \$0.30 per pill, a 2,850 percent increase.<sup>26</sup> Similarly, the cost of doxycycline, an antibiotic, increased from \$0.06 per pill to \$3.36 per pill, a 5,600 percent increase.<sup>27</sup> A health insurance information technology company reports that prices for 400 generic drugs increased over 1,000 percent between 2008 and 2015.<sup>28</sup> Drug prices appear set by what the market will bear instead of the cost of production.<sup>29, 30</sup>

### **Generic Drug Approval**

A generic drug is a copy of a branded drug in terms of dosage, administration, and performance. Generic drugs must be a “bioequivalent” to the branded drug, meaning the generic drug will work the same way in the body and be as safe and effective as the brand name drug.<sup>31</sup> A pharmaceutical manufacturer may obtain FDA approval for a generic drug through an Abbreviated New Drug Application (ANDA) that does not require clinical testing.<sup>32, 33</sup> A manufacturer may submit this application since drugs are substitutable based on research for an approved drug. “Generic drug developers can use data from their brand-name counterparts, resulting in much less-expensive development programs.”<sup>34</sup>

The number of generic drugs approved by the FDA has increased significantly over the past three years. In federal fiscal year 2019, the FDA approved 1,171 generic drugs (935 full approvals and 236 tentative approvals).<sup>35</sup> Further, in 2019 the FDA approved 125 applications for generic medicines with no generic competition.<sup>36</sup> In fiscal year 2018, the FDA approved 971 generic drugs (781 full approvals and 190 tentative approvals).<sup>37</sup> This is a significant increase since 2013, when there were only 440 full approvals.<sup>38</sup> The FDA Reauthorization Act of 2017 increased generic drug applicant program fees to support clearing a generic drug applicant backlog.<sup>39, 40, 41</sup>

In some cases, a pharmaceutical manufacturer is required to conduct trials to prove the drug has the same effect as the brand-name counterpart. During a 2017 interview, the director of the Office of Generic Drugs in the FDA provided insight in to the process of generic drug approval, including the following direct excerpts:<sup>42</sup>

- Clinical trials may involve human volunteers who take both the brand name and generic drug products.
- Patients should be able to take the brand name drug on one day and the generic drug on another day and still receive the same treatment effect.
- The clinical trials validate that the generic drug is safe, effective, and can be substituted for the brand product.

- They also must show that the right amount of the active ingredient goes to the place in the body where it has an effect, and any inactive ingredients used are safe.
- Companies also need to show that the drug will not deteriorate over time, that the manufacturer can produce the same drug every time, and that the labeling is the same as the brand name drug.
- The average time between generic drug application submission and approval depends on the complexity of the drug and the completeness of the application.
- Some generic versions of priority drugs that have been determined to potentially provide a significant advance in medical care have been approved in six months or less.
- Other times it may take years before FDA’s scientific and medical team is confident in an approval decision.
- Some generic drugs are never approved, because the company is unable to meet FDA’s rigorous standards for approval (For example, in 2017, 15 of 100 generic drugs reviewed by the FDA were approved on average<sup>43</sup>.)

The FDA rates many generic drugs as “AB-rated generic drugs” because they are interchangeable with the brand drug. AB-rated generic drugs are identical versions of the brand drugs in terms of the following: pharmacokinetic and pharmacodynamic properties, mechanism of action, efficacy, safety, dosage, strength, intended usage, and route of administration.<sup>44</sup> AB-rated generic drugs are listed in the FDA’s Orange Book.<sup>45</sup> Washington state pharmacists are generally required to substitute generic drugs listed in the FDA’s Orange Book for brand drugs.<sup>46</sup>

Unfortunately, there are gaps and conflict in federal law that prevent generic insulin availability; however, that might change once the Biologics Price Competition and Innovation Act (BPCI Act) goes in to effect on March 23, 2020.<sup>47</sup> Most therapeutic biological products (e.g. antitoxin, blood component or derivatives, vaccines) are licensed under the Public Health Services (PHS Act). Conversely, some protein products, including insulin, are approved under the Federal Food, Drug, and Cosmetic (FD&C Act) because the definition of a “biological product” is ambiguous in the PHS Act.<sup>48, 49</sup> Since all insulin products were licensed under the FD&C Act, there are no reference products under the PHS Act to merit generic approval of insulin.<sup>50</sup> The FD&C Act generic drug approval process applies to conventional small-molecule chemical drugs, not natural source protein products such as insulin.<sup>51</sup> The BPCI Act clarifies the definition of “biological product” in the PHS Act to include protein products and recognizes approved applications of insulin under the FD&C Act as a “biological product” under the PHS Act.<sup>52</sup> The BPCI Act should allow a legal process for approval of biosimilar insulin; however, the FDA will still need to ensure the safety and efficacy of biosimilar insulin.<sup>53</sup>

### **Pharmacy Benefit Managers**

Pharmacy benefit managers (PBMs) work as brokers between payers, drug manufacturers, and pharmacies.<sup>54</sup> They play an important role in the selection, reimbursement, and access of pharmaceutical products. They create formularies (drug lists) to maximize value by choosing



products within a drug class and then apply volume-buying power to negotiate rebates from the manufacturer. This tactic is supposed to lower the cost of those products for payers and often lowers costs for patients by placing products in a lower tier formulary.

As part of the Medicare Prescription Drug Improvement and Modernization Act of 2003, PBMs gained more recognition when the federal government started providing the Medicare Part-D drug benefit.<sup>55</sup> PBMs need market share to be effective negotiators with pharmaceutical companies. This reliance on large size led to consolidation in the PBM industry.

Since PBMs are mediators that extract savings on behalf of payers, they are highly scrutinized by manufacturers and pharmacies. There is also increased focus on PBMs by lawmakers and regulatory agencies.<sup>56, 57</sup> There is a discrepancy between the price PBMs reimburse pharmacies and what they charge payers, called “spread pricing.” Lack of transparency about concessions and pricing between these parties allows for increased profits by PBMs.<sup>58</sup> PBMs make more profit than distributors or pharmacies.<sup>59</sup>

The Centers for Medicare and Medicaid Services is currently considering a requirement for PBMs to pass along discounts they receive from pharmaceutical manufacturers to consumers.<sup>60, 61</sup>

### **Cost Drivers**

There are many factors affecting the price of drugs, including:

- Countries with national health programs use government entities to negotiate drug prices and do not cover drugs with excessive prices. PBMs were supposed to play this role in the United States, yet there are concerns with PBMs as described above. In the United States, federal law prevents the government from price negotiations between Medicare and drug manufacturers.<sup>62</sup> State attempts to regulate prescription drug prices often result in federal court challenges.<sup>63</sup>
- Getting a generic drug to market can be difficult and expensive for a manufacturer because of FDA approval time. The average time for the FDA to process a generic drug application was 42 months.<sup>64</sup> An increased number of generic drug application submissions and FDA staffing problems cause approval delays.<sup>65</sup>
- Lower numbers of generic drug producers from market consolidation within the pharmaceutical industry due to decreased generic drug prices.<sup>66</sup> Likewise, generic drugs may not attract multiple producers because of the small size of the market. Consequently, a pharmaceutical company may then sell the drug ownership to a small manufacturer. The firm can then exploit the monopoly and raise the price outrageously. For example, when Turing Pharmaceuticals acquired the rights to pyrimethamine (Daraprim) from GlaxoSmithKline, it raised the price from \$13.50 to \$750 per pill - a 5,000 percent increase from 2014 to 2015.<sup>67</sup> Prescription drugs prices appear set by what the market bears instead of the value they provide or the cost of production.

- Unanticipated safety issues can limit the supply of a generic drug. In 2011, a pharmaceutical manufacturer stopped production due to quality concerns at its New Jersey plant.<sup>68</sup> The shortage resulted in a 6,000 percent increase in the price of the drug. Currently, there are no federal regulations to slowdown short-term price increases. More recently, the FDA discovered carcinogens in the blood-pressure medicine valsartan, which led to a massive recall from one of China’s biggest generic companies.<sup>69</sup>
- Sometimes, pharmaceutical manufacturers raise the prices of patented drugs very highly before the patent date ends, to create deceptive price changes.<sup>70</sup> Prices of generic drugs entering the market then look low compared to the price of the existing patented ones; however, the generic drug price is actually much higher than the original prescription drug before the patent ending. For example, the price of Nitrostat, a heart medicine, increased 56 percent the year before a generic version came on the market.<sup>71</sup>
- Pharmaceutical companies extend the patent period through secondary patents a process called “patent evergreening.”<sup>72, 73</sup> They change drug features (including dosage, appearance, type, etc.) to maintain their patent and postpone the entrance of a generic equivalent. For example, Purdue Pharmaceuticals was able to extend a patent for OxyContin by introducing a version that was less prone to tampering. The FDA extended the patent to avoid increased access to generic oxycodone which could more easily be abused, yet the patent extension allowed Purdue to maintain increased prices on OxyContin.<sup>74</sup>

As described above, prescription drug cost increases are multi-causal. Market forces that may drive up prices include: (1) spread pricing by pharmacy benefit managers; (2) challenges getting generic drugs to market; (3) market consolidation for specific generic drugs; (4) unanticipated safety issues reducing supplies of specific generic drugs; and (5) patent evergreening by brand drug manufacturers to maintain patents. In addition, there are challenges creating generic versions of insulin because of gaps and conflict in federal law. Policy action is vital because people in the United States are dying because they cannot afford their medicine.

## Research Methodology

This study required conducting data searches on the PubMed website and a review of grey literature (i.e. reports, working papers, government documents, news articles produced by organizations outside of traditional peer-reviewed publishing). In addition, several authors with published data in this area were contacted. The original research plan focused on collecting published data on production, distribution, and other costs to estimate the average cost to manufacture generic drugs. This information would then allow a comparison of the average cost of similar generic ones in the market. The goal was to compare the manufacturing cost of a generic drug with the market price to determine the potential financial gain of Washington State manufacturing.

Unfortunately, comprehensive data regarding manufacturing costs for generic drugs is not publicly available. Searches of PubMed database did not identify studies with detailed manufacturing costs. The open market competition between pharmaceutical manufacturers probably prevents the private sector from sharing cost data, and results in limited peer reviewed data.

The research did locate limited sources of grey literature with some cost figures. Considering that manufacturing projects are all significantly different, each plan requires individual cost analysis. Therefore, it was not feasible to develop a one-size-fits-all table from the cost figures found in the literature.

Besides the literature review, attempts to interview subject matter experts drew a limited response rate, with the exception of one published author. The department thanks Dr. Dzintars Gotham, Faculty of Medicine, Imperial College London, UK, for his helpful response and for providing useful information on unit costs for some generic drugs included in this report.

