

BIOLOGIC DRUGS, BIOSIMILARS, AND BARRIERS TO ENTRY

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ABSTRACT

Biologic drugs represent an important category of drugs that improve health outcomes in this country. Yet, these cutting-edge drugs are often prohibitively costly, preventing access for many Americans. Recognizing the need for more affordable, generic substitutes for biologic drugs—or biosimilars—Congress recently created a biosimilars approval pathway that would enable these cheaper biologic drugs to obtain FDA approval and reach patients more quickly. Unfortunately, original biologics manufacturers have sought to extend their current monopoly profits by erecting various legal and regulatory barriers to entry. Their legal maneuvers take many forms, from delaying approval of safe biosimilars to abrogating previous commitments to international drug-naming protocols to circumventing Congressional intent for biosimilar substitution. Regrettably, these policies reduce competition in the market for biologic drugs, impede drug innovation, increase drug costs, and limit patient access to these important medications. This Article explores this conflict between biologics and biosimilars, and the consequences that barriers to biosimilar entry in this market will create.

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I. INTRODUCTION

Medications comprise a significant share of both America’s economy in general, and its health care sector in specific. With annual spending over \$320 billion,¹ prescription drugs consume over 10 percent of all American medical spending.² Spending on a relatively new category of medications, biological drugs—or biologics—is especially growing; in 2013, biologics comprised a quarter of drug spending,³ rising to potentially two-thirds of drug spending by 2015.⁴ These cutting-edge drugs offer patients with complicated and otherwise debilitating or fatal diseases hope for remission or even outright cure. Yet they

¹ Federal Trade Commission, Public Workshop: Follow-On Biologics: Impact of Recent Legislative and Regulatory Naming Proposals on Competition, 78 Federal Register 68840 (2013) (hereinafter FTC Follow-On Biologics Workshop).

² See, e.g., Centers for Medicare & Medicaid Services, “Nation’s Health Dollar – Where It Came From, Where It Went,” available at <http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/PieChartSourcesExpenditures2011.pdf>.

³ Andrew Pollack, *Biotech Firms, Billions at Risk, Lobby States to Limit Generics*, N.Y. TIMES (Jan. 28, 2013).

⁴ Steve Miller, *The \$250 Billion Potential of Biosimilars*, Express Scripts Int’l (Apr. 23, 2013), available at <http://lab.express-scripts.com/speciality-medications/the-250-billion-potential-of-biosimilars/#sthash.EVnF5tSn.dpuf>.

are often prohibitively costly, with courses of treatment for diseases from rheumatoid arthritis to breast cancer to multiple sclerosis running tens or hundreds of thousands of dollars per patient.⁵ As a result, many patients do not have access to these life-saving treatments.

Fortunately, Congress has recognized the need for cheaper, “generic” substitutes for biologic drugs—or biosimilars. As part of the Affordable Care Act (“ACA”), Congress created a biosimilars approval pathway that would enable these cheaper biologic drugs to obtain FDA approval and reach patients more quickly. Consumers stand to benefit significantly from the new market competition between lower-cost, but similarly-effective, biosimilars; in fact, estimates suggest this competition could save consumers \$250 billion over the next decade.⁶

Unfortunately, as with traditional brand-name pharmaceuticals and generics, original biologics manufacturers have sought to extend their monopoly profits by erecting legal and regulatory barriers to entry and use. These companies broadly resist the availability of biosimilars and have successfully lobbied both the FDA and state legislatures to obstruct the biosimilars approval pathway.⁷ Their legal maneuvers take many forms, from delaying approval of safe biosimilars to abrogating previous commitments to international drug-naming protocols to circumventing Congressional intent for biosimilar substitution. Regrettably, these policies reduce competition in the market for biologic drugs, impede drug innovation, increase drug costs, and

⁵ See Congressional Research Service, *FDA Regulation of Follow-On Biologics 2* (Apr. 26, 2010) [hereinafter CRS FDA Report].

⁶ Steve Miller, *Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition*, slide 7 (Feb. 4, 2014), available at http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/miller.pdf.

⁷ See generally Pollack, *supra* note 3.

limit patient access to these important medications, frustrating the ACA's goals of increasing healthcare availability while controlling healthcare costs.

This analysis examines in detail the conflict between biologic drug exclusivity and patient access to biologically similar drugs. Like traditional prescription drugs, potential biologics require large up-front research and development costs; these costs attend equally large product failure rates. Federal law accordingly provides biologic manufacturers with a lengthy exclusivity period to recoup these costs. But while a statutory exclusivity period prompts original manufacturers to further innovation, it comes at the expense of increased prices and reduced access to potent biologics.

Legislators and regulators must strike a careful balance between permitting certain companies to earn monopoly profits and allowing free competition and broad drug availability to patients. Lessons from economic principles, sound empirical analysis, and other countries' experiences suggest that impeding biosimilars' entry to market will harm consumers and patients with little to no corresponding benefits except to pharmaceutical monopolists.

This analysis begins by exploring the background, history, and substantial benefits behind biologics and close substitutes to biologics, with reference to the historically familiar conflict between traditional name-brand and generic prescription drugs. It then turns to several proposed regulatory and legislative roadblocks on an already-enacted federal pathway for expedited approval of safe, biologically similar substitutes for known biologics, including recent actions by the FDA and bills enacted and proposed before multiple state legislatures. It discusses why these proposals, instead of promoting consumer safety as some advocates insist, will raise prices and decrease patient access to potent biologics, ultimately denying consumers top-quality medical care at more affordable prices. These barriers to entry not only contravene the spirit

of the Affordable Care Act, which provided for speedier certification for substitute biologics, but also increase costs and reduce competition, all for no established benefits to patient safety or manufacturer innovation. I conclude that further attempts to increase or protect exclusivity for biologics will help only a few drug companies at the cost of healthcare markets, patient care, and the American economy at large.

II. COMPLEX MEDICINE: A HISTORY OF BIOLOGICS AND CONSUMER BENEFITS

Biologics both gather their name and primarily distinguish themselves from traditional drugs by their origins: they derive from living organisms, typically proteins, though occasionally including toxins, blood, viruses, or allergens.⁸ These medications include many novel and powerful tools, and are far more complex than traditional medicines. Where a traditional drug might contain between a few dozen to a hundred atoms per molecule, a biologic's complicated proteins can include from several thousand to tens of thousands of atoms per molecule.⁹ Biologics are comparatively new relative to traditional drugs: the FDA cleared the first biologic for human use, human insulin, in 1982.¹⁰

Both drug manufacturers and regulators recognize that biologics' inherent complexity introduces concerns not present with their traditional counterparts. Most notably, manufacturers can perfectly duplicate traditional drugs, potentially guaranteeing the "absence of a significant difference"

⁸ Jason Kanter & Robin Feldman, *Understanding & Incentivizing Biosimilars*, 58 HASTINGS L.J. 57, 59 (2012) (citing 42 U.S.C. § 262(i)(1) (2006)).

