

Andrew Goldman, written submission in support of HB 666

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My name is Andrew Goldman. I was born in Baltimore and raised in Baltimore County, I graduated from the University of Maryland School of Law, and I live in Baltimore City with my wife. I am currently employed as counsel for Knowledge Ecology International (KEI), a non-profit organization that, among other things, focuses on policies relating to the development and pricing of and access to new drugs and vaccines.

I offer the following comments in support of HB 666:

Every week there is a new drug with an outrageous price tag that causes ripples of shock and disbelief, only to be outdone by another drug the next week.

Companies routinely seek to justify the high prices of medicines by pointing to R&D costs.¹ In a 2015 *New York Times* article titled “Drug Prices Soar, Prompting Calls for Justification,” Andrew Pollack wrote, “Pharmaceutical executives ... say that their sales have to recoup their investment in research and development if the companies are to stay in business.”² However, too little is known about actual R&D costs, and the industry studies that the companies use to justify high prices on specific drugs are contested.³

HB 666 seeks answers to an important question. What does the industry actually spend in R&D for specific products? If R&D costs are indeed massive, as the companies often suggest, the data, reported by the companies themselves, will bear this out.

The fact that drug companies are bitterly resisting the transparency legislation in every state where it has been introduced suggests that the ability to exaggerate R&D costs is important, to the industry.

¹ See, for example, the comments provided by PhRMA to the USTR for the 2017 Special 301, wherein the association makes reference four times to the high costs of R&D to justify incentives such as test data exclusivity, and to support their calls for increased scrutiny of various countries over their IP regimes, including Turkey, Peru, Mexico, and Australia. These references occur on pages 98, 99, 127, 144, and 162. <http://keionline.org/sites/default/files/PhRMA-2017-Special-301-Submission.pdf>

² Andrew Pollack, “Drug Prices Soar, Prompting Calls for Justification,” *The New York Times*, July 23, 2015. Available at: <https://www.nytimes.com/2015/07/23/business/drug-companies-pushed-from-far-and-wide-to-explain-high-prices.html>

³ Ed Silverman, Developing a Drug Costs \$2.6 Billion, but not Everyone Believes This. *WSJ*. November 18, 2014. <http://blogs.wsj.com/pharmalot/2014/11/18/developing-a-drug-costs-2-6-billion-but-not-everyone-believes-this/>; Michael Hiltzik, The \$2.5-billion mistake: A gullible Trump bought into Big Pharma's inflated claim about drug R&D costs, *LA Times*. January 31, 2017. <http://www.latimes.com/business/hiltzik/la-fi-hiltzik-trump-pharma-20170131-story.html>

Spinraza as Case Study for How HB 666 Will be Valuable

I will use the case of Spinraza, a drug approved by the FDA in 2016 to treat spinal muscular atrophy (SMA), to illustrate why HB 666 would be useful.

Spinal muscular atrophy, known also as SMA, is a genetic disease that causes muscle deterioration and mobility impairment, and is typically fatal among infants. I have a friend, another Maryland resident, whose child was diagnosed as an infant with SMA. He is a hardworking and respected small-business owner, a talented musician and engineer. His child has been one of the lucky ones for whom the disease was not fatal.

The drug is marketed by Biogen as Spinraza, and it costs \$750,000 for the first year, and \$375,000 per year thereafter for maintenance. The treatment involves just four injections per year. This works out to \$4.125 million over 10 years, without taking into account and price increases.

KEI has sought to estimate the costs to BIOGEN to conduct the research, including clinical trials, to register the drug with the FDA.

According to the FDA's Medical Review, BIOGEN provided evidence regarding 437 patients enrolled in 10 clinical studies, including 93 patients in the Phase 1 trials, 93 in the Phase 2 or Phase 1/2 trials, and 251 in the Phase 3 trials.

We don't have the actual costs of the trials, so we used a survey by Battelle, commissioned and published by PhRMA in 2015, that estimated the average costs of trials conducted in the United States, where trial costs are high, by phase.⁴

Spinraza was also designated as a treatment for an Orphan disease in April 2011, before all of the 10 trials were conducted, and thereby was eligible for a 50 percent tax credit for each of the trials.