## Findings

Our findings include:

- Specific cost data for pharmaceutical manufacturing.
- Specific drug unit cost.
- Alternative options to state-owned pharmaceutical manufacturing.

## Specific Cost of Pharmaceutical Manufacturing

This section summarizes benchmark costs that can be useful for planning, budgeting, and cost estimation in the design of similar facilities.

The cost to develop a pharmaceutical facility has a wide range. Dr. Scott Rudge summarized data on more than 30 facilities based on data from the International Society for Pharmaceutical Engineering.<sup>75</sup> Appendix B includes a chart with individual facility data. The cost to develop a pharmaceutical manufacturing facility can range from \$10M to \$500M, with the median cost just under \$91M. The cost per square foot appears more evenly distributed. While there are a few outliers above \$3,000/s.f., most facilities cost around \$1,111/s.f. There does not appear to be a strong correlation between cost and the location of the facility - a facility in India is lowest, followed by Germany, Italy, and Japan.

Richard Pavlotsky, director of an architect and engineering company, published a cost estimation for a pharmaceutical facility. The cost figures are identified for a 100,000 s.f. facility in Table 1.<sup>76</sup> His work includes proprietary data from various sources in the pharmaceutical and engineering community; statistics for constructed or reconstructed costs between 1993 and 2003; and data from the International Society for Pharmaceutical Engineering reports.

**Table 1: Total Installed Costs**

Cost Items	Biopharmaceutical Facility			Solid Dose and Bulk Facility		
	Costs % of Total	Costs \$ Million	Costs \$ Sq. Ft.	Costs % of Total	Costs \$ Million	Costs \$ Sq. Ft.
Base Building	23.5	21.0	209.9	22.7	14.9	148.7
Process equipment	29.1	25.9	255.0	24.0	15.7	157.2
Process piping	6.4	5.7	57.2	3.4	2.2	22.3
Process utilities	5.5	4.9	49.4	4.5	2.9	29.5
Building mechanical (HVAC, plumbing)	10.5	9.4	93.8	12.5	8.2	81.9
Building Electrical	5.5	4.9	49.1	8.5	5.6	55.7
Controls & automation	3.5	3.1	31.3	6.5	4.3	42.6
Clean & BSL - 2/3 areas (15.05 and 15.07)	2.5	2.3	23.2	2.0	1.3	13.1
Others (admin, design, management, validation)	13.5	12.3	120.6	15.9	10.4	104.1
Total Costs in Million Dollar		89.3			65.5	
S.F. Gross in Dollar		893.0			655.0	
S.F. Net in Dollar		1,275.7			935.7	

### Specific Drug Unit Cost

A recent study analyzed the costs of manufacturing specific drugs by examining the price of the Active Pharmaceutical Ingredients (API).<sup>77</sup> This study used prices of actual API from India as the main factor for price estimation. API are one of the most significant components of the cost of production. The study recommended continued efforts to encourage competitive supply. The formula included estimates to account for profit, overhead, capital expenses, and operating

expenses including GMP standard compliance. The study identified an estimated generic price for drugs (Appendix A). Estimated generic prices ranged from US\$0.011 per tablet (glyceryl trinitrate 500 µg) to US\$1.447 per tablet (darunavir 800 mg). Most of the estimated generic prices were less than 2.5 cents per tablet. These estimated per-tablet cost figures allow a comparison of prices of similar generic drugs currently on the market. Some significant price gaps indicate areas where production in a state-owned (or alternative) manufacturing facility could be advantageous.

## Alternative generic drug manufacturing models

Even though state manufacturing of generic prescription drugs might be beneficial, there are significant barriers to state manufacturing. Some government pharmaceutical manufacturing facilities failed. In 2007, South Africa developed a public-private venture to manufacture vaccines.<sup>78</sup> There were numerous challenges including: (1) inability to compete on price with the expertise and volumes of pharmaceutical manufacturers who had a global presence; (2) inability to compete on price with pharmaceutical manufacturers in India and China who have lower costs; (3) lack of access to distribution channels; (4) inability to generate economies of scale.<sup>79</sup> Given the resources involved with state generic drug manufacturing, the following are promising alternative models that may achieve the same desired outcome.

### 1. Long-Term Purchasing Agreements with Non-Profit Prescription Manufacturers

Healthcare organizations are partnering to create new generic pharmaceutical manufacturing companies.<sup>80</sup> Several major hospital systems representing over 450 hospitals around the United States launched a nonprofit company called Civica Rx to manufacture generic drugs.<sup>81</sup> The purpose of Civica Rx is to help fight rising costs and chronic shortages. Civica Rx will initially manufacture 16 essential injectable medications that are often overpriced and in short supply in hospitals.<sup>82</sup> Dan Liljenquist spearheaded the idea of creating Civica Rx; Mr. Liljenquist is a former Bain Capital leader and a former senator of the Utah State legislature. Civica Rx will make generic medications under its label by working with contract manufacturing facilities, including some in Denmark and England.<sup>83</sup> Civica Rx will require hospitals to commit to long-term contracts to buy the medications at fixed prices, even if another generic company drops its prices. Since January 2018, Civica Rx has already drawn attention from more than 800 hospitals who have expressed interest in participating.<sup>84</sup>

### 2. Production via Contract Manufacturing Facilities

The high costs of pharmaceutical manufacturing have led to the rise of outsourcing.<sup>85</sup> A contract manufacturing facility is a company that provides complete pharmaceutical services from drug development through drug manufacturing, on a contractual basis. Some manufacturers specialize in design or production services, while others specialize in product assembly and distribution. Civica Rx is using contract manufacturing facilities

to develop its drugs. The website [https://www.contractpharma.com/csd/all\\_categories](https://www.contractpharma.com/csd/all_categories) lists approximately 1500 pharmaceutical contract manufacturing companies, including nearly 1,000 in the United States, with contact information and the companies' specialties.

### 3. Subscription-Based Payment System

Washington is one of the first states in the nation to successfully adopt a subscription-based payment system for prescription drugs.<sup>86, 87</sup> Sometimes called the “Netflix model”, subscription-based payment systems offer fixed-pay contracts with big pharmaceutical companies. This allows subscribers to purchase prescription drugs at a reduced cost to make essential medicines more affordable. Australia was the first country to adopt the model, in 2015. They used it to provide drug treatments for patients with the hepatitis C virus.<sup>88</sup> A study in The New England Journal of Medicine found that by using the Netflix model, Australia has treated seven times as many patients than without the agreements.<sup>89</sup> This subscription-based payment system shows potential to work for other essential drugs, as well.

## Recommendations

- Washington State can potentially manufacture generic prescription drugs; however, it will require significant resource investment and time to realize. With the amount of state and federal legislative action on this issue, state manufacturing might not be an effective or efficient response. Promising alternatives exist to address the increasing cost of drugs and resulting decrease in access.
- This is a very complex issue with potentially viable alternatives. Federal legal barriers to increase access for insulin will hopefully improve when sections of the Biologics Price Competition and Innovation Act (BPCI Act) goes in to effect on March 23, 2020. The department recommends hiring an independent consultant who is a subject matter expert to help determine the best approach for the State of Washington. The independent consultant could help determine which avenue to access biosimilar insulin is most promising.

## Conclusion

The price of prescription drugs in the United States has risen significantly over the past decade. The prices of prescription drugs appear less set by the cost of production or value they provide, but rather by what the market will bear. Unfortunately, estimates predict the price of prescription drugs will continue to outpace inflation and people will suffer, especially the

uninsured. People in the United States are already dying because they cannot afford their medicine.

Prescription drug cost increases are multi-causal. Possible market forces driving up prices include: (1) spread pricing by pharmacy benefit managers; (2) challenges getting generic drugs to market; (3) market consolidation for specific generic drugs; (4) unanticipated safety issues reducing the supply of specific generic drugs; and (5) patent evergreening by brand drug manufacturers to maintain patents. In addition, there are challenges creating generic versions of insulin because of gaps and conflict in federal law.

In 2019, at the request of the Washington State Legislature, the department conducted a study on the state's ability to produce generic prescription drugs, with a priority on insulin. The pharmaceutical industry lacks transparency and there is limited data on production or costs of manufacturing prescription drugs. Although there is limited data available, research indicates that creating state manufacturing capacity will require significant time and resources.

There are other potential alternatives to address the increasing cost of prescription drugs, including production via contract manufacturing facilities. This is a very complex issue with potentially viable alternatives. The department recommends hiring an independent consultant who is a subject matter expert and potentially establishing a legislative workgroup to help determine the best approach for the State of Washington.

Continued legislative focus on pharmaceutical costs is critical to ensure the public's health and affordable access to lifesaving drugs.