⁹ See, e.g., Joan Kerber-Walker, *Small Molecules, Large Biologics, and the Biosimilar Debate*, Arizona Bioindustry Association (Feb. 18, 2013), available at <http://www.azbio.org/small-molecules-large-biologics-and-the-biosimilar-debate>.

¹⁰ CRS FDA Report, *supra* note 5, at 1.

between an FDA-approved drug and a proposed equivalent.¹¹ This effective duplication, *bioequivalence*, defines the conventional relationship between a “brand-name” drug and a “generic:” generic drugs, simply put, are bioequivalent substitutes for brand-name counterparts. However, whereas bioequivalence is possible for a chemically-synthesized drug with dozens or hundreds of atoms, it is impossible to duplicate exactly complex biologics with tens of thousands of atoms per molecule; even a *chemically* identical biologic may produce different effects in the body because of the unique *structural* organization pattern of the proteins (called “folding”).¹² In fact, biologics even vary slightly across batches from a single, original manufacturer.¹³ As a result, companies looking to replicate a biologic must instead use highly similar—but slightly variant—living organisms or processes in creating a *biosimilar* (sometimes called a “follow-on biologic,” or “FOB”), a substitute biologic copied from an original biologic and designed to act as a “generic biologic.”¹⁴

The benefits of cheaper, more widely-available generic drugs were recognized in the market for traditional drugs three decades ago. As FDA drug approvals proved notoriously slow and expensive, Congress recognized the duplicative costs inherent in requiring bioequivalent drugs to undergo the full procedural rigors behind FDA approval. This prompted the Hatch-Waxman Act in 1984.¹⁵ Hatch-Waxman crafted a framework designed to both preserve

¹¹ 21 C.F.R. § 320.1 (2010). See also Henry Grabowski et al., *Implementation of the Biosimilar Pathway: Economic & Policy Issues*, 41 SETON HALL L. REV. 511, 512 & n.5 (2011).

¹² See, e.g. Kerber-Walker, *supra* note 9.

¹³ Mark McCamish, *Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition*, slide 6 (Feb. 4, 2014), available at: http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/mccamish.pdf.

¹⁴ The term “generic biologic” is necessarily slightly imprecise; as mentioned above, a “generic,” properly understood, is chemically identical to its brand-name counterpart; biosimilars are simply highly functionally similar, with no clinically meaningful differences in potency or safety.

¹⁵ Pub. L. No. 98-417, 98 Stat. 1585.

incentives for “brand-name” innovations as well as to encourage companies to create bioequivalent drugs—generics—that copy these branded drugs. Hatch-Waxman granted brand-name manufacturers a period of *patent restoration*, which extended a covered drug’s patent length by up to five years (to a maximum of 14 years) for half of the branded drug’s clinical testing period and all time spent securing FDA approval.¹⁶ It further conferred on branded drugs five years of *brand exclusivity*—a prohibition against FDA approval of bioequivalent generic drugs for a limited window to ensure branded manufacturers an adequate opportunity to recoup research costs and earn risk-adjusted profits.¹⁷ But in exchange for these new protections to brand-name manufacturers, Hatch-Waxman actively incentivized generic challenge to brand-name patents, conferring a limited exclusivity period to the first generic challenger to a brand-name drug.¹⁸ Critically for potential generic drugs, Hatch-Waxman created the Abbreviated New Drug Application (“ANDA”), a greatly truncated FDA approval process allowing a generic that demonstrates bioequivalence to rely on *previously submitted brand-name* safety and efficacy data.¹⁹

Hatch-Waxman has successfully increased generic drug development without an offsetting reduction in branded drug innovation. By reducing both the time and money costs for generic manufacturers seeking FDA approval,

¹⁶ 21 U.S.C. § 355(c)(3)(E)(ii).

¹⁷ *Id.*

¹⁸ In order for a generic drug to receive FDA approval before patent expiration of the branded drug, the generic company must challenge the branded drug’s patent as invalid, not infringed by the generic drug, or unenforceable. Hatch-Waxman encourages generic companies to challenge patents by granting a 180-day period of market exclusivity to the first generic company that challenges a patent and is either not sued by the branded manufacturer or prevails in the subsequent lawsuit. *See, e.g.,* U.S. DEP’T HEALTH & HUMAN SERVS., *Guidance for Industry: 180-Day Generic Drug Exclusivity Under the Hatch-Waxman Amendments to the Federal Food, Drug, & Cosmetic Act* (1998), available at <http://www.fda.gov/downloads/Drugs/.../Guidances/ucm079342.pdf>.

¹⁹ 21 U.S.C. § 355(j).

Hatch-Waxman produced a rush of generics to market.²⁰ Whereas generics comprised only 19 percent of all drugs dispensed prior to 1984, they now represent over 84 percent of prescriptions filled.²¹ This surge of cheaper generic products has produced significant savings for consumers; in the last decade alone, generic drugs have saved the health care system over \$1 trillion dollars.²² Hatch-Waxman did not, however, quash research and development in new drugs – in fact, drug development budgets have increased between threefold and sixfold since Hatch-Waxman was enacted.²³

Yet, because of the subtle distinction between bioequivalence and biosimilarity, Hatch-Waxman increased generic competition in the market for traditional drugs while failing to similarly encourage follow-on biologics development and distribution. Hatch-Waxman’s ANDA procedures applied only to drugs approved under the Food, Drug and Cosmetic Act—almost exclusively *bioequivalent* drugs. In contrast, biosimilar drugs regulated under the Public Health Service Act required full, individual FDA testing and approval.²⁴ This asymmetry rendered biologics broadly immune to the downward pricing pressures which affected traditional drugs in the decades following Hatch-Waxman.

Though this asymmetry between traditional drugs and biologics persisted for several decades, Europe eventually led the way in developing

²⁰ Grabowski et al., *supra* note 11, at 512-13.

²¹ U. S. Government Accountability Office, *Drug Pricing: Research on Savings from Generic Drug Use 2* (2012), available at: <http://www.gao.gov/assets/590/588064.pdf>; IMS Institute for Healthcare Informatics, *Declining Medicine Use and Costs: For Better or Worse? A Review of the Use of Medicines in the United States in 2012* (May 2013), at 15.

²² Letter from John E. Dicken, Director, Health Care to Sen. Orrin G. Hatch, Committee on Finance, *Drug Pricing: Research on Savings From Generic Drug Use* (Jan. 31, 2012), available at <http://www.gao.gov/assets/590/588064.pdf>.

²³ Congressional Budget Office, *Research and Development in the Pharmaceutical Industry 7* (2006), available at: <https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/76xx/doc7615/10-02-drugr-d.pdf>.