In Table 1, the public information about the enrollment in the trials and the Battelle estimates of per patient costs are used to estimate the trial costs before and after the Orphan Drug Tax Credit (ODTC).

⁴ Table A-1. Estimated Locally-Based Per Patient Costs by Selected Disease Areas and Phase. Biopharmaceutical Industry-Sponsored Clinical Trials: Impact on State Economies. Prepared by Battelle Technology Partnership Practice, Prepared for Pharmaceutical Research and Manufacturers of America (PhRMA), March 2015

Table 1, Costs of trials cited in the Spinraza medical review

Phase	Enrollment*	Patient costs per phase, based upon 2015 Battelle/PhRMA survey of US based trials	Cost before ODTC	Cost After ODTC
Phase 1	93	\$38,500	\$3,580,500	\$1,790,250
Phase 1/2a	34	\$40,000	\$1,360,000	\$680,000
Phase 2	59	\$40,000	\$2,360,000	\$1,180,000
Phase 3	251	\$42,000	\$10,542,000	\$5,271,000
Totals	437		\$17,842,500	\$8,921,250

Phase 2 costs are used for the 34 patients in a Phase 1/2a trial.

In this analysis, the cost of the 10 trials cited in the FDA medical review was \$17.8 million, before the tax credit, and \$8.9 million after.

Federal research grants also were used to fund much of the preclinical research on Spinraza, including but not limited to grants to the University of Massachusetts and Cold Spring Harbor Laboratory.⁵

We appreciate that the industry investments in clinical studies were risky investments. Because we are able to estimate the trial costs by phase, it is possible to make reasonable adjustments to the risks of failure, based upon data on thousands of trials from publicly available sources. In one widely quote study Tufts University, the likelihood of FDA approval for a drug tested in Phase 1 is 11.8 percent; in Phase 2, 20 percent; and in Phase 3, 56 percent.⁶ Using these parameters, the risk adjusted costs of the Spinraza trials is estimated at \$35 million.

Table 2, Risk adjustments for Spinraza trial costs

Phase	Cost After ODTC	Phase likelihood of FDA approval	Risk adjusted costs of trials, net of ODTC
Phase 1	\$1,790,250	.118	\$15,128,934
Phase 1/2a	\$680,000	.1585	\$4,583,410
Phase 2	\$1,180,000	.199	\$5,935,258
Phase 3	\$5,271,000	.56	\$9,417,238
Totals	\$8,921,250		\$35,064,840

⁵ <http://www.keionline.org/node/2710>

⁶ J Health Econ. 2016 May;47:20-33. doi: 10.1016/j.jhealeco.2016.01.012. Epub 2016 Feb 12., See Figure 1.

Note that even after such adjustments, the numbers for Spinraza are small, when compared to the most common figures cited by journalists and drug company lobbyists as the costs of drug development, including most notably, the \$2.6 billion estimate of drug development costs estimated by industry consultants associated with a center at Tufts University,⁷ as well as other estimates that typically exceed one billion dollars per new drug.

Industry consultant estimates of the costs of drug development have been referred to in numerous publications, further confusing the issue. *Scientific American* reported on the Tufts study in 2014 in an article titled “Cost to Develop New Pharmaceutical Drug Now Exceeds \$2.5B,” saying that, “A new report published by the Tufts Center for the Study of Drug Development (CSDD) pegs the cost of developing a prescription drug that gains market approval at \$2.6 billion....”⁸ An article in *The Guardian* from 2016 on the cost of developing new medicines states that pharmaceutical companies argue that, “drug development is highly resource-intensive and expensive. Drugs typically take 12 years from the initial discovery stage to reach the market, and while estimates of costs vary, the Association of the British Pharmaceutical Industry puts it at £1.15bn [~\$1.41 bn] per drug.”⁹

Now let’s take a second look at the Spinraza case. Parents struggling to pay for or have access to Spinraza, and employers, taxpayers and others who pay for the reimbursement of the drug, are confronted with an important question: is \$750,000 in one year, and \$4.1 million over 10 years, a reasonable price for Spinraza, and is the high price necessary to reward BIOGEN for its investments?