## Appendices

<b>Appendix A. ESTIMATED API PRICE PER KILOGRAM, CURRENT PRICES, AND ESTIMATED GENERIC PRICES</b>						
Source: Hill AM, Barber MJ, Gotham D, Estimated costs of production and potential prices for the WHO Essential Medicines List, BMJ Global Health 2018;3:e000571						
Medicine	Unit	API (price/kg)	UK unit price	SA unit price	India unit price	Estimated generic price
<b>Anaesthetics</b>						
midazolam	tablet (7.5mg)	\$5,256		11.6¢	51.8¢ <sub>P</sub>	5.6¢
midazolam	tablet (15mg)	\$5,256		23.3¢	10.4¢ <sub>P</sub>	10.0¢
<b>Medicines for pain and palliative care</b>						
acetylsalicylic acid	tablet (100mg)	\$5			0.2¢ <sub>P</sub>	1.2¢
acetylsalicylic acid	tablet (200mg)	\$5				1.4¢
acetylsalicylic acid	tablet (300mg)	\$5	1.0¢* (0.7x) <sub>BNF</sub>		0.5¢ <sub>TN</sub>	1.5¢
acetylsalicylic acid	tablet (400mg)	\$5				1.6¢
acetylsalicylic acid	tablet (500mg)	\$5			0.6¢ <sub>P</sub>	1.7¢
amitriptyline	tablet (10mg)	\$49	0.7¢* (0.5x) <sub>EMIT</sub>	1.8¢	0.4¢ <sub>P</sub>	1.2¢
amitriptyline	tablet (25mg)	\$49	0.9¢* (0.7x) <sub>EMIT</sub>	0.7¢	0.3¢ <sub>TN</sub>	1.3¢
amitriptyline	tablet (75mg)	\$49	2.6¢* (1.6x) <sub>EMIT</sub>	2.2¢	0.8¢ <sub>TN</sub>	1.6¢
codeine	tablet (30mg)		4.5¢ <sub>BNF</sub>	23.0¢	7.5¢ <sub>P</sub>	
cyclizine	tablet (50mg)	\$84	6.1¢* (3.8x) <sub>EMIT</sub>			1.6¢
dexamethasone	tablet (2mg)	\$1,482	18.5¢* (12.7x) <sub>BNF</sub>		0.7¢ <sub>TN</sub>	1.5¢
dexamethasone	tablet (4mg)	\$1,482	37.0¢* (20.6x) <sub>BNF</sub>		1.4¢ <sub>TN</sub>	1.8¢
diazepam	tablet (5mg)	\$131	0.8¢* (0.7x) <sub>EMIT</sub>	0.7¢	0.2¢ <sub>TN</sub>	1.2¢
diazepam	tablet (10mg)	\$131	1.1¢* (0.8x) <sub>EMIT</sub>	1.4¢	0.4¢ <sub>TN</sub>	1.3¢
docusate sodium	capsule (100mg)	\$11	9.1¢* (6.9x) <sub>BNF</sub>		1.5¢ <sub>P</sub>	1.3¢
fluoxetine	SODF (20mg)	\$71	1.2¢* (0.9x) <sub>EMIT</sub>	1.0¢	0.4¢ <sub>TN</sub>	1.3¢
haloperidol	SODF (0.5mg)	\$331	5.1¢* (4.5x) <sub>BNF</sub>	7.6¢	1.2¢ <sub>P</sub>	1.1¢
haloperidol	SODF (2mg)	\$331		30.5¢	2.9¢ <sub>P</sub>	1.2¢
haloperidol	SODF (5mg)	\$331	4.6¢* (3.5x) <sub>EMIT</sub>	1.5¢	0.3¢ <sub>TN</sub>	1.3¢
ibuprofen	tablet (200mg)	\$10	0.8¢* (0.5x) <sub>EMIT</sub>	0.7¢	0.3¢ <sub>TN</sub>	1.5¢
ibuprofen	tablet (400mg)	\$10	2.4¢* (1.3x) <sub>BNF</sub>	1.4¢	0.6¢ <sub>TN</sub>	1.8¢
ibuprofen	tablet (600mg)	\$10	1.5¢* (0.7x) <sub>EMIT</sub>	2.1¢	0.9¢ <sub>TN</sub>	2.2¢
loperamide	SODF (2mg)	\$234	7.0¢* (5.9x) <sub>EMIT</sub>	1.1¢	0.2¢ <sub>TN</sub>	1.2¢
metoclopramide	SODF (10mg)	\$77	1.3¢* (1.0x) <sub>EMIT</sub>	0.4¢	0.4¢ <sub>P</sub>	1.2¢
midazolam	SODF (7.5mg)	\$5,256		46.5¢	51.8¢ <sub>P</sub>	5.6¢
midazolam	SODF (15mg)	\$5,256		23.3¢	10.4¢ <sub>P</sub>	10.0¢
morphine	slow-release tablet (10mg)		8.3¢ <sub>BNF</sub>	12.0¢	4.6¢ <sub>P</sub>	
morphine	slow-release tablet (100mg)		61.8¢ <sub>BNF</sub>	64.1¢	97.5¢ <sub>P</sub>	
morphine	slow-release tablet (200mg)		176.2¢ <sub>BNF</sub>	128.3¢	195.0¢ <sub>P</sub>	
morphine	tablet (30mg)		20.0¢ <sub>BNF</sub>	36.1¢	8.3¢ <sub>P</sub>	
morphine	immediate-release tablet (10mg)		12.3¢ <sub>BNF</sub>		4.6¢ <sub>P</sub>	
ondansetron	SODF (4mg)	\$990	3.4¢* (2.1x) <sub>EMIT</sub>	12.8¢	0.3¢ <sub>TN</sub>	1.6¢
ondansetron	SODF (8mg)	\$990	11.4¢* (5.4x) <sub>EMIT</sub>	192.4¢	0.5¢ <sub>TN</sub>	2.1¢
paracetamol	tablet (100mg)	\$4				1.2¢

paracetamol	tablet (200mg)	\$4				1.3¢
paracetamol	tablet (300mg)	\$4				1.4¢
paracetamol	tablet (400mg)	\$4				1.5¢
paracetamol	tablet (500mg)	\$4	0.4¢* (0.3x) <sub>BNF</sub>	0.5¢	0.3¢ <sub>TN</sub>	1.6¢
<b>Antiallergics and medicines used in anaphylaxis</b>						
loratadine	tablet (10mg)	\$281	1.7¢* (1.2x) <sub>EMIT</sub>		2.9¢ <sub>P</sub>	1.4¢
prednisolone	tablet (5mg)	\$962	2.0¢* (1.2x) <sub>EMIT</sub>	1.0¢	0.5¢ <sub>TN</sub>	1.7¢
prednisolone	tablet (25mg)	\$962	9.8¢* (2.5x) <sub>EMIT</sub>	5.1¢	2.7¢ <sub>TN</sub>	3.8¢
<b>Antidotes and other substances used in poisonings</b>						
penicillamine	SODF (250mg)	\$1,724	23.1¢* (0.5x) <sub>BNF</sub>		14.9¢ <sub>TN</sub>	49.8¢
succimer	SODF (100mg)					
<b>Anticonvulsants/antiepileptics</b>						
carbamazepine	tablet (100mg)	\$52	2.9¢* (1.6x) <sub>EMIT</sub>	0.9¢	0.5¢ <sub>TN</sub>	1.8¢
carbamazepine	tablet (200mg)	\$52	5.1¢* (2.1x) <sub>EMIT</sub>	1.8¢	1.1¢ <sub>TN</sub>	2.4¢
ethosuximide	tablet (250mg)		169.9¢ <sub>BNF</sub>			
phenobarbital	tablet (15mg)	\$36	10.4¢* (8.7x) <sub>EMIT</sub>	0.4¢	0.1¢ <sub>TN</sub>	1.2¢
phenobarbital	tablet (30mg)	\$36	0.9¢* (0.7x) <sub>EMIT</sub>	0.8¢	0.3¢ <sub>TN</sub>	1.3¢
phenobarbital	tablet (60mg)	\$36	4.3¢* (3.1x) <sub>EMIT</sub>	0.4¢	0.6¢ <sub>TN</sub>	1.4¢
phenobarbital	tablet (100mg)	\$36				1.6¢
phenytoin	SODF (25mg)	\$17	69.9¢* (58.4x) <sub>EMIT</sub>		1.8¢ <sub>P</sub>	1.2¢
phenytoin	SODF (50mg)	\$17	70.5¢* (55.7x) <sub>EMIT</sub>	2.2¢	0.2¢ <sub>TN</sub>	1.3¢
phenytoin	SODF (100mg)	\$17	62.0¢* (44.1x) <sub>EMIT</sub>	3.3¢	0.3¢ <sub>TN</sub>	1.4¢
valproic acid (sodium valproate)	tablet (100mg)	\$26		5.6¢	1.1¢ <sub>P</sub>	1.5¢
valproic acid (sodium valproate)	tablet (200mg)	\$26			0.9¢ <sub>TN</sub>	1.8¢
valproic acid (sodium valproate)	tablet (500mg)	\$26	10.2¢* (3.5x) <sub>BNF</sub>		5.1¢ <sub>P</sub>	2.9¢
<b>Antihelminthics</b>						
diethylcarbamazine	tablet (50mg)	\$13			0.1¢ <sub>TN</sub>	1.3¢
diethylcarbamazine	tablet (100mg)	\$13			0.2¢ <sub>TN</sub>	1.5¢
ivermectin	tablet (3mg)				9.5¢ <sub>P</sub>	
levamisole	tablet (50mg)	\$28			2.1¢ <sub>P</sub>	1.3¢
levamisole	tablet (150mg)	\$28				1.8¢
oxamniquine	capsule (250mg)					
praziquantel	tablet (150mg)	\$148			57.6¢ <sub>P</sub>	3.7¢
praziquantel	tablet (600mg)	\$148		288.9¢	61.9¢ <sub>P</sub>	11.5¢
triclabendazole	tablet (250mg)	\$44				2.5¢
<b>Antibacterials</b>						
amoxicillin	SODF (250mg)	\$25	1.8¢* (0.8x) <sub>EMIT</sub>	2.7¢	1.0¢ <sub>TN</sub>	2.1¢
amoxicillin	SODF (500mg)	\$25	3.2¢* (1.0x) <sub>EMIT</sub>	4.1¢	2.0¢ <sub>TN</sub>	3.1¢
amoxicillin + clavulanic acid	tablet (500mg+125mg)	FDC	12.9¢ <sub>BNF</sub>		31.5¢ <sub>P</sub>	
azithromycin	capsule (250mg)	\$193	58.8¢* (8.8x) <sub>EMIT</sub>	23.8¢	1.7¢ <sub>P</sub>	6.7¢
azithromycin	capsule (500mg)	\$193	117.7¢* (9.6x) <sub>EMIT</sub>	47.6¢	1.1¢ <sub>P</sub>	12.3¢