²⁴ Kanter & Feldman, *supra* note 8, at 62-63.

science-driven regulatory regimes in approving biosimilars for consumer use.²⁵ The European Commission established a biosimilars approval pathway in 2004.²⁶ The Commission formally approved its first biosimilar drug – Omnitrope, a human growth hormone—in April 2006, following a positive scientific opinion from the European Medicines Agency (EMA).²⁷ The EMA has subsequently extensively investigated numerous proposed biosimilar drugs; the European Union has approved 16 biosimilar medicines for use in Europe thus far.²⁸ The EMA has concluded all of these medicines are “highly similar” to their biologic reference products, presenting no relevant differences for therapeutic use.²⁹

These countries’ faster biosimilar approval pathways have yielded substantial patient benefits, lower drug costs, and wider biologic availability. One German study suggested European medical savings of over €33.4 billion (\$45.5 billion) by 2020, with over €20.4 billion in savings from just biosimilar antibody drugs.³⁰ Another estimate calculates that the European biosimilars approval process saves European patients as much as 60% after four years of

²⁵ Andrzej Wiecek & Ashraf Mikhail, *European Regulatory Guidelines for Biosimilars*, Nephrology Dialysis Transplantation v17-v18 (Oct. 2006), available at http://ndt.oxfordjournals.org/content/21/suppl_5/v17.full.pdf+html.

²⁶ GPhA, *Biosimilars in the EU*, available at <http://www.gphaonline.org/gpha-media/gpha-resources/biosimilars-in-the-eu>.

²⁷ CRS FDA Report, *supra* note 5, at 2.

²⁸ European Medicines Agency, *European Public Assessment Reports*, available at http://www.ema.europa.eu/ema/index.jsp?curl=pages%2Fmedicines%2Flanding%2Fepar_search.jsp&murl=menus%2Fmedicines%2Fmedicines.jsp&mid=WC0b01ac058001d124&searchTab=searchByAuthType&alreadyLoaded=true&isNewQuery=true&status=Authorised&status=Withdrawn&status=Suspended&status=Refused&keyword=Enter+keywords&searchType=name&taxonomyPath=&treeNumber=&searchGenericType=biosimilars&genericsKeywordSearch=Submit (last accessed Dec. 22, 2013).

²⁹ European Medicines Agency, *Guideline on Similar Biological Medicinal Products 6* (May 22, 2013), available at http://www.ema.europa.eu/docs/en_GB/document_library/Scientific_guideline/2013/05/WC500142978.pdf.

³⁰ Ben Hirschler, *Analysis: Copycat biotech drugs slow to take off in Europe*, Reuters.com (Dec. 3, 2013), available at <http://www.reuters.com/article/2013/12/03/us-biotech-copycats-analysis-idUSBRE9B205I20131203>.

market penetration as against original biologics prices; even conservative figures estimate cost savings of 20-30%.³¹ A single drug recently approved for biosimilar use in Europe recorded European sales of over \$2 billion in 2012 alone.³² Some other countries are following the European experience with biosimilars; for example, Canada has also approved the use of biosimilar drugs under some circumstances.³³

The Biologics Price Competition and Innovation Act (“BPCIA”), part of the Patient Protection and Affordable Care Act (“ACA”), somewhat updated the American drug approval legal system.³⁴ BPCIA provides an expedited biosimilars approval pathway in keeping with global trends towards increased biosimilars use. BPCIA’s biosimilars pathway largely tracks Hatch-Waxman’s theoretical framework, albeit with a few biologic-specific distinctions and some variance in exclusivity periods. Most significantly, a proposed biologic substitute does not have to demonstrate bioequivalence, but merely biosimilarity, to a reference product: that the proposed biosimilar shows “no . . . meaningful differences . . . in terms of safety, purity, and potency.”³⁵ This distinction rectifies Hatch-Waxman’s failure with biosimilars by loosening the contextually impossible bioequivalence standard.

Under BPCIA, a product approved as biosimilar may further be deemed “interchangeable” with another biologic if its manufacturer can demonstrate that switching between the reference biologic and the proposed substitute

³¹ It should be noted that these figures vary substantially, but are all significant. *See generally* Grabowski et al., *supra* note 11, at 543 (listing multiple estimates of biosimilars price discount evidence assuming robust pathway for biosimilars approval).

³² Hirschler, *supra* note 30.

³³ Cole Werble, *Canadian Biosimilar Approvals for Remicade: Time to Restart the Bus?*, Pharma & Med Tech Business Intelligence (Jan. 27, 2014), available at <http://www.elsevierbi.com/publications/rpm-report/first-take/2014/1/canadian-biosimilar-approvals-for-remicade>.

³⁴ 42 U.S.C. § 262(i)(2)(B).

³⁵ 42 U.S.C. § 262(i)(2)(B).

presents no additional risk in safety or efficacy for consumers.³⁶ Importantly, under Federal law, interchangeable products may be substituted for reference biologics without a prescribing doctor's intervention.³⁷ Innovative biologics—the biologic equivalent of “brand-name” drugs—receive 12 years of market exclusivity³⁸ under BPCIA (including 4 years of data exclusivity), though the Obama Administration has recently called for reducing this to only seven years.³⁹ Similar to Hatch-Waxman's 180-day generic exclusivity window, the first biosimilar deemed interchangeable receives a one-year “biosimilar exclusivity” approval as well.⁴⁰ BPCIA vests with the FDA broad discretion in determining biosimilarity: the Agency may rely on various studies—or waive these requirements⁴¹—make rules,⁴² issue guidance, or even categorically ban biosimilar applications for classes of biologics.⁴³

Although the FDA has yet to approve a biosimilar, the U.S. stands to benefit significantly from BPCIA's biosimilar approval pathway. In 2010, four of the top-ten selling drugs were biologics, and estimates indicate this will rise

³⁶ 42 U.S.C. § 262(i)(3).

³⁷ *Id.*

³⁸ “Market exclusivity” is a minimum period during which the FDA is not permitted to approve any biosimilar (or generic) versions of a drug, granting that original biologic an effective monopoly regardless of developed biosimilars. “Data exclusivity” refers to the period during which a follow-on biologic, or biosimilar, is not permitted to use a reference drug's safety information to file a truncated or expedited application for FDA approval. During the data exclusivity period, a proposed biosimilar must pay the costs – in time and capital – to secure FDA approval as though it were an original biologic *See generally* Elizabeth Richardson, et al. *Biosimilars*, HEALTH AFFAIRS (October 10, 2013), available at:

http://www.healthaffairs.org/healthpolicybriefs/brief.php?brief_id=100; Dept. Health & Human Servs., FDA, Approval Pathway for Biosimilar and Interchangeable Biological Products; Public Hearing; Request for Comments, 75 Federal Register 61497 (Oct. 5, 2010).

³⁹ *See*, Executive Office of the President of the United States, Fiscal Year 2014 Budget of the U.S. Government at 40, *available at* <http://www.whitehouse.gov/sites/default/files/omb/budget/fy2014/assets/budget.pdf>. *See generally infra* Part III.C.

⁴⁰ Kanter & Feldman, *supra* note 8, at 69-72.