If the public believes the KEI estimates of \$8.9 million for the costs, net of the Orphan Drug Tax Credit, for the clinical studies, and \$35 million after adjustments for the risk of failures, the BIOGEN price will seem unreasonable, and indeed like price gouging. After all, the company will be able to recoup the risks adjusted costs of the trials in one year from just 46 patients.

If they believe the outlays were \$2.6 billion, and risky on top of that (despite the fact that the Tufts study bakes in risk and capital costs, on top of out-of-pocket costs), BIOGEN will face less push back.

KEI believes there are remedies to the high price, including the use of federal march-in rights or other rights under the Bayh-Dole Act, if the government wants to act.

⁷ J.A. DiMasi et al. / *Journal of Health Economics* 47 (2016) 20–33. See also: Press Release: Tufts CSDD Assessment of Cost to Develop and Win Marketing Approval for a New Drug Now Published, March 10, 2016. http://csdd.tufts.edu/news/complete_story/tufts_csdd_rd_cost_study_now_published

⁸ Rick Mullin, “Cost to Develop New Pharmaceutical Drug Now Exceeds \$2.5B,” *Scientific American*, November 24, 2014. Available at: <https://www.scientificamerican.com/article/cost-to-develop-new-pharmaceutical-drug-now-exceeds-2-5b/>

⁹ Kim Thomas, “The Price of Health: The Cost of Developing New Medicines,” *The Guardian*, March 30, 2016. Available at: <https://www.theguardian.com/healthcare-network/2016/mar/30/new-drugs-development-costs-pharma>

As a practical matter, it is challenging for most patients and patient groups to make the same type of analysis that KEI has done for Spinraza. But also, when a patient advocacy group does the analysis, drug manufacturers and their lobbyists will seek to dismiss it as being inaccurate, or biased.

HB 666 should provide, on a more routine basis, the type of information that we have presented for Spinraza, and coming from the company itself, the information will be given more weight by policy makers. The transparency of the reporting will also allow third parties to verify the reasonableness of the data, for example, by comparing the industry's reported expenses with third party estimates of per-patient-costs on trials.

Other National and International Efforts for Transparency

Some legislators have asked for some context with regard to how Maryland's effort fits into the national and even international debate on these issues. Not surprisingly, the outcry for transparency has spread. In 2015-2016, twenty transparency bills in fourteen states were introduced.¹⁰ In late 2016 and early 2017, 21 bills have been introduced in thirteen states, including Maryland.¹¹

In March 2016, KEI wrote about the importance of obtaining sufficiently disaggregated and granular information in transparency bills, including in particular, the outlays and enrollment for each clinical trial used to support the registration of the drug.¹²

In 2016, the United Nations Secretary-General appointed a High-Level Panel on Access to Medicines (UN HLP). One of the topics the UN HLP examined was the need for more transparency of the costs of research and development for specific drugs, including the role of government subsidies for R&D.

In February 2016, seventeen civil society groups, including KEI, two academic researchers on drug pricing and three members of the European Parliament¹³ made an 8 page submission to the HLP, on measures to increase the transparency of markets for drugs, vaccines, diagnostics and other medical technologies, in order to rectify asymmetries of information. The submission noted:

Key components of the business model of the pharmaceutical industry, including research, development and commercialisation, remain shrouded in secrecy, particularly as regards access to information by patients and the general public. This undermines

¹⁰ <http://keionline.org/sites/default/files/transparency-legislation-summary-kei-briefing-note-2016-2.pdf>

¹¹ <http://www.keionline.org/node/2741>

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https://medium.com/@jamie_love/when-governments-mandate-transparency-of-r-d-costs-the-details-are-important-6be001f9e052#.zo1mwgitu

¹³ <http://keionline.org/sites/default/files/UN-HLP-A2M-Transparency-28Feb2016-Final.pdf>

trust in and accountability of the pharmaceutical industry, and leaves patients vulnerable . . . and makes it unnecessarily more difficult for society to make the appropriate policies regarding the financing and priority setting of R&D, and product purchases. Given the complexity, size and volume of transactions in the pharmaceutical sector, the lack of transparency creates a range of opportunities to exercise power and influence that can have negative health outcomes and can result in corruption.