bedaquiline	tablet (100mg)		12930.9¢ <sub>BNF</sub>			
cefalexin	SODF (250mg)	\$49	3.4¢* (1.2x) <sub>EMIT</sub>		1.6¢ <sub>TN</sub>	2.7¢
cefixime	capsule (400mg)	\$162	491.4¢ (51.3x) <sub>BNF</sub>		22.4¢ <sub>P</sub>	9.6¢
chloramphenicol	capsule (250mg)	\$234	816.8¢* (103.7x) <sub>BNF</sub>		1.3¢ <sub>P</sub>	7.9¢
ciprofloxacin	tablet (250mg)	\$27	2.4¢* (1.1x) <sub>EMIT</sub>	3.6¢	0.8¢ <sub>TN</sub>	2.1¢
clarithromycin	SODF (500mg)	\$249	14.8¢* (1.0x) <sub>EMIT</sub>	35.9¢	3.3¢ <sub>TN</sub>	15.5¢
clindamycin	capsule (150mg)	\$213	7.0¢* (1.4x) <sub>EMIT</sub>	24.4¢	22.5¢ <sub>P</sub>	5.1¢
clofazimine	capsule (50mg)	\$239			1.6¢ <sub>P</sub>	2.5¢
clofazimine	capsule (100mg)	\$239			2.9¢ <sub>P</sub>	3.9¢
cloxacillin	capsule (500mg)	\$24			2.5¢ <sub>TN</sub>	2.9¢
cloxacillin	capsule (1000mg)	\$24			5.0¢ <sub>TN</sub>	4.6¢
cycloserine	SODF (250mg)	\$805	523.4¢* (21.8x) <sub>BNF</sub>		61.9¢ <sub>P</sub>	24.0¢
dapsone	tablet (25mg)	\$30	37.4¢* (30.5x) <sub>EMIT</sub>		0.05¢ <sub>P</sub>	1.2¢
dapsone	tablet (50mg)	\$30	74.8¢* (56.5x) <sub>EMIT</sub>		0.1¢ <sub>P</sub>	1.3¢
dapsone	tablet (100mg)	\$30	132.7¢ (87.2x) <sub>EMIT</sub>		0.5¢ <sub>P</sub>	1.5¢
delamanid	tablet (50mg)		3385.4¢ <sub>BNF</sub>			
doxycycline	SODF (50mg)	\$144	3.4¢* (1.6x) <sub>EMIT</sub>		2.3¢ <sub>P</sub>	2.1¢
doxycycline	SODF (100mg)	\$144	4.6¢* (1.5x) <sub>EMIT</sub>	2.4¢	0.8¢ <sub>TN</sub>	3.1¢
erythromycin	SODF (250mg)	\$41	9.5¢* (3.2x) <sub>BNF</sub>		1.6¢ <sub>TN</sub>	3.0¢
ethambutol	tablet (100mg)	\$42	8.0¢* (4.3x) <sub>EMIT</sub>		0.3¢ <sub>P</sub>	1.9¢
ethambutol	tablet (200mg)	\$42	16.1¢* (6.2x) <sub>EMIT</sub>	2.3¢	0.6¢ <sub>P</sub>	2.6¢
ethambutol	tablet (300mg)	\$42	24.1¢* (7.3x) <sub>EMIT</sub>		1.7¢ <sub>P</sub>	3.3¢
ethambutol	tablet (400mg)	\$42	23.1¢* (5.7x) <sub>EMIT</sub>	4.6¢	1.0¢ <sub>P</sub>	4.0¢
ethambutol + isoniazid	tablet (400mg + 150mg)	FDC				4.3¢
ethambutol + isoniazid + pyrazinamide + rifampicin	tablet (275/75/400/150mg FDC)	FDC	85.6¢ (13.2x) <sub>BNF</sub>	10.1¢	5.1¢ <sub>P</sub>	6.5¢
ethambutol + isoniazid + rifampicin	tablet (275/75/150mg FDC)	FDC				5.2¢
ethionamide	tablet (125mg)			4.7¢	4.5¢ <sub>P</sub>	
ethionamide	tablet (250mg)			9.5¢	9.0¢ <sub>P</sub>	
isoniazid	tablet (50mg)	\$16	44.7¢* (35.8x) <sub>BNF</sub>	0.9¢	0.04¢ <sub>P</sub>	1.2¢
isoniazid	tablet (100mg)	\$16	89.3¢* (65.3x) <sub>BNF</sub>	1.7¢	0.1¢ <sub>P</sub>	1.4¢
isoniazid	tablet (200mg)	\$16	178.7¢* (111.1x) <sub>BNF</sub>	3.4¢	0.2¢ <sub>P</sub>	1.6¢
isoniazid	tablet (300mg)	\$16	268.0¢* (145.0x) <sub>BNF</sub>	5.1¢	0.7¢ <sub>P</sub>	1.8¢
isoniazid + pyrazinamide + rifampicin	tablet (75/400/150mg FDC)	FDC			4.4¢ <sub>P</sub>	4.5¢
isoniazid + pyrazinamide + rifampicin	tablet (150/500/150mg FDC)	FDC			5.6¢ <sub>P</sub>	5.0¢

isoniazid + rifampicin	tablet (60/60mg FDC)	FDC		4.5¢		2.1¢
isoniazid + rifampicin	tablet (75/150mg FDC)	FDC		4.1¢	2.3¢ P	3.3¢
isoniazid + rifampicin	tablet (150/150mg FDC)	FDC				3.5¢
isoniazid + rifampicin	tablet (150/300mg FDC)	FDC	58.5¢ (10.8x) <sub>BNF</sub>	8.1¢	5.8¢ P	5.4¢
levofloxacin	tablet (250mg)	\$142	15.9¢* (3.0x) <sub>EMIT</sub>	14.7¢	1.3¢ TN	5.3¢
levofloxacin	tablet (500mg)	\$142	21.5¢* (2.3x) <sub>EMIT</sub>	27.6¢	2.6¢ TN	9.4¢
levofloxacin	tablet (750mg)	\$142	47.6¢* (3.5x) <sub>EMIT</sub>	44.1¢	4.0¢ TN	13.5¢
linezolid	tablet (400mg)	\$690			52.5¢ P	32.5¢
linezolid	tablet (600mg)	\$690	2975.2¢* (61.8x) <sub>BNF</sub>	741.3¢	44.9¢ P	48.1¢
metronidazole	tablet (200mg)	\$12	2.4¢* (1.6x) <sub>EMIT</sub>	0.7¢	0.4¢ TN	1.5¢
metronidazole	tablet (300mg)	\$12	3.6¢* (2.1x) <sub>EMIT</sub>	1.1¢	0.6¢ TN	1.7¢
metronidazole	tablet (400mg)	\$12	2.5¢* (1.3x) <sub>EMIT</sub>	1.2¢	0.8¢ TN	1.9¢
metronidazole	tablet (500mg)	\$12	6.0¢* (2.9x) <sub>EMIT</sub>	1.8¢	1.0¢ TN	2.1¢
nitrofurantoin	tablet (100mg)	\$295	11.9¢ (2.6x) <sub>EMIT</sub>	23.7¢	1.5¢ P	4.5¢
p-aminosalicylic acid	tablet (500mg)					
phenoxymethylpenicillin	tablet (250mg)		1.9¢ <sub>EMIT</sub>		1.3¢ TN	
pyrazinamide	tablet (400mg)	\$22				2.4¢
pyrazinamide	tablet (150mg)	\$22			2.7¢ P	1.6¢
rifabutin	capsule (150mg)	\$2,077	391.6¢ (10.8x) <sub>BNF</sub>		63.0¢ P	36.3¢
rifampicin	capsule (150mg)	\$112	8.9¢* (2.9x) <sub>EMIT</sub>	7.8¢	2.1¢ TN	3.1¢
rifampicin	capsule (300mg)	\$112	14.8¢* (2.9x) <sub>EMIT</sub>	15.6¢	4.1¢ TN	5.1¢
rifampicin	SODF (150mg)	\$112	8.9¢* (2.9x) <sub>EMIT</sub>	7.8¢	2.1¢ TN	3.1¢
rifampicin	SODF (300mg)	\$112	14.8¢* (2.9x) <sub>EMIT</sub>	15.6¢	4.1¢ TN	5.1¢
rifapentine	tablet (150mg)					
sulfamethoxazole + trimethoprim	tablet (100mg+20mg)	FDC			0.3¢ P	1.4¢
sulfamethoxazole + trimethoprim	tablet (400mg+80mg)	FDC	10.7¢* (5.0x) <sub>BNF</sub>		0.5¢ P	2.2¢
sulfamethoxazole + trimethoprim	tablet (800mg+150mg)	FDC	30.4¢* (9.6x) <sub>BNF</sub>		1.4¢ P	3.2¢
trimethoprim	tablet (100mg)	\$30	1.2¢* (0.8x) <sub>EMIT</sub>			1.5¢
trimethoprim	tablet (200mg)	\$30	8.3¢* (4.3x) <sub>EMIT</sub>			1.9¢
<b>Antifungal medicines</b>						
fluconazole	capsule (50mg)	\$142	3.9¢* (2.0x) <sub>EMIT</sub>	4.7¢	0.9¢ P	2.0¢
flucytosine	capsule (250mg)	\$1,377				40.1¢
griseofulvin	tablet (125mg)	\$115	125.7¢* (44.6x) <sub>BNF</sub>		1.2¢ TN	2.8¢
griseofulvin	tablet (250mg)	\$115	251.3¢* (55.8x) <sub>BNF</sub>		2.4¢ TN	4.5¢
nystatin	tablet (20mg)					
nystatin	tablet (100mg)					
abacavir (ABC)	tablet (300mg)	\$538	384.8¢ (17.0x) <sub>BNF</sub>	20.0¢	70.5¢ P	22.6¢
aciclovir	tablet (200mg)	\$81	7.3¢* (2.4x) <sub>BNF</sub>	3.8¢	5.1¢ P	3.1¢

atazanavir	SODF (100mg)	\$1,189			42.8¢ P	16.5¢
atazanavir	SODF (150mg)	\$1,189	657.3¢ (27.3x) <sup>BNF</sup>	33.2¢	62.5¢ P	24.1¢
atazanavir	SODF (300mg)	\$1,189	1314.6¢ (27.9x) <sup>BNF</sup>	66.4¢	105.0¢ P	47.1¢
daclatasvir	tablet (30mg)	\$852	37944.3¢ (8802.6x) <sup>BNF</sup>			4.3¢
daclatasvir	tablet (60mg)	\$852	37944.3¢ (5062.9x) <sup>BNF</sup>			7.5¢
darunavir	tablet (75mg)	\$1,588	121.0¢ (8.3x) <sup>BNF</sup>			14.6¢
darunavir	tablet (400mg)	\$1,588	645.2¢ (8.9x) <sup>BNF</sup>			72.9¢
darunavir	tablet (600mg)	\$1,588	967.9¢ (8.9x) <sup>BNF</sup>	117.1¢	237.5¢ P	108.8¢
darunavir	tablet (800mg)	\$1,588	1290.5¢ (8.9x) <sup>BNF</sup>			144.7¢
dasabuvir	tablet (250mg)		2166.7¢ <sup>BNF</sup>			
efavirenz	capsule (50mg)	\$109	72.5¢* (41.0x) <sup>BNF</sup>	4.5¢		1.8¢
efavirenz	capsule (100mg)	\$109	144.8¢* (60.0x) <sup>BNF</sup>	9.0¢	19.5¢ P	2.4¢
efavirenz	capsule (200mg)	\$109	289.3¢* (78.2x) <sup>BNF</sup>	5.2¢	39.0¢ P	3.7¢
efavirenz	tablet (200mg)	\$109	289.3¢ (78.2x) <sup>BNF</sup>	5.2¢	39.0¢ P	3.7¢
efavirenz	tablet (600mg)	\$109	88.3¢* (10.0x) <sup>EMIT</sup>	11.4¢	11.9¢ P	8.8¢
efavirenz + emtricitabine + tenofovir	tablet (600/200/300mg FDC)	FDC	2309.1¢ (130.3x) <sup>BNF</sup>	34.2¢	190.0¢ P	17.7¢
emtricitabine + tenofovir	tablet (200/300mg FDC)	FDC	1541.5¢ (105.6x) <sup>BNF</sup>	20.3¢	70.0¢ P	14.6¢
entecavir	tablet (0.5mg)	\$669,376	1574.1¢ (40.5x) <sup>BNF</sup>		10.8¢ TN	38.8¢
entecavir	tablet (1mg)	\$669,376	1574.1¢ (20.6x) <sup>BNF</sup>		5.4¢ TN	76.5¢
lamivudine (3TC)	tablet (150mg)	\$241	31.4¢* (5.9x) <sup>EMIT</sup>	2.4¢	11.7¢ TN	5.3¢
lamivudine + nevirapine + stavudine	tablet (150/200/30mg FDC)	FDC			30.5¢ P	9.8¢
lamivudine + nevirapine + zidovudine	tablet (30/50/60mg FDC)	FDC				4.7¢
lamivudine + nevirapine + zidovudine	tablet (150/200/300mg FDC)	FDC			31.9¢ P	17.8¢
lamivudine + zidovudine	tablet (30/60mg FDC)	FDC				3.7¢
lamivudine + zidovudine	tablet (150/300mg FDC)	FDC	53.2¢* (3.8x) <sup>EMIT</sup>	13.4¢	29.7¢ P	14.0¢
ledipasvir + sofosbuvir	tablet (90/400mg FDC)	FDC	60326.2¢ (593.4x) <sup>BNF</sup>			101.7¢
lopinavir + ritonavir (LPV/r)	tablet (100/25mg FDC)	FDC	166.5¢ (13.7x) <sup>BNF</sup>	8.2¢		12.1¢
lopinavir + ritonavir (LPV/r)	tablet (200/50mg FDC)	FDC	309.2¢ (13.4x) <sup>BNF</sup>	13.9¢	72.5¢ P	23.2¢
nevirapine (NVP)	tablet (200mg)	\$165	32.3¢* (6.5x) <sup>EMIT</sup>	4.5¢	21.5¢ P	5.0¢