⁴¹ *Id.*

⁴² *Id.*

⁴³ 42 U.S.C. § 262(k)(8)(E).

to seven of the top ten by 2016.⁴⁴ Many of these biologics stand to soon go off-patent, opening the door for competition from cheaper biosimilars.⁴⁵ As a result, industry estimates suggest that the biosimilar approval pathway established by BPCIA could save U. S. consumers \$250 billion over the next decade.⁴⁶

Yet recent lobbying efforts, regulatory delays, and proposed state legislation threaten to obstruct the BPCIA-expedited pathway to inexpensive, powerful biosimilar drugs and to preserve a handful of biologic monopolies. This resistance has come in two forms. First, despite BPCIA's clear legislative intent and structure—imposing a Hatch-Waxman-style compromise between innovative biologics (roughly equivalent to brand-name traditional drugs) and biosimilars (roughly equivalent to generics)—the FDA has resisted the spirit of BPCIA through a number of biosimilar-hostile regulatory moves. Often at the behest of several major drug manufacturers, equally problematic legislative proposals wend their way through a substantial fraction of state legislatures. Several states have already passed laws obstructing life-saving biosimilar drugs, and these state proposals share multiple BPCIA-thwarting traits in common. I next examine both of these obstacles to cheaper and more broadly available biosimilar drugs.

⁴⁴ Miller, *Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition*, *supra* note 6, at slide 3.

⁴⁵ FED. TRADE COMM'N, EMERGING HEALTH CARE ISSUES: FOLLOW-ON BIOLOGIC DRUG COMPETITION 4 (2009), available at <http://www.ftc.gov/sites/default/files/documents/reports/emerging-health-care-issues-follow-biologic-drug-competition-federal-trade-commission-report/p083901biologicsreport.pdf>

⁴⁶ Miller, *Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition*, *supra* note 6 at slide 7.

III. CURRENT BARRIERS TO BIOSIMILAR ENTRY

Despite a prominent place in federal law, billions of dollars in potential savings, and an increasing trend toward international approval, pharmaceutical monopolists work to frustrate effective biosimilars adoption in the U.S. As with efforts to obstruct generic drugs to maintain—or enhance—profits on brand-name pharmaceuticals, some biologics manufacturers have lobbied federal regulators, state legislatures, and even international organizations to prevent consumers from obtaining effective biosimilars.⁴⁷ These legal maneuvers take many forms, from delaying approval of safe biosimilars to abrogating previous commitments to international drug-naming protocols to circumventing Congressional intent for biosimilar substitution. I next outline these international, federal, and state efforts before turning to the legal and economic cases against these barriers to entry.

A. FDA RESISTANCE TO A BIOSIMILARS PATHWAY

The FDA has proven surprisingly resistant to promoting biosimilars approval, despite BPCIA's charge to the Agency to implement a framework balancing biologics' and biosimilars' manufacturers' interests. The BPCIA unequivocally expresses the Affordable Care Act's intention and sense "that a biosimilars pathway balancing innovation and consumer interests should be established,"⁴⁸ commending this responsibility broadly to the FDA.⁴⁹ The agency's commissioner has admirably echoed these sentiments, stating that implementing an effective biosimilars pathway is "among [the FDA's] highest priorities."⁵⁰ Yet the FDA's 2012 draft guidelines, explaining their tentative

⁴⁷ See generally Pollack, *supra* note 3.

⁴⁸ 42 U.S.C. § 262(b).

⁴⁹ 42 U.S.C. § 262 (k)(5)(B).

⁵⁰ Margaret A. Hamburg, M.D., Commissioner of Food and Drugs, (quoted in Feb. 2012), available at <http://gpha.hfwebdev.com/issues/biosimilars>.

approach towards a biosimilars pathway, leave several key areas unresolved, increasing uncertainty for biosimilars manufacturers and, ultimately, costs for consumers. The draft guidelines fail to provide any meaningful guidance as to what standards the agency will employ in determining whether a biosimilar is interchangeable with a biologic.⁵¹ Similarly, the draft guidelines do not establish—or even broadly cabin—the nature or extent of drug testing the FDA will require in comparing a proposed biosimilar and its reference biologic.⁵² The FDA does not expect to even finalize this draft until later this year at the earliest,⁵³ while prominent industry lawsuits regarding the FDA’s biosimilars management could delay the FDA’s implementation of an approval pathway until as late as 2022.⁵⁴

But the FDA’s resistance to biosimilars exceeds merely passive resistance to biosimilar drugs or hesitation to proceed with a biosimilar applications pathway; the FDA is currently considering whether to adopt a different naming policy for biosimilars than the policy that has been in place for generic drugs for over 50 years.⁵⁵

Both traditional drugs and biologics typically have two names: a brand name—often called a proprietary name—and a nonproprietary name.⁵⁶ The nonproprietary name reflects certain characteristics of the drugs such as

⁵¹ 42 U.S.C. § 262 (k)(4) (2009) (enacted).

⁵² 42 U.S.C. § 262 (k)(2)(A)(i)(I)(aa)-(cc).

⁵³ Mia Burns, *Frost & Sullivan Breaks Down Biosimilars Market*, Drugs.com (Oct. 2013), <http://www.drugs.com/news/frost-sullivan-breaks-down-biosimilars-market-48276.html>. “The FDA has yet to finalize its guidelines. . . . Toscano said during [a] webinar that the final agency guidance is anticipated during 2014, with the first biosimilars being held in anticipation for some time in 2015.”

⁵⁴ Stanton J. Lovenworth, *The New Biosimilar Era: The Basics, the Landscape, & the Future*, 6 LIFE SCI. L. & INDUS. REP. 972 (2012).

⁵⁵ American Medical Association, *Generic Naming: Who is USAN* (2014) available at: <http://www.ama-assn.org//ama/pub/physician-resources/medical-science/united-states-adopted-names-council/generic-drug-naming-explained.page>

⁵⁶ For example, the proprietary name of the widely-prescribed cholesterol drug is “Lipitor,” while its non-proprietary name is “atorvastatin calcium.”

chemical structure or pharmacological properties.⁵⁷ The FDA, working with the U.S. Adopted Names Council and the U.S. Pharmacopeial Convention, has the role of determining drugs' nonproprietary names—the United States Adopted Name (“USAN”).⁵⁸ Outside of the U.S., the World Health Organization (“WHO”) assigns drugs' nonproprietary names—the International Nonproprietary Names (“INN”). Although the INN and USAN are independent of each other, the two groups work to ensure the USAN and INN are typically identical.⁵⁹ As a result, products with the same active ingredients can be recognized globally by their nonproprietary name.

But proponents of a new naming policy have worked to disrupt this naming convention. These groups assert that unique names are necessary to track any adverse events from biologics and biosimilars.⁶⁰ These groups point to a study of traditional drugs that found that generics and branded products under the same INN sometimes suffer misattributions of adverse events.⁶¹ The WHO and FDA are, as a consequence, reconsidering biosimilars naming: potential new policies range from minor deviations, such as a prefix or biosimilars identifier added to existing names, to completely different INNs/USANs for biosimilars.⁶²

⁵⁷ FTC Follow-on Biologics Workshop, *supra* note 1 at 68844.