. . .

There is a pervading opaqueness around funding flows for R&D. Publicly traded companies self report some information about R&D budgets for investors, but with limited detail, depending upon the relevance of the data to the share price.

Of particular interest are the data on the economics of clinical trials used to establish the safety and efficacy of drugs and vaccines. According to PhRMA's 2013 annual industry survey, approximately 67 percent of all member R&D outlays were spent on clinical trials . 2 The companies and organisations involved in undertaking clinical trial have detailed information on the costs of specific trials and rich statistical information on how those costs vary by disease, location, design and size of trials, and on specific products, but this information is not generally available to the public. While smaller companies sometimes report on the costs associated with some specific trials, this is the exception, and much more frequently such outlays are lumped together in aggregate reporting on R&D outlays that are not assigned to a specific drug or vaccine, let alone a specific trial. This allows companies great discretion in making assertions about R&D spending for specific products, and makes it more difficult for anyone but industry insiders to model the risk adjusted costs of R&D, because costs need to be associated with the timing and the phase of development.

The UN HLP report adopted several of these suggestions, and called on governments to require health technology manufacturers to disclose "(i) The costs of R&D, production, marketing and distribution of health technology being procured or given marketing approval with each expense category separated; and (ii) Any public funding received in the development of the health technology, including tax credits, subsidies and grants."¹⁴

On March 2, 2017, the European Parliament adopted a resolution, on a 568-30 vote, calling for transparency and clarity of public funding on research and development of new drugs, and claiming that public investment should be reflected in the price of drugs.¹⁵

¹⁴ http://keionline.org/sites/default/files/UNSG_HLP_A2M_Report_FINAL_Sept_2016.pdf

¹⁵ Sarantis Michalopoulos, "EU Parliament demands clarity in public funding of drugs R+D," *Euractiv*, March 3, 2017. Available at:

http://www.euractiv.com/section/health-consumers/news/eu-parliament-demands-clarity-in-public-funding-of-drugs-rd/?utm_content=bufferb3ad7&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

Trade Secrets and Confidential Proprietary Information

Detractors of HB 666 have expressed concerns regarding the disclosure of trade secrets and confidential proprietary information.

The costs associated with clinical trials and other elements of R&D, and the costs associated with the marketing of the products, are often disclosed to investors, in detail relevant to (material to) investors, without raising concerns about trade secrets or the protection of confidential information. HB 666 would create obligations to provide information about these costs to the general public, and in particular the parties that use and pay for drugs, in the formats and detail that are relevant for consumers/payers, so that both the investors and the buyers are informed.

There may be more challenging issues regarding data on prices and rebates. To the extent that information on rebates are considered confidential, the Maryland Department of Health and Mental Health has policies and guidelines in place that can be used, including the Information Assurance Policy (02.01.06)¹⁶, and accompanying Procedural Guidance for DHMH Information Assurance Policies and Programs.¹⁷ Furthermore, the Maryland Code contains protections against disclosure of confidential commercial information under the Public Information Act (MD GEN PROVIS § 4-335). The existing laws and procedures in place should be sufficient safeguards to assuage relevant concerns, if the legislature chooses to provide for confidentiality of the information on rebates.

However, in no case should the disclosures on R&D costs be secret from the public.

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<http://dhmh.maryland.gov/docs/02.01.06%20Information%20Assurance%20Policy%20-%20IAP%20-%2006-1-01.pdf>

¹⁷ <http://dhmh.maryland.gov/Pages/iapguidelines.aspx>