ombitasvir + paritaprevir + ritonavir	tablet (12.5/75/50mg FDC)	FDC	24916.7¢ <sup>BNF</sup>			
oseltamivir	capsule (30mg)	\$1,860	100.2¢ (10.7x) <sup>BNF</sup>		37.5¢ <sup>P</sup>	9.4¢
oseltamivir	capsule (45mg)	\$1,860	200.3¢ (14.8x) <sup>BNF</sup>		48.8¢ <sup>P</sup>	13.5¢
oseltamivir	capsule (75mg)	\$1,860			62.9¢ <sup>TN</sup>	21.8¢
ribavirin	SODF (200mg)	\$122	95.5¢* (23.9x) <sup>EMIT</sup>	26.9¢	13.8¢ <sup>TN</sup>	4.0¢
ribavirin	SODF (400mg)	\$122	266.5¢* (38.8x) <sup>EMIT</sup>	53.7¢	27.6¢ <sup>TN</sup>	6.9¢
ribavirin	SODF (600mg)	\$122	286.4¢* (29.4x) <sup>EMIT</sup>	80.6¢	41.4¢ <sup>TN</sup>	9.7¢
ritonavir	tablet (25mg)	\$1,665				5.8¢
ritonavir	tablet (100mg)	\$1,665	84.2¢ (4.2x) <sup>BNF</sup>			19.9¢
saquinavir (SQV)	SODF (200mg)	\$898				24.4¢
saquinavir (SQV)	SODF (500mg)	\$898	272.2¢ (4.6x) <sup>BNF</sup>		75.0¢ <sup>P</sup>	59.3¢
simeprevir	capsule (150mg)		34663.6¢ <sup>BNF</sup>			
sofosbuvir	tablet (400mg)	\$1,224	54140.3¢ (958.1x) <sup>BNF</sup>			56.5¢
stavudine (d4T)	capsule (15mg)	\$193		2.4¢	2.9¢ <sup>P</sup>	1.5¢
stavudine (d4T)	capsule (20mg)	\$193	323.7¢ (205.7x) <sup>BNF</sup>	2.7¢	3.2¢ <sup>P</sup>	1.6¢
stavudine (d4T)	capsule (30mg)	\$193	339.5¢ (188.9x) <sup>BNF</sup>	2.6¢	5.7¢ <sup>P</sup>	1.8¢
tenofovir disoproxil fumarate (TDF)	tablet (300mg)	\$182	885.7¢ (119.0x) <sup>BNF</sup>	9.1¢	18.0¢ <sup>TN</sup>	7.4¢
tenofovir disoproxil fumarate (TDF)	tablet (300mg)	\$182	885.7¢ (119.0x) <sup>BNF</sup>	9.1¢	18.0¢ <sup>TN</sup>	7.4¢
valganciclovir	tablet (450mg)	\$2,391	2343.2¢ (19.1x) <sup>BNF</sup>	1285.0¢	220.2¢ <sup>TN</sup>	122.6¢
zidovudine (ZDV or AZT)	capsule (100mg)	\$252	69.0¢* (17.1x) <sup>EMIT</sup>	5.3¢	9.5¢ <sup>P</sup>	4.0¢
zidovudine (ZDV or AZT)	capsule (250mg)	\$252	104.0¢* (12.4x) <sup>EMIT</sup>		378.0¢ <sup>P</sup>	8.4¢
zidovudine (ZDV or AZT)	tablet (300mg)	\$252		11.5¢	23.0¢ <sup>P</sup>	9.8¢
<b>Antiprotozoal medicines</b>						
amodiaquine	tablet (200mg)	\$28			0.8¢ <sup>P</sup>	2.0¢
artemether + lumefantrine	tablet (20mg+120mg)	FDC	121.9¢ (52.5x) <sup>BNF</sup>	11.7¢	18.6¢ <sup>P</sup>	2.3¢
artesunate	tablet (50mg)	\$282			1.8¢ <sup>P</sup>	2.7¢
artesunate + amodiaquine	tablet (25mg+67.5mg)	FDC				2.2¢
artesunate + amodiaquine	tablet (50mg+135mg)	FDC				3.3¢
artesunate + amodiaquine	tablet (100mg+270mg)	FDC				5.5¢
artesunate + mefloquine	tablet (25mg+55mg)	FDC				7.8¢

artesunate + mefloquine	tablet (100mg+220mg)	FDC				27.9¢
benznidazole	tablet (12.5mg)					
benznidazole	tablet (50mg)					
benznidazole	tablet (100mg)					
chloroquine	tablet (100mg)	\$20			0.9¢ <sub>P</sub>	1.5¢
chloroquine	tablet (150mg)	\$20			0.9¢ <sub>P</sub>	1.7¢
diloxanide	tablet (500mg)	\$22	405.2¢* (122.4x) <sub>BNF</sub>		0.4¢ <sub>P</sub>	3.3¢
doxycycline	SODF (100mg)	\$144	4.6¢* (1.5x) <sub>EMIT</sub>	2.4¢	0.8¢ <sub>TN</sub>	3.1¢
mefloquine	tablet (250mg)	\$861	236.1¢ (8.5x) <sub>BNF</sub>		41.7¢ <sub>P</sub>	27.9¢
metronidazole	tablet (200mg)	\$12	2.4¢* (1.6x) <sub>EMIT</sub>	0.7¢	0.4¢ <sub>TN</sub>	1.5¢
metronidazole	tablet (300mg)	\$12	3.6¢* (2.1x) <sub>EMIT</sub>	1.1¢	0.6¢ <sub>TN</sub>	1.7¢
metronidazole	tablet (400mg)	\$12	2.5¢* (1.3x) <sub>EMIT</sub>	1.2¢	0.8¢ <sub>TN</sub>	1.9¢
metronidazole	tablet (500mg)	\$12	6.0¢* (2.9x) <sub>EMIT</sub>	1.8¢	1.0¢ <sub>TN</sub>	2.1¢
miltefosine	SODF (10mg)					
miltefosine	SODF (50mg)					
nifurtimox	tablet (30mg)					
nifurtimox	tablet (120mg)					
nifurtimox	tablet (250mg)					
pentamidine	tablet (200mg)					
pentamidine	tablet (300mg)					
primaquine	tablet (7.5mg)	\$381			1.9¢ <sub>P</sub>	1.7¢
primaquine	tablet (15mg)	\$381			3.2¢ <sub>P</sub>	2.3¢
proguanil	tablet (100mg)	\$264	15.9¢ (3.5x) <sub>BNF</sub>		3.7¢ <sub>P</sub>	4.6¢
pyrimethamine	tablet (25mg)	\$53	56.3¢ (43.6x) <sub>BNF</sub>			1.3¢
quinine	tablet (300mg)	\$111	5.5¢* (0.9x) <sub>EMIT</sub>		3.5¢ <sub>P</sub>	5.9¢
sulfadiazine	tablet (500mg)	\$292	185.3¢* (10.4x) <sub>BNF</sub>			17.9¢
sulfadoxine + pyrimethamine	tablet (500mg +25mg)	FDC			3.0¢ <sub>P</sub>	6.3¢
sulfamethoxazole + trimethoprim	tablet (100mg+20mg)	FDC			0.3¢ <sub>P</sub>	1.4¢
sulfamethoxazole + trimethoprim	tablet (400mg+80mg)	FDC	10.7¢* (5.0x) <sub>BNF</sub>		0.5¢ <sub>P</sub>	2.2¢
<b>Antimigraine medicines</b>						
acetylsalicylic acid	tablet (300mg)	\$5	1.0¢* (0.7x) <sub>BNF</sub>		0.5¢ <sub>TN</sub>	1.5¢
acetylsalicylic acid	tablet (400mg)	\$5				1.6¢
acetylsalicylic acid	tablet (500mg)	\$5			0.6¢ <sub>P</sub>	1.7¢
ibuprofen	tablet (200mg)	\$10	0.8¢* (0.5x) <sub>EMIT</sub>	0.7¢	0.3¢ <sub>TN</sub>	1.5¢
ibuprofen	tablet (400mg)	\$10	2.4¢* (1.3x) <sub>BNF</sub>	1.4¢	0.6¢ <sub>TN</sub>	1.8¢
paracetamol	tablet (300mg)	\$4				1.4¢
paracetamol	tablet (400mg)	\$4				1.5¢
paracetamol	tablet (500mg)	\$4	0.4¢* (0.3x) <sub>BNF</sub>	0.5¢	0.3¢ <sub>TN</sub>	1.6¢
propranolol	tablet (20mg)	\$36	2.1¢* (1.7x) <sub>BNF</sub>	15.4¢	1.0¢ <sub>P</sub>	1.2¢
propranolol	tablet (40mg)	\$36	1.4¢* (1.0x) <sub>EMIT</sub>	7.7¢	1.1¢ <sub>P</sub>	1.3¢
<b>Antineoplastics and immunosuppressives</b>						
all-trans retinoid acid (ATRA)	capsule (10mg)		312.0¢ <sub>BNF</sub>			
allopurinol	tablet (100mg)	\$34	0.9¢* (0.6x) <sub>EMIT</sub>	4.6¢	0.8¢ <sub>TN</sub>	1.6¢