⁵⁸ *Id.*

⁵⁹ Report on WHO Information Consultation on International Nonproprietary Names (INN) Policy for Biosimilar Products, INN, WHO (Sept. 2006), at 5, *available at* http://www.who.int/medicines/services/inn/BiosimilarsINN_Report.pdf?ua=1

⁶⁰ Mari Serebrov, “WHO: Biosimilars not the same, Why should names be?” (2014), *available at*: <http://www.bioworld.com/content/who-biosimilars-not-same-why-should-names-be-0>

⁶¹ Specifically, the study found that adverse events are sometimes misattributed to brand name products when patients suffering these events in fact took the respective generic. *See* Erika Leitzan, Laura Sim, & Emily Alexander, *Biosimilar Naming: How Do Adverse Event Reporting Data Support the Need for Distinct Nonproprietary Names for Biosimilars*, 3 FDLI's Food and Drug Policy Forum (2013), *available at*: <http://www.fdi.org/docs/members-only/lietzan-faers-bio-final-3-27-13.pdf?sfvrsn=0>

⁶² Serebrov, *supra* note 60.

Critics of this potential policy change point to several other pieces of evidence showing that unique nonproprietary names are not necessary to accurately track adverse events. Rather than relying on data from traditional non-biological drugs, they point to evidence from adverse event reporting for actual biologic drugs, demonstrating that biologic products are almost universally identified by their unique proprietary name, not the INN that they share with other drugs.⁶³ Additionally, they explain that existing technology for adverse event reporting renders unique nonproprietary names unnecessary for safety reporting. In fact, current pharmacy technology enables manufacturers and regulators to track pharmaceuticals down to a specific batch.⁶⁴ Thus, changing this time-tested naming convention will add negligible or no safety benefits.

Moreover, by virtue of biologics' inherent complexity, no two batches of biologics are identical; even consecutive batches of a biological drug from the same manufacturer are not identical.⁶⁵ These natural variations undercut any theoretical justification for a different *biosimilar* nonproprietary name, as these biosimilars merely demonstrate slight variations not unlike differences between original biologics batches. Furthermore, every approved biosimilar

⁶³ McCamish, *supra* note 13, at slide 13 (reporting adverse event data for the Sandoz biologic products: Binocrit, Abseamed, Epoetin Alfa Hexal, Omnitrope, Zarzio); Sumant Ramachandra, Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition, slide 7 (Feb. 4, 2014), available at http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/ramachandra.pdf (reporting adverse event data for the Hospira biologic products: Retacrit and Nivestim)

⁶⁴ Bruce Leicher, Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition, slide 24 (Feb. 4, 2014), available at: http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/leicher.pdf; Miller, *Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition*, *supra* note 6, at slides 8-9.

⁶⁵ McCamish, *supra* note 13, at slides 6-8.

necessarily has been shown to have no meaningful differences from its reference drug, obviating the need for a distinct nonproprietary name entirely.

Instead of providing safety benefits, changes to the nomenclature for biosimilars would necessarily impede consumer access to these drugs in several ways. The most direct is in basic information costs to healthcare professionals and pharmacists: the current policy of assigning nonproprietary names focuses on active ingredients, developing a terminology consistent for therapeutic, rather than business, purposes. Departing from this naming uniformity would partially obscure which biologics were approved for similar uses.⁶⁶ It would also perniciously suggest—contrary to BPCIA’s very definition of biosimilarity—that biosimilar drugs differed in clinically meaningful ways from their corresponding original biologics.⁶⁷ But perhaps more unhelpfully, a naming change would undoubtedly encourage a messaging campaign to discourage biosimilars parallel to the long-since-discredited attempts by brand-name pharmaceuticals to discourage consumers from generic traditional drugs. Neither of these results is consistent with BPCIA’s delegation to the FDA to establish a cost-effective, sensible pathway to biosimilars approval.

B. ANTI-BIOSIMILARS LOBBYING IN THE STATES

Encouraged by some success in resisting BPCIA at the federal level, opponents of biosimilars have proposed bills in numerous state legislatures designed to impede the prescription of approved biosimilars in place of innovative biologics.⁶⁸ While most states that considered these laws have rejected them, a handful of states have passed laws restricting biosimilars substantially more than BPCIA contemplates. So far, North Dakota, Florida,

⁶⁶ Lovenworth, *supra* note 54, at 9.

⁶⁷ FTC Follow-On Biologics Workshop, *supra* note 1 at 68844.

⁶⁸ See generally Pollack, *supra* note 3.

Utah, Virginia, and Oregon have passed a biosimilars-restricting law,⁶⁹ and similar legislation continues to be considered in numerous other states.⁷⁰ These laws are straightforward in their approach: they seek to impose dubious patient consent, recordkeeping, and physician notification requirements to discourage healthcare professionals and consumers from dispensing or consuming biosimilars.

These state bills share several problematic features with only a few minor variations. Each adds elements directly countermanding or otherwise implicitly undermining BPCIA's Hatch-Waxman-like framework and goals. Biosimilar-restrictive legislation typically relies on three interlocking mechanisms, establishing: (1) a notification and recordkeeping requirement for the prescribing physician of any substitution; (2) a patient's veto or patient notification requirement, or both; and (3) a set of burdensome recordkeeping (or labeling) provisions for pharmacists.⁷¹ These three interlocking mechanisms collectively attempt to circumvent Congress's determination through BPCIA that interchangeable biologics can be substituted without a doctor's intervention. These state laws not only allow physician interference with an FDA-approved substitute, but actively solicit it through unnecessary notification and recordkeeping requirements.

The physician notification provisions contained in the state legislation require pharmacists to notify prescribers upon dispensing an interchangeable

⁶⁹ US State Legislation on Biosimilars Substitution, 2 GABI JOURNAL 155 (2013), 155-56, *available at* <http://gabi-journal.net/us-state-legislation-on-biosimilars-substitution.html>.

⁷⁰ Jessica Mazer, Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition, slide 3 (Feb. 4, 2014), *available at* http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/mazer.pdf.

⁷¹ *See, e.g.*, S.B. 2190, 63rd Leg., § 1(1)(a)-(e) (N.D. 2013); H.B. 365, 102nd Leg., § 2(2)((a)-(d).

biosimilar.⁷² These provisions both increase burdensome—and often duplicative—notifications by and to healthcare professionals and deter physicians from substituting biosimilars for original biologics. The notification requirement delivers a message to physicians that biosimilars are different or suspect, raising fears among physicians that they could be exposed to malpractice claims based on substitution.⁷³ The physician notification provisions directly contradict, however, BPCIA’s conspicuous *absence* of a physician notification for substitution of biosimilars, much less interchangeable biosimilars. The absence of such a requirement in BPCIA is understandable: the BPCIA’s definition of biosimilarity—requiring the absence of meaningful clinical differences in safety and potency—precludes the vast majority of medical distinctions between original biologics and biosimilar drugs. Moreover, these requirements when applied to *interchangeable* biosimilars, as anti-biosimilar laws contemplate, are even more pointless because there are no meaningful distinctions between original biologics and interchangeable biosimilars.