allopurinol	tablet (300mg)	\$34	1.6¢* (0.6x) <sub>EMIT</sub>	3.3¢	2.4¢ <sub>TN</sub>	2.4¢
anastrozole	tablet (1mg)	\$48,669	3.5¢* (0.5x) <sub>EMIT</sub>	12.2¢		6.6¢
azathioprine	tablet (50mg)	\$390	5.3¢* (1.6x) <sub>BNF</sub>	6.8¢	1.9¢ <sub>TN</sub>	3.4¢
bicalutamide	tablet (50mg)	\$1,066	7.3¢* (1.0x) <sub>EMIT</sub>	21.5¢	18.6¢ <sub>TN</sub>	7.2¢
calcium folinate	tablet (15mg)		233.9¢ <sub>EMIT</sub>	127.8¢	57.0¢ <sub>P</sub>	
capecitabine	tablet (150mg)	\$393	16.7¢* (2.1x) <sub>EMIT</sub>	41.4¢	108.0¢ <sub>P</sub>	7.9¢
capecitabine	tablet (500mg)	\$393	32.1¢* (1.4x) <sub>EMIT</sub>	139.1¢	23.7¢ <sub>TN</sub>	23.5¢
chlorambucil	tablet (2mg)		222.9¢ <sub>BNF</sub>	110.7¢	71.2¢ <sub>P</sub>	
ciclosporin	capsule (25mg)	\$1,354	56.6¢* (11.4x) <sub>BNF</sub>	28.3¢	31.5¢ <sub>P</sub>	5.0¢
cyclophosphamide	tablet (25mg)	\$1,563	90.4¢* (16.3x) <sub>BNF</sub>	14.1¢	1.3¢ <sub>TN</sub>	5.5¢
etoposide	capsule (100mg)	\$8,463	1134.0¢ (11.7x) <sub>BNF</sub>		150.0¢ <sub>TN</sub>	96.5¢
fludarabine	tablet (10mg)		2621.5¢ <sub>BNF</sub>	2157.8¢	2486.3¢ <sub>P</sub>	
hydroxycarbamide	SODF (200mg)		433.3¢ <sub>BNF</sub>			
hydroxycarbamide	SODF (250mg)		541.7¢ <sub>BNF</sub>		5.3¢ <sub>P</sub>	
hydroxycarbamide	SODF (300mg)		650.0¢ <sub>BNF</sub>			
hydroxycarbamide	SODF (400mg)		866.7¢ <sub>BNF</sub>			
hydroxycarbamide	SODF (500mg)		11.4¢ <sub>EMIT</sub>		10.6¢ <sub>P</sub>	
hydroxycarbamide	SODF (1000mg)		22.9¢ <sub>EMIT</sub>		21.2¢ <sub>P</sub>	
imatinib	tablet (100mg)	\$2,284	2108.9¢ (78.4x) <sub>BNF</sub>	65.6¢	135.0¢ <sub>P</sub>	26.9¢
imatinib	tablet (400mg)	\$2,284	8435.6¢ (80.9x) <sub>BNF</sub>	262.4¢	21.7¢ <sub>TN</sub>	104.3¢
mercaptopurine	tablet (50mg)	\$292	255.6¢* (91.3x) <sub>BNF</sub>	297.5¢	2.8¢ <sub>TN</sub>	2.8¢
mesna	tablet (400mg)	\$666	1745.9¢* (55.7x) <sub>BNF</sub>			31.4¢
mesna	tablet (600mg)	\$666	2477.8¢* (53.3x) <sub>BNF</sub>			46.5¢
methotrexate	tablet (2.5mg)	\$77,181	6.0¢* (0.3x) <sub>EMIT</sub>	5.3¢	0.9¢ <sub>TN</sub>	23.9¢
prednisolone	tablet (5mg)	\$962	2.0¢* (1.2x) <sub>EMIT</sub>	1.0¢	0.5¢ <sub>TN</sub>	1.7¢
prednisolone	tablet (25mg)	\$962	9.8¢* (2.5x) <sub>EMIT</sub>	5.1¢	2.7¢ <sub>TN</sub>	3.8¢
procarbazine	capsule (50mg)		883.9¢ <sub>BNF</sub>		50.0¢ <sub>P</sub>	
tamoxifen	tablet (10mg)	\$271	21.0¢* (13.1x) <sub>EMIT</sub>	1.9¢	0.5¢ <sub>TN</sub>	1.6¢
tamoxifen	tablet (20mg)	\$271	7.0¢* (3.4x) <sub>EMIT</sub>	3.9¢	1.1¢ <sub>TN</sub>	2.1¢
tioguanine	SODF (40mg)		569.8¢ <sub>BNF</sub>		45.0¢ <sub>P</sub>	
<b>Antiparkinsonism medicines</b>						
biperiden	tablet (2mg)	\$2,677				1.8¢
levodopa + carbidopa	tablet (100/10mg FDC)	FDC	9.5¢* (2.7x) <sub>BNF</sub>		1.5¢ <sub>P</sub>	3.5¢
levodopa + carbidopa	tablet (100/25mg FDC)	FDC	16.7¢* (3.9x) <sub>BNF</sub>	5.3¢	3.1¢ <sub>P</sub>	4.3¢
levodopa + carbidopa	tablet (250/25mg FDC)	FDC	23.8¢* (3.4x) <sub>BNF</sub>	9.0¢	3.6¢ <sub>P</sub>	7.1¢
<b>Medicines affecting the blood</b>						
ferrous salt	tablet (60mg iron)		1.7¢ <sub>EMIT</sub>			
ferrous salt + folic acid	tablet (60mg iron + 0.4mg)	FDC				1.2¢
folic acid	tablet (400mcg)	\$462	0.9¢* (0.7x) <sub>BNF</sub>			1.1¢
folic acid	tablet (1mg)	\$462			1.1¢ <sub>P</sub>	1.2¢



folic acid	tablet (5mg)	\$462	1.3¢* (0.9x) <sub>EMIT</sub>	0.9¢	0.2¢ <sub>TN</sub>	1.4¢
hydroxycarbamide	SODF (200mg)		433.3¢ <sub>BNF</sub>			
hydroxycarbamide	SODF (500mg)		11.4¢ <sub>EMIT</sub>		10.6¢ <sub>P</sub>	
hydroxycarbamide	SODF (1000mg)		22.9¢ <sub>EMIT</sub>		21.2¢ <sub>P</sub>	
phytomenadione	tablet (10mg)					
warfarin	tablet (0.5mg)	\$519	0.5¢* (0.5x) <sub>EMIT</sub>	1.0¢	0.8¢ <sub>P</sub>	1.2¢
warfarin	tablet (1mg)	\$519	1.1¢* (0.9x) <sub>EMIT</sub>	2.1¢	1.5¢ <sub>P</sub>	1.2¢
warfarin	tablet (2mg)	\$519	2.1¢* (1.7x) <sub>EMIT</sub>	4.2¢	1.8¢ <sub>P</sub>	1.3¢
warfarin	tablet (5mg)	\$519	1.2¢* (0.8x) <sub>EMIT</sub>	2.4¢	3.0¢ <sub>P</sub>	1.4¢
<b>Cardiovascular medicines</b>						
acetylsalicylic acid	tablet (100mg)	\$5			0.2¢ <sub>P</sub>	1.2¢
amiodarone	tablet (100mg)	\$128	1.8¢* (0.7x) <sub>EMIT</sub>	3.0¢	3.8¢ <sub>TN</sub>	2.7¢
amiodarone	tablet (200mg)	\$128	3.9¢* (0.9x) <sub>EMIT</sub>	5.9¢	7.6¢ <sub>TN</sub>	4.3¢
amiodarone	tablet (400mg)	\$128	7.7¢* (1.0x) <sub>EMIT</sub>	11.8¢	11.4¢ <sub>TN</sub>	7.5¢
amlodipine	tablet (5mg)	\$143	0.7¢* (0.6x) <sub>EMIT</sub>	0.7¢	0.1¢ <sub>TN</sub>	1.2¢
bisoprolol	tablet (1.25mg)	\$435	1.5¢* (1.3x) <sub>EMIT</sub>		1.3¢ <sub>P</sub>	1.2¢
bisoprolol	tablet (5mg)	\$435	1.2¢* (0.8x) <sub>EMIT</sub>		3.1¢ <sub>P</sub>	1.4¢
clopidogrel	tablet (75mg)	\$176	6.9¢* (2.0x) <sub>BNF</sub>	7.6¢	0.8¢ <sub>TN</sub>	3.4¢
clopidogrel	tablet (300mg)	\$176	617.7¢* (60.3x) <sub>BNF</sub>		3.2¢ <sub>TN</sub>	10.3¢
digoxin	tablet (62.5mcg)	\$7,081	2.1¢* (1.8x) <sub>BNF</sub>			1.2¢
digoxin	tablet (250mcg)	\$7,081	1.3¢* (1.0x) <sub>EMIT</sub>	2.8¢	0.4¢ <sub>TN</sub>	1.3¢
digoxin	tablet (62.5mcg)	\$7,081	2.1¢* (1.8x) <sub>BNF</sub>			1.2¢
digoxin	tablet (250mcg)	\$7,081	1.3¢* (1.0x) <sub>EMIT</sub>	2.8¢	0.4¢ <sub>TN</sub>	1.3¢
enalapril	tablet (2.5mg)	\$152	2.3¢* (2.0x) <sub>EMIT</sub>	0.4¢	0.2¢ <sub>TN</sub>	1.2¢
enalapril	tablet (5mg)	\$152	1.3¢* (1.0x) <sub>EMIT</sub>	0.8¢	0.4¢ <sub>TN</sub>	1.2¢
enalapril	tablet (2.5mg)	\$152	2.3¢* (2.0x) <sub>EMIT</sub>	1.6¢	0.2¢ <sub>TN</sub>	1.2¢
enalapril	tablet (5mg)	\$152	1.3¢* (1.0x) <sub>EMIT</sub>	0.8¢	0.4¢ <sub>TN</sub>	1.2¢
furosemide	tablet (40mg)	\$37	0.6¢* (0.5x) <sub>EMIT</sub>	0.5¢	4.0¢ <sub>P</sub>	1.3¢
glyceryl trinitrate	tablet (500mcg)	\$39	1.8¢* (1.6x) <sub>EMIT</sub>		1.4¢ <sub>P</sub>	1.1¢
hydralazine	tablet (25mg)	\$316	5.2¢* (2.3x) <sub>BNF</sub>	2.9¢		2.2¢
hydralazine	tablet (50mg)	\$316	30.1¢* (9.0x) <sub>BNF</sub>	4.7¢		3.4¢
hydrochlorothiazide	SODF (12.5mg)	\$25		0.7¢	0.9¢ <sub>P</sub>	1.2¢
hydrochlorothiazide	SODF (25mg)	\$25		0.7¢	1.4¢ <sub>P</sub>	1.2¢
hydrochlorothiazide	SODF (25mg)	\$25		0.7¢	1.4¢ <sub>P</sub>	1.2¢
isosorbide dinitrate	sublingual tablet (5mg)				0.6¢ <sub>P</sub>	
methyldopa	tablet (250mg)		5.3¢ <sub>EMIT</sub>	4.0¢	2.7¢ <sub>TN</sub>	
simvastatin	tablet (5mg)	\$246	0.4¢ (0.3x) <sub>EMIT</sub>	0.7¢	1.5¢ <sub>P</sub>	1.3¢
simvastatin	tablet (10mg)	\$246	0.7¢* (0.5x) <sub>EMIT</sub>	1.4¢	3.0¢ <sub>P</sub>	1.4¢
simvastatin	tablet (20mg)	\$246	1.1¢* (0.7x) <sub>EMIT</sub>	2.0¢	4.5¢ <sub>P</sub>	1.7¢
simvastatin	tablet (40mg)	\$246	1.7¢* (0.7x) <sub>EMIT</sub>	4.0¢	11.3¢ <sub>P</sub>	2.3¢
spironolactone	tablet (25mg)		2.1¢ <sub>EMIT</sub>	2.0¢	2.8¢ <sub>P</sub>	
verapamil	tablet (40mg)	\$73	1.3¢* (0.8x) <sub>EMIT</sub>	2.6¢	0.8¢ <sub>TN</sub>	1.5¢
verapamil	tablet (80mg)	\$73	2.6¢* (1.4x) <sub>EMIT</sub>	1.3¢	1.7¢ <sub>TN</sub>	1.9¢
<b>Diuretics</b>						
amiloride	tablet (5mg)	\$349	2.2¢* (1.6x) <sub>EMIT</sub>			1.4¢

furosemide	tablet (10mg)	\$37	0.3¢* (0.2x) <sub>EMIT</sub>			1.2¢
furosemide	tablet (20mg)	\$37	0.6¢* (0.5x) <sub>EMIT</sub>	0.3¢	2.0¢ <sub>P</sub>	1.2¢
furosemide	tablet (40mg)	\$37	0.6¢* (0.5x) <sub>EMIT</sub>	0.5¢	4.0¢ <sub>P</sub>	1.3¢
hydrochlorothiazide	SODF (25mg)	\$25		0.7¢	1.4¢ <sub>P</sub>	1.2¢
spironolactone	tablet (25mg)		2.1¢ <sub>EMIT</sub>	2.0¢	2.8¢ <sub>P</sub>	
<b>Gastrointestinal medicines</b>						
dexamethasone	SODF (0.5mg)	\$1,482	177.8¢* (146.9x) <sub>EMIT</sub>		0.2¢ <sub>TN</sub>	1.2¢
dexamethasone	SODF (0.75mg)	\$1,482	266.7¢* (213.0x) <sub>EMIT</sub>		0.3¢ <sub>TN</sub>	1.3¢
dexamethasone	SODF (1.5mg)	\$1,482	533.5¢* (387.2x) <sub>EMIT</sub>		0.5¢ <sub>TN</sub>	1.4¢
dexamethasone	SODF (4mg)	\$1,482	37.0¢* (20.6x) <sub>BNF</sub>		1.4¢ <sub>TN</sub>	1.8¢
metoclopramide	tablet (10mg)	\$77	1.3¢* (1.0x) <sub>EMIT</sub>	0.4¢	0.4¢ <sub>P</sub>	1.2¢
omeprazole	SODF (10mg)	\$14	2.9¢* (2.5x) <sub>EMIT</sub>	9.9¢	2.1¢ <sub>P</sub>	1.1¢
omeprazole	SODF (20mg)	\$14	2.0¢* (1.7x) <sub>EMIT</sub>	19.9¢	0.4¢ <sub>TN</sub>	1.2¢
omeprazole	SODF (40mg)	\$14	3.3¢* (2.7x) <sub>EMIT</sub>	39.8¢	0.8¢ <sub>TN</sub>	1.2¢
ondansetron	SODF (4mg)	\$990	3.4¢* (2.1x) <sub>EMIT</sub>	12.8¢	0.3¢ <sub>TN</sub>	1.6¢
ondansetron	SODF (8mg)	\$990	11.4¢* (5.4x) <sub>EMIT</sub>	192.4¢	0.5¢ <sub>TN</sub>	2.1¢
ondansetron	SODF (24mg)	\$990	34.3¢* (8.3x) <sub>EMIT</sub>	577.1¢	0.8¢ <sub>TN</sub>	4.2¢
ranitidine	tablet (150mg)	\$19	1.1¢* (0.7x) <sub>EMIT</sub>	1.4¢	0.5¢ <sub>P</sub>	1.6¢
senna	tablet (7.5mg)		1.9¢ <sub>BNF</sub>		5.9¢ <sub>P</sub>	
sulfasalazine	tablet (500mg)	\$39	4.5¢* (1.2x) <sub>EMIT</sub>	17.7¢	3.5¢ <sub>TN</sub>	3.6¢
zinc sulfate	SODF (20mg)	\$2		0.7¢	4.5¢ <sub>P</sub>	1.1¢
<b>Hormones, other endocrine medicines and contraceptives</b>						
clomifene	tablet (50mg)	\$140	42.4¢* (21.8x) <sub>EMIT</sub>	33.6¢	4.4¢ <sub>P</sub>	1.9¢
ethinylestradiol + levonorgestrel	tablet (30mcg + 150mcg)		3.7¢ <sub>BNF</sub>	0.5¢	1.5¢ <sub>P</sub>	
ethinylestradiol + norethisterone	tablet (30mcg + 1mg)					
fludrocortisone	tablet (100mcg)				17.3¢ <sub>P</sub>	
glucicazide	SODF (30mg)	\$137			2.3¢ <sub>P</sub>	1.6¢
glucicazide	SODF (60mg)	\$137			3.2¢ <sub>P</sub>	2.1¢
glucicazide	SODF (80mg)	\$137	1.5¢* (0.6x) <sub>EMIT</sub>		1.1¢ <sub>TN</sub>	2.4¢
hydrocortisone	tablet (5mg)	\$691	103.6¢ (68.2x) <sub>EMIT</sub>	3.9¢	2.9¢ <sub>TN</sub>	1.5¢
hydrocortisone	tablet (10mg)	\$691	207.2¢ (108.4x) <sub>EMIT</sub>	7.8¢	5.8¢ <sub>TN</sub>	1.9¢
hydrocortisone	tablet (20mg)	\$691	267.9¢ (99.4x) <sub>EMIT</sub>	15.6¢	11.6¢ <sub>TN</sub>	2.7¢
levonorgestrel	tablet (30mcg)		3.4¢ <sub>BNF</sub>	0.6¢		
levonorgestrel	tablet (750mcg)		949.0¢ <sub>BNF</sub>		25.5¢ <sub>P</sub>	
levonorgestrel	tablet (1.5mg)		361.4¢ <sub>EMIT</sub>	140.8¢	79.5¢ <sub>P</sub>	
levothyroxine	tablet (25mcg)		7.7¢ <sub>EMIT</sub>		0.5¢ <sub>P</sub>	
levothyroxine	tablet (50mcg)		2.2¢ <sub>BNF</sub>		0.9¢ <sub>P</sub>	
levothyroxine	tablet (100mcg)		2.3¢ <sub>BNF</sub>		1.6¢ <sub>P</sub>	
medroxyprogesterone acetate	tablet (5mg)		15.2¢ <sub>BNF</sub>	7.1¢	3.3¢ <sub>P</sub>	
metformin	tablet (500mg)	\$4	0.8¢* (0.4x) <sub>EMIT</sub>	1.1¢	0.3¢ <sub>TN</sub>	1.8¢