Patient veto and patient notification provisions act similarly, requiring a pharmacist to notify a patient of a biosimilar substitution,⁷⁴ and in some cases, allowing the patient the right to refuse the biosimilar product selected by the pharmacist.⁷⁵ These provisions raise fears in patients that they are receiving a different or inferior product that warrants advance notification.⁷⁶ Also, if given the ability to veto a biosimilar substitution, patients may opt for the brand-

⁷² S.B. 2190, 63rd Leg. (N.D. 2013); H.B. 365, 102nd Leg. (Fl. 2013); S.B. 460, 77th Leg. (Or. 2013); S.B. 78, 60th Leg. (Ut. 2013); S.B. 1285, 63rd Leg. (Va. 2013), H.B. 1422, 63rd Leg. (Va. 2013).

⁷³ Leicher, *supra* note 64, at slides 5-7.

⁷⁴ S.B. 2190, 63rd Leg. (N.D. 2013); H.B. 365, 102nd Leg. (Fl. 2013); S.B. 460, 77th Leg. (Or. 2013); S.B. 78, 60th Leg. (Ut. 2013); S.B. 1285, 63rd Leg. (Va. 2013), H.B. 1422, 63rd Leg. (Va. 2013).

⁷⁵ S.B. 2190, 63rd Leg. (N.D. 2013)

⁷⁶ Mazer, *supra* note 70, at slide 3.

name biologic that has advertised heavily, even when this option would increase patient and payer costs without *any* resulting medical benefits.

Finally, anti-biosimilars laws generally impose lengthy recordkeeping provisions on pharmacists. These require pharmacists to keep records, usually for three to five years, of all biosimilar substitutions made for all patients.⁷⁷ Pharmacists must of course maintain these superfluous, and often duplicative, records consistent with extensive and costly federal regulations protecting sensitive medical data.⁷⁸ By imposing these burdensome requirements every time a pharmacist substitutes a biosimilar, recordkeeping provisions deter biosimilar substitution. They also suggest to pharmacists that biosimilars' efficacy and safety is uncertain, warranting extensive recordkeeping requirements.

Proponents of state legislation that imposes restrictions on substitution of interchangeable biologics argue that these regulations are necessary to prevent the immunogenic reactions, adverse side effects, and diminished effectiveness that could result from nonequivalent biosimilar substitution.⁷⁹ However, these concerns are clearly unwarranted when examined in light of other countries' experiences regarding biosimilars; the European Union, for example, has maintained a biosimilars approval pathway for almost a decade, with a similar safety record as original biologics, billions of Euros in patient savings, and broadly increased patient access to biologics.⁸⁰

⁷⁷ US State Legislation on Biosimilars Substitution, *supra* note 69. Florida's enacted legislation only requires keeping records for two years.

⁷⁸ *Id.*

⁷⁹ Biotechnology Industry Organization, *BIO Principles on Patient Safety in the Substitution of Biologic Products* (Jan. 2013), available at <http://www.bio.org/advocacy/letters/bio-principles-patient-safety-substitution-biologic-products>.

⁸⁰ Laurence J. Kotlikoff, *Stimulating Innovation in the Biologics Industry: A Balanced Approach to Marketing Exclusivity*, Boston University (2008), available at http://people.bu.edu/kotlikoff/New%20Kotlikoff%20Web%20Page/Kotlikoff_Innovation_in_Biologics21.pdf

State anti-biosimilars laws have broadly failed thus far. While five states have passed anti-biosimilars laws,⁸¹ several of the most populous states have rejected anti-biosimilars laws, including California, Illinois, and Texas.⁸² Of the sixteen states that have contemplated anti-biosimilars measures, more than two-thirds—eleven in total—have rejected these laws.⁸³ Nevertheless, several states continue to consider anti-biosimilars legislation.⁸⁴ As I explain below, this legislation potentially carries grave consequences for both patient health and consumer welfare.

IV. CONSEQUENCES FROM BARRIERS TO BIOSIMILARS

The BPCIA expressly contemplates a framework that balances original biologics manufacturers' understandable interests in protecting research investments and earning profits against biosimilars manufacturers'—and consumers'—interests in wider drug access at lower costs. Some federal and state regulatory proposals act directly contrary to this mandate, seeking to maintain or even extend original biologics manufacturers' effective monopolies over their biologics. Others merely attempt to defeat BPCIA's compromise by discouraging physicians, pharmacists, or consumers from prescribing, providing, or using safe biosimilars. Both attempts frustrate BPCIA's critical function under the ACA's twin goals: medical cost containment and expanded affordable medical coverage. I next discuss these anti-biosimilars policies' troubling implications. As I explain, these impediments reduce competition in

⁸¹ US State Legislation on Biosimilars Substitution, *supra* note 69.

⁸² *Id.* See also Posting of Kurt R. Karst to FDA: Law Blog, http://www.fdalawblog.net/fda_law_blog_hyman_phelps/2013/10/biosimilar-substitution-bill-opposition-strikes-gold-in-california-governor-brown-vetoes-the-measure.html (Oct. 15, 2013).

⁸³ *Id.* See also Posting of Kurt R. Karst to FDA: Law Blog, *supra* note 82; HIS Healthcare and Pharma Blog, <http://healthcare.blogs.ihc.com/2013/09/03/state-biosimilars-legislation-in-the-us-what-the-situation-in-california-reveals-about-the-nuances-of-the-substitution-debate/> (Sept. 3, 2013).

⁸⁴ Mazer, *supra* note 70, at slide 3.

the market for biologic drugs, impede drug innovation, increase drug costs, and limit patient access to these important medications.

A. THREATS TO COMPETITION AND INNOVATION

Basic economic theory, confirmed in multiple economic sectors, reveals that proposals to block biosimilars from expedited FDA approval act as barriers to entry to biologics markets, extending an already lengthy monopoly period for original biologics manufacturers. This extension needlessly locks potential rival firms out of biologics markets by raising costs to bring biosimilars to market. These increased costs deter potential entrants, reducing competition; this reduction in competition decreases innovation, encourages monopoly pricing, and ultimately increases prices to consumers. Consumers—patients—pay twice for these barriers to entry: through more expensive drugs and through reduced access to effective, potentially life-saving, medications.

Barriers to entry include any legal, economic, or practical limitations which prevent firms from offering products in a given market; these barriers necessarily increase the likelihood a firm will obtain a monopoly and charge monopoly prices.⁸⁵ In the purest sense, these are costs that *would* be borne by firms not *currently* serving a market but that are *not* currently felt by firms *in* the market: in other words, costs that only affect outsiders looking in on a market.⁸⁶ Some barriers to entry are economic: for example, *economies of scale* are cost advantages that firms gain only by obtaining a certain size or market

⁸⁵ See Joe S. Bain, *Barriers to New Competition* (1956). See also George Stigler, *The Organization of Industry* (1968). Stigler defines a barrier to entry as any cost to producing a product borne only by firms seeking to enter an industry rather than firms already in it. For example, regulatory costs required to clear an already-established biologic are already sunk by original biologics manufacturers, which can be recouped during an original biologic's exclusivity period; however, without a workable FDA biosimilars pathway, a new biosimilar manufacturer must pay these costs anew – likely without therapeutic benefit – to compete with an original biologic. FDA licensing provisions are therefore one class of barrier to entry, which state regulators seek to enhance.