metformin	tablet (500mg)	\$4	0.8¢* (0.4x) <sub>EMIT</sub>	1.1¢	0.3¢ <sub>TN</sub>	1.8¢
potassium iodide	tablet (60mg)	\$20				1.3¢
potassium iodide	tablet (60mg)	\$20				1.3¢
propylthiouracil	tablet (50mg)		136.2¢ <sub>BNF</sub>		5.1¢ <sub>P</sub>	
propylthiouracil	tablet (50mg)		136.2¢ <sub>BNF</sub>		5.1¢ <sub>P</sub>	
<b>Muscle relaxants (peripherally-acting) and cholinesterase inhibitors</b>						
neostigmine	tablet (15mg)		92.5¢ <sub>BNF</sub>		5.5¢ <sub>P</sub>	
pyridostigmine	tablet (60mg)		29.6¢ <sub>BNF</sub>	58.3¢	9.0¢ <sub>P</sub>	
<b>Ophthalmological preparations</b>						
acetazolamide	tablet (250mg)	\$58	70.5¢* (24.3x) <sub>EMIT</sub>	3.1¢	1.3¢ <sub>TN</sub>	2.9¢
<b>Oxytocics and antioxyotics</b>						
mifepristone - misoprostol	tablet (200mg) & tablet (200mcg)	combination	264.7¢ <sub>EMIT</sub>		748.5¢ <sub>P</sub>	
misoprostol	tablet (200mcg)		21.7¢ <sub>BNF</sub>	29.0¢	2.1¢ <sub>TN</sub>	
nifedipine	immediate- release capsule (10mg)	\$70	6.2¢* (5.1x) <sub>BNF</sub>	4.2¢	1.1¢ <sub>TN</sub>	1.2¢
<b>Medicines for mental and behavioural disorder</b>						
amitriptyline	tablet (25mg)	\$49	0.9¢* (0.7x) <sub>EMIT</sub>	0.7¢	0.3¢ <sub>TN</sub>	1.3¢
amitriptyline	tablet (75mg)	\$49	2.6¢* (1.6x) <sub>EMIT</sub>	2.2¢	0.8¢ <sub>TN</sub>	1.6¢
carbamazepine	tablet (100mg)	\$52	2.9¢* (1.6x) <sub>EMIT</sub>	0.9¢	0.5¢ <sub>TN</sub>	1.8¢
carbamazepine	tablet (200mg)	\$52	5.1¢* (2.1x) <sub>EMIT</sub>	1.8¢	1.1¢ <sub>TN</sub>	2.4¢
chlorpromazine	tablet (100mg)	\$77	5.8¢* (2.7x) <sub>EMIT</sub>	4.7¢	0.8¢ <sub>TN</sub>	2.2¢
chlorpromazine	tablet (10mg)	\$77			2.3¢ <sub>P</sub>	1.2¢
chlorpromazine	tablet (25mg)	\$77	8.4¢* (6.0x) <sub>BNF</sub>	1.5¢	0.4¢ <sub>TN</sub>	1.4¢
chlorpromazine	tablet (50mg)	\$77	2.9¢* (1.8x) <sub>EMIT</sub>	3.2¢	0.7¢ <sub>TN</sub>	1.6¢
chlorpromazine	tablet (100mg)	\$77	5.8¢* (2.7x) <sub>EMIT</sub>	4.7¢	0.8¢ <sub>TN</sub>	2.2¢
clomipramine	capsule (10mg)	\$329	5.4¢* (3.6x) <sub>EMIT</sub>		2.3¢ <sub>P</sub>	1.5¢
clomipramine	capsule (25mg)	\$329	5.7¢* (2.7x) <sub>EMIT</sub>		4.4¢ <sub>P</sub>	2.1¢
clozapine	SODF (25mg)	\$189	9.4¢* (5.6x) <sub>EMIT</sub>	2.9¢	0.9¢ <sub>TN</sub>	1.7¢
clozapine	SODF (50mg)	\$189	18.7¢* (8.4x) <sub>EMIT</sub>	5.9¢	1.9¢ <sub>TN</sub>	2.2¢
clozapine	SODF (100mg)	\$189	37.8¢* (11.4x) <sub>EMIT</sub>	9.4¢	3.8¢ <sub>TN</sub>	3.3¢
clozapine	SODF (200mg)	\$189	75.7¢* (13.7x) <sub>EMIT</sub>	18.9¢	7.5¢ <sub>TN</sub>	5.5¢
diazepam	tablet (2mg)	\$131	0.8¢* (0.7x) <sub>EMIT</sub>		1.1¢ <sub>P</sub>	1.2¢
diazepam	tablet (5mg)	\$131	0.8¢* (0.7x) <sub>EMIT</sub>	0.7¢	0.2¢ <sub>TN</sub>	1.2¢
fluoxetine	SODF (20mg)	\$71	1.2¢* (0.9x) <sub>EMIT</sub>	1.0¢	0.4¢ <sub>TN</sub>	1.3¢
fluoxetine	SODF (20mg)	\$71	1.2¢* (0.9x) <sub>EMIT</sub>	1.0¢	0.4¢ <sub>TN</sub>	1.3¢
haloperidol	SODF (0.5mg)	\$331	5.1¢* (4.5x) <sub>BNF</sub>	7.6¢	1.2¢ <sub>P</sub>	1.1¢
haloperidol	SODF (2mg)	\$331	20.5¢* (17.0x) <sub>BNF</sub>	30.5¢	2.9¢ <sub>P</sub>	1.2¢
haloperidol	SODF (5mg)	\$331	4.6¢* (3.5x) <sub>EMIT</sub>	1.5¢	0.3¢ <sub>TN</sub>	1.3¢
lithium carbonate	SODF (300mg)	\$15			0.6¢ <sub>TN</sub>	1.8¢
risperidone	SODF (1mg)	\$1,466	2.2¢* (1.7x) <sub>EMIT</sub>	1.1¢	0.1¢ <sub>TN</sub>	1.3¢
risperidone	SODF (2mg)	\$1,466	1.4¢* (0.9x) <sub>EMIT</sub>	1.2¢	0.2¢ <sub>TN</sub>	1.5¢
risperidone	SODF (3mg)	\$1,466	3.6¢* (2.2x) <sub>EMIT</sub>	2.0¢	0.3¢ <sub>TN</sub>	1.6¢
risperidone	SODF (4mg)	\$1,466	2.8¢* (1.6x) <sub>EMIT</sub>	2.5¢	0.4¢ <sub>TN</sub>	1.8¢
risperidone	SODF (6mg)	\$1,466	5.0¢* (2.3x) <sub>EMIT</sub>	4.0¢	0.7¢ <sub>TN</sub>	2.1¢
risperidone	SODF (0.25mg)	\$1,466	1.3¢ (1.1x) <sub>EMIT</sub>	3.0¢		1.2¢

risperidone	SODF (0.5mg)	\$1,466	2.5¢* (2.1x) <sup>EMIT</sup>	1.5¢	0.5¢ <sup>P</sup>	1.2¢
valproic acid (sodium valproate)	tablet (200mg)	\$26			0.9¢ <sup>TN</sup>	1.8¢
valproic acid (sodium valproate)	tablet (500mg)	\$26	10.2¢* (3.5x) <sup>BNF</sup>		5.1¢ <sup>P</sup>	2.9¢
<b>Medicines for diseases of the joints</b>						
acetylsalicylic acid	tablet (100mg)	\$5			0.2¢ <sup>P</sup>	1.2¢
acetylsalicylic acid	tablet (150mg)	\$5	0.5¢* (0.4x) <sup>BNF</sup>		0.3¢ <sup>TN</sup>	1.3¢
acetylsalicylic acid	tablet (200mg)	\$5				1.4¢
acetylsalicylic acid	tablet (300mg)	\$5	1.0¢* (0.7x) <sup>BNF</sup>		0.5¢ <sup>TN</sup>	1.5¢
acetylsalicylic acid	tablet (400mg)	\$5				1.6¢
acetylsalicylic acid	tablet (500mg)	\$5			0.6¢ <sup>P</sup>	1.7¢
allopurinol	tablet (100mg)	\$34	0.9¢* (0.6x) <sup>EMIT</sup>	4.6¢	0.8¢ <sup>TN</sup>	1.6¢
azathioprine	tablet (50mg)	\$390	5.3¢* (1.6x) <sup>BNF</sup>	6.8¢	1.9¢ <sup>TN</sup>	3.4¢
chloroquine	tablet (100mg)	\$20			0.9¢ <sup>P</sup>	1.5¢
chloroquine	tablet (150mg)	\$20			0.9¢ <sup>P</sup>	1.7¢
hydroxychloroquine	SODF (200mg)	\$145	6.1¢* (1.3x) <sup>EMIT</sup>		2.8¢ <sup>TN</sup>	4.5¢
methotrexate	tablet (2.5mg)	\$77,181	6.0¢* (0.3x) <sup>EMIT</sup>	5.3¢	0.9¢ <sup>TN</sup>	23.9¢
penicillamine	SODF (250mg)	\$1,724	23.1¢* (0.5x) <sup>BNF</sup>		14.9¢ <sup>TN</sup>	49.8¢
sulfasalazine	tablet (500mg)	\$39	4.5¢* (1.2x) <sup>EMIT</sup>	17.7¢	3.5¢ <sup>TN</sup>	3.6¢

API : active pharmaceutical ingredient

UK : United Kingdom

SA: South Africa

UK unit price (ratio to estimated generic price)

SA unit price (USD cents)

India unit price (USD cents)

Estimated generic price (USD cents)

BNF: British National Formulary

EMIT: pharmaceutical electronic market information tool

Blank - no data.

EMIT - lowest price was from the eMIT database.

BNF - lowest price was from the BNF.

\* available from multiple suppliers in the UK.

P price from database of Maximum Retail Sales Prices.

TN price from Tamil Nadu public tender database.

Appendix B: COST OF PHARMACUETICAL FACILITY											
Company	Year	location	purpose	Sq. ft.		Total		Costs Sq. ft.		Rank cost/s.f.	
MedImmune	2011	USA	biologics api	337,000		\$ 588,389,000		\$ 1,746		7	
Merck	2012	USA	vaccines	214,000		\$ 315,000,000		\$ 1,472		8	
Shire	2011	USA	biologics api	200,000		\$ 230,000,000		\$ 1,150		13	
Merck	2011	USA	small molecules	240,666		\$ 216,000,000		\$ 898		16	
Biogen Idec	2010	USA	biologics api	50,000		\$ 39,100,000		\$ 782		17	
Genentech	2007	USA	biologics api	500,000		\$ 375,000,000		\$ 750		19	
BMS	2008	USA	solids	132,410		\$ 90,687,000		\$ 685		22	
MannKind	2010	USA	inhalers	251,876		\$ 163,100,000		\$ 648		26	
Cook	2007	USA	biologics api	124,000		\$ 70,000,000		\$ 565		27	
Hoffman LaRoche	2011	Switzerland	fill/finish	3,444		\$ 11,891,102		\$ 3,453		2	
Centocor	2009	Switzerland	fill/finish	7,219		\$ 24,900,000		\$ 3,449		3	
Roche	2009	Switzerland	biologics api	209,896		\$ 370,000,000		\$ 1,763		6	
Pfizer	2011	Sweden	biologics api	54,465		\$ 188,700,000		\$ 3,465		1	
Genentech	2010	Singapore	biologics api	102,000		\$ 194,000,000		\$ 1,902		5	
Taiyo	2007	Japan	fill/finish	126,411		\$ 38,580,000		\$ 305		32	
Chiesi	2012	Italy	R&D Center	236,806		\$ 117,480,000		\$ 496		28	
Centocor	2009	Ireland	biologics api	264,000		\$ 586,000,000		\$ 2,220		4	
Pfizer	2010	Ireland	fill/finish	177,066		\$ 254,674,792		\$ 1,438		9	
Pfizer	2010	Ireland	biologics api	133,000		\$ 189,613,542		\$ 1,426		10	
Irish Government	2012	Ireland	biologics api	69,965		\$ 46,400,000		\$ 663		24	
Orchid	2009	India	small molecules	107,642		\$ 35,720,000		\$ 332		31	
Roche	2012	Germany	R&D labs	161,458		\$ 209,871,400		\$ 1,300		11	
Hoffman LaRoche	2008	Germany	biologics api	355,209		\$ 460,000,000		\$ 1,295		12	
Rentschler	2012	Germany	biologics api	9,800		\$ 9,900,000		\$ 1,010		14	
Novartis	2011	Germany	vaccines	257,042		\$ 242,000,000		\$ 941		15	
Vetter	2007	Germany	fill/finish	172,223		\$ 134,000,000		\$ 778		18	
IDT Biologika	2008	Germany	vaccines	50,568		\$ 37,470,000		\$ 741		20	
BI	2008	Germany	R&D labs	95,357		\$ 64,700,000		\$ 679		23	
Pfizer	2008	Germany	solids	83,958		\$ 55,000,000		\$ 655		25	
hameln	2009	Germany	fill/finish	99,028		\$ 44,500,000		\$ 449		29	
Pfizer	2011	Germany	small molecules	173,837		\$ 42,300,000		\$ 243		33	
Roche	2007	China	small molecules	22,604		\$ 16,640,000		\$ 736		21	
Aseptic Technologies	2009	Belgium	fill/finish	12,917		\$ 4,980,000		\$ 386		30	

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