⁸⁶ Stigler, *supra* note 85, at 67-70.

share; firms outside a market necessarily lack these advantages by virtue of having no market share, so these cost advantages act as a barrier to entry.⁸⁷ Some barriers to entry are purely legal, however, such as data and market exclusivity periods—included in part in both Hatch-Waxman and BPCIA—which formally prevent outside firms from offering competing products.⁸⁸

BPCIA and Hatch-Waxman inherently represent a compromise on barriers to entry between original drug manufacturers and subsequent potential entrants, balancing entry concerns by permitting some barriers while reducing others. Original drug manufacturers claim—with some support—that the high research and development costs necessary to produce successful pharmaceuticals effectively require extensive monopoly profits merely to recoup their investments.⁸⁹ Subsequent drug manufacturers, seeking profits and original manufacturers' market share, can safely and at lower cost reproduce these expensive drugs—reducing original manufacturers' opportunity to recoup costs (or amass profits) while passing savings on to consumers. Each side claims its position will increase innovation: original manufacturers contend that an extensive monopoly period is the only way to allow for research into new, and often unproductive, drugs; subsequent manufacturers point out that competitive markets tend to spur innovation as subsequent firms jostle for market share and original manufacturers continue to innovate to stay ahead of the pack.⁹⁰ BPCIA and Hatch-Waxman compromise

⁸⁷ Joe S. Bain, *Economies of Scale, Concentration, and the Condition of Entry in Twenty Manufacturing Industries*, 44 THE AMER. ECON. REV. 15 (1954), at 15-39.

⁸⁸ US Biosimilars Law May Prove a Barrier to Entry for Biosimilars, GaBI Online (Sept. 23, 2011), available at <http://gabionline.net/Biosimilars/Research/US-biosimilars-law-may-prove-a-barrier-to-entry-for-biosimilars>.

⁸⁹ *Id.*; see also Henry Grabowski and Joseph DiMasi, *Biosimilars, Data Exclusivity, and the Incentives for Innovation: A Critique of Kotlikoff's White Paper*, Duke Univ. Dept. of Econ. Working Paper, No. 2009-02 (Feb. 2009), at 9, available at http://public.econ.duke.edu/Papers//PDF/FinalDraft2_5_09.pdf.

⁹⁰ Grabowski and DiMasi, *supra* note 89, at 9; see also Laurence J. Kotlikoff, *supra* note 80.

between these two competing positions, granting an extensive exclusivity period to original manufacturers to allow for substantial cost recoupment and profits while reducing the onerous barrier to entry that the FDA's new drug approval pathway imposes.⁹¹

Indeed, evidence indicates that Hatch-Waxman spurred innovation and greatly increased competition in the market for traditional drugs. Since Hatch-Waxman was enacted in 1984, more than 8,000 generic drugs have been approved by FDA.⁹² Where generics represented only 19 percent of all drugs dispensed prior to 1984, they now represent over 84 percent.⁹³ Moreover, while spurring innovation in generic drugs by facilitating their earlier market entry, Hatch-Waxman continued to protect the patent rights of branded drug manufacturers, encouraging innovation among these manufacturers as well. Research and development budgets have continued to rise among brand-name drug manufacturers.⁹⁴ Similar to Hatch-Waxman's effect on innovation, BPCIA would also be expected to spur innovation and competition in the market for biologic drugs. The EU, which has had an established regulatory pathway for biosimilars for a decade, has seen a significant degree of competition in the market for biologic drugs.⁹⁵

But the regulatory proposals discussed above each threaten to upset BPCIA's legislative balance; each introduces an additional, unproductive barrier

⁹¹ Grabowski and DiMasi, *supra* note 89, at 9.

⁹² Food and Drug Administration, Fact Sheet: New "Biosimilars" User Fees Will Enhance Americans' Access to Alternatives to Biologic Drugs (2012), available at: <http://www.fda.gov/RegulatoryInformation/Legislation/FederalFoodDrugandCosmeticActFDCAAct/SignificantAmendmentstotheFDCAAct/FDASIA/ucm311121.htm>.

⁹³ U. S. Government Accountability Office, *Drug Pricing: Research on Savings from Generic Drug Use 2* (2012), available at: <http://www.gao.gov/assets/590/588064.pdf>; IMS Institute for Healthcare Informatics, *Declining Medicine Use and Costs: For Better or Worse? A Review of the Use of Medicines in the United States in 2012* (May 2013), at 15.

⁹⁴ *Id.* (citing PhRMA, Pharmaceutical Industry Profile 2011, 14-15 (2011)).

⁹⁵ European Commission, What You Need to Know about Biosimilar Medicinal Products 15-16 (2013), available at: http://ec.europa.eu/enterprise/sectors/healthcare/files/docs/biosimilars_report_en.pdf

to entry. Disrupting a half-century-long convention in nonproprietary naming will raise information costs on consumers, physicians, and pharmacists, deterring biosimilars prescription and use even when medically appropriate. In fact, varying nonproprietary names will imply none-too-subtly that biosimilar medications are clinically different, despite BPCIA's stern mandate that *all* biosimilars must contain no clinically meaningful difference from corresponding original biologics. Notification and recordkeeping provisions similarly send a message that the safety or efficacy of biosimilars is unclear, leading to unnecessary uncertainty and unwarranted fears. These state-level requirements also raise transaction costs on medical professionals, making healthcare more expensive to no one's benefit—save a handful of pharmaceutical monopolists. Both policies will raise barriers to entry, harming consumers.

Indeed, empirical evidence confirms that anti-biosimilars policies will stifle competition, raising prices and limiting consumer access to life-saving medications. Global data—from Australia, Japan, and Europe—indicates that varying nonproprietary names reduces biosimilars' market presence, restricting competition in the market for biologics.⁹⁶ Varying U.S. nonproprietary names would likely have the same anticompetitive effect. Similarly, empirical evidence demonstrates how state-level laws burdening biosimilars substitutability would harm consumers: states that required notification, recordkeeping, and consent to substitution for generic drugs saw significantly less generic drug usage.⁹⁷ These provisions—by design—stifled

⁹⁶ Mark McCamish, *supra* note 13, at slides 15-16 (reporting on IMS Health data, 2012); Ramachandra, *supra* note 63, at slide 8.

⁹⁷ William H. Shrank et al., State Generic Substitution Laws Can Lower Drug Outlays Under Medicaid, 29 *Health Affairs* 1383 (2010); Norman V. Carroll, Jack E Fincham, Fred M. Cox, *The Effects of Differences in State Drug Product Selection Laws on Pharmacists' Substitution Behavior*, 25 *MEDICAL CARE* (1987).

competition and innovation in traditional drug markets.⁹⁸ Policymakers should not repeat this unfortunate mistake. It is clear that these proposed policies will merely reduce competition and innovation in biologics markets. As I discuss next, this economic harm will translate directly into patient harm, violating BPCIA's goals of increasing healthcare availability while controlling healthcare costs.

B. HIGHER CONSUMER PRICES AND REDUCED PATIENT ACCESS

These barriers to entry—through the international, national, and state attempts to prevent consumers from receiving life-saving biosimilars drugs—will harm consumers and patients alike. Restricting competition in the market for biologic drugs will necessarily keep the prices for biological drugs out of reach for many consumers. A principle as old as markets themselves demonstrates why: the less competition in a market, the higher prices will be.⁹⁹

Biologic drugs are currently prohibitively expensive for many consumers. The average cost of a biologic drug is 22 times greater than a traditional drug.¹⁰⁰ The average annual cost of a biologic drug is estimated to be \$34,550,¹⁰¹ but annual costs for many drugs exceed \$200,000.¹⁰² Moreover, by requiring large patient coinsurance for specialty drugs, such as biologics, most consumers' prescription drug insurance coverage fails to fully defray

⁹⁸ *Id.*

⁹⁹ Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory*, Oxford University Press (1995), at 383.

¹⁰⁰ A.D. So & S.L. Katz, *Biologics Boondoggle*, N.Y. TIMES (March 7, 2010).

¹⁰¹ E.A. Blackstone & J.P. Fuhr, Jr., *Innovation and Competition: Will Biosimilars Succeed?*, Biotechnology Healthcare (2012).

¹⁰² F. Megerlin, et al., *Biosimilars And The European Experience: Implications For The United States*, 32 Health Affairs 1803 (2013)

these massive costs.¹⁰³ As a result, many consumers cannot afford to obtain these life-saving drugs.

In contrast, increasing competition in the market for biologic drugs will necessarily cause prices to decrease, allowing more patients access to these treatments. There is substantial room for competition to reduce prices as manufacturers of branded biologics currently reap substantial monopoly profits. The average gross margin for these drugs is close to 98 percent; that is, manufacturers retain approximately 98 percent of their revenues *after* they pay the cost of manufacturing the biologics.¹⁰⁴ Current barriers to entry already result in this 98% margin for pharmaceutical monopolists; preserving barriers through either regulatory inaction or state legislation will merely extend original manufacturers' monopoly power, maintaining high prices while reducing biologics' availability to patients.

Both domestic and international evidence demonstrates how increased competition from biosimilars will reduce prices in the market for biologic drugs. Since Hatch-Waxman was enacted in 1984, competition between generics and brand-name pharmaceuticals in traditional drug markets has saved consumers well over \$1 trillion.¹⁰⁵ Consumers saved \$157 billion through generics competition in 2010 alone.¹⁰⁶ As the FTC has concluded, "Overall, generic drug competition has substantially reduced many prescription

¹⁰³ Leigh Purvis, Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition, slides 8-12 (Feb. 4, 2014), available at: http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/purvis.pdf

¹⁰⁴ Aaron Gal, Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition, slide 5 (Feb. 4, 2014), available at: http://www.ftc.gov/system/files/documents/public_events/Follow-On%20Biologics%20Workshop%3A%20Impact%20of%20Recent%20Legislative%20and%20Regulatory%20Naming%20Proposals%20on%20Competition/gal.pdf

¹⁰⁵ U. S. Government Accountability Office, *supra* note 93, at 4.

¹⁰⁶ GPhA, Savings: An Economic Analysis of Generic Drug Usage in the U.S. (September 2011);

drug prices and total prescription drug expenditures, and increased access to therapeutic drugs for more Americans.”¹⁰⁷ Similarly, evidence from Europe reveals that biosimilars have stimulated market competition, reducing prices and increasing access to life-saving drugs. Data indicates that biosimilars in the EU will save consumers between \$15 billion and \$45 billion from 2007 to 2020.¹⁰⁸ These lower prices significantly improve patient access to these important drugs; biosimilar entry has increased the volume of biologic drugs dispensed by approximately 50 percent.¹⁰⁹ Potential American savings dwarf those in Europe: industry estimates suggest that U. S. consumers could save over \$250 billion in the next decade from biosimilar competition for just 11 biologic drugs.¹¹⁰ These cost savings will allow countless more patients access to these life-saving drugs.

Considered fully, impeding biosimilars unjustifiably increases healthcare costs while decreasing availability of powerful drugs. Policies attempting to bar biosimilars from consumers—whether in the guise of a new naming convention, state regulations encouraging physician confusion or patient hesitation, or simply increasing recordkeeping costs—harm patients in favor of helping monopolists. These barriers to entry hurt consumers and upset BPCIA’s thoughtful compromise, and should be rejected.

V. CONCLUSION

Biologics are at American medicine’s forefront, promising treatments and even cures for previously intractable diseases. These drugs represent a vital and growing share of the American pharmaceutical sector. But the cost of

¹⁰⁷ FTC Follow-on Biologics Workshop, *supra* note 1 at 68841.

¹⁰⁸ Ramachandra, *supra* note 63, at slide 13.

¹⁰⁹ *Id.* at slide 12.

¹¹⁰ Miller, *Presentation for FTC Biosimilars Workshop on Naming Proposals and Impact on Competition*, *supra* note 6, at slide 7.

these drugs puts them beyond most patients' reach. Biosimilars appear to be a partial remedy to this complicated problem, offering lower-cost, powerful therapeutic benefits to patients who might respond to tested and known biologics.

The BPCIA, sensibly examining analogous Hatch-Waxman's successes in the market for traditional drugs, imports a familiar and successful compromise between biologics manufacturers' desire for a limited monopoly to incentivize innovation and consumers' need for broad access to biotherapies. The BPCIA gives original biologics' manufacturers a lengthy exclusivity period, while still encouraging potential biosimilar manufacturers to create innovative and similar drugs through a faster approval process and the promise of substitutability for interchangeable biosimilars. This compromise mirrors the successful integration of name-brand and generic traditional pharmaceuticals, drastically reducing costs and increasing drug availability. If properly implemented, BPCIA promises to similarly expand access to biologic medications.

But federal and state regulators have recently attempted, with some limited success, to impede the BPCIA's biosimilars implementation pathway; these obstacles merely hurt consumers – patients – for the benefit of a few patent-holders. Policies such as a different nonproprietary naming system for biosimilars or state regulations that burden the substitution of interchangeable biologics required under BPCIA offer no gains in patient safety or efficacy and muddle a uniform national program. These obstacles instead impose costly barriers to entry to potential biosimilar manufacturers, lengthening original biologics manufacturers' effective monopoly periods, inhibiting innovation in potential biosimilars, increasing drug costs, and reducing access to the most effective available medications. Consumers will benefit tremendously through

increased innovation, lower prices, and broader access to these drugs—if federal regulators and state legislators will allow it.