## Resistance DA

#### Low prices independently cause AMR.

Babu and Suma 6 Babu, Varsha, and C. Suma. "Antibiotic pricing: when cheaper may not be better." Clinical infectious diseases 43.8 (2006): 1085-1086. (Government Primary Health Center)//Elmer

To The Editor—Antibiotics in India have always been cheaper in absolute terms thanks to weak patent laws that have been in effect until recently. Because a direct translation of drug prices from US dollars to Indian rupees (INR) would have rendered most new antibiotics inaccessible to the vast majority of Indians, such patent violations were subtly encouraged. Even despite this, we were caught unaware when pharmaceutical representatives approached our primary care center in rural India, claiming that a 5-day course of levofloxacin would henceforth cost the patient ∼INR 20 (<$0.50). Reluctant to accept such a statement at face value, we consulted the CIMS Updated Prescriber's Handbook [1], a popular index of pharmaceutical drugs available in India. Here, we discovered that a 5-day course of oral levofloxacin (500 mg once daily) cost anywhere from INR 19.5 to INR 475 ($0.50–$10.50), with most companies pricing their brand at <$1 for a full course. The same course in the United States would cost >$100. Intrigued, we did some more research and came up with the following results. The cheapest 5-day courses of first-line antibiotics, such as oral amoxicillin (500 mg thrice daily) or oral erythromycin (500 mg 4 times daily), cost INR 45 ($1) and INR 90 ($2), respectively. On the other hand, the cost of a 3-day course of oral azithromycin (500 mg daily) was one-half that of a course of erythromycin. Despite the obvious price advantage to the patients, we find this trend troubling. **Lower prices** often **lead to wider prescription of a given drug**, especially in resource-limited settings. **If** second-line **antibiotics**—such as levofloxacin and azithromycin—**are made available at lower prices** than first-line antibiotics, **there is a high probability of their overuse and subsequent development of resistance**. In the face of **very low costs of medication**, patients are unlikely to complain of escalating medical expenses. The issue assumes more gravity when one considers the fact that levofloxacin is an important second-line drug for the treatment of tuberculosis [2]. Its widespread use in the community **is likely to lead to emergence of resistance** **among** **mycobacteria** **and** delayed diagnosis of **tuberculosis** [3]—an occurrence that India, with its large population of tuberculosis-affected patients, cannot afford. We believe we have encountered a situation where **low prices of antibiotics are likely to cause more harm than good**. In the post World Trade Organization treaty scenario, governments in resource-limited countries should use their privileges of essential drug control to ensure that the costs of first-line antibiotics remain lower than those of second-line drugs. Such a government-instituted ladder in antibiotic pricing is essential to prevent the misuse of antibiotics in the community and to ensure that antibiotic resistance is kept at low levels.

#### Aggressive patenting key to preventing generics.

**Gupta et al., 10** **(Himanshu Gupta, Suresh Kumar, Saroj Kumar Roy, and R.S. Gaud, \*Faculty of Pharmacy at Jamia Hamdard, \*\*Faculty of Pharmacy at Jamia Hamdard , \*\*\*School of Pharmacy and Technology Management at SVKM's NMIMS University, \*\*\*\*School of Pharmacy and Technology Management at SVKM's NMIMS University, 2010, accessed on 9-4-2021, *Journal of Pharmacy & BioAllied Sciences*, "Patent protection strategies", https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3146086/) \*brackets in original //D.Ying**

A patent is a legal device that grants an inventor market exclusivity over a new invention or medication. Market exclusivity can mean tremendous economic rewards for the patent holder because it provides the inventor with a monopoly over the invention for the 20-year patent term. Obtaining a patent and retaining market exclusivity can be a treacherous process, especially in the arena of pharmaceutical patents. Pharmaceutical companies today are facing increased costs for drug discovery and development and aggressive competition from generic drug companies [Table 1]. As research costs skyrocket, generic drug companies sit poised and are ready to compete as soon as a patent expires [Table 2]. Maximizing patent term for successful products is an effective strategy for fending off generic competition and extending product lifecycle. Patents grant the creators of new inventions exclusive control and possession over these inventions. This allows the inventor to prevent others from commercially using ideas or inventions without the creator's permission during the life of the patent.[1] Scientific, legal, and practical considerations must be carefully weighed to best protect an inventor's rights. Creating and protecting or attacking pharmaceutical patents requires close interaction between pharmaceutical scientists and lawyers. It also requires a good understanding of key concepts of each other's discipline. Therefore, there should be collaboration between scientists and attorneys.[2,3]

#### Generic antibiotics don't treat infections and create superbugs.

**Eban, 19** **(Katherine Eban, investigative journalist, 5-17-2019, accessed on 9-4-2021, *Time*, "How Some Generic Drugs Could Do More Harm Than Good", https://time.com/5590602/generic-drugs-quality-risk/) //D.Ying**

Most people assume that a drug is a drug — that Lipitor, for example, or a generic version, is the same anywhere in the world, so long as it’s made by a reputable drug company that has been inspected and approved by regulators. That, at least, is the logic that has driven the global generic-drug revolution: that drug companies in countries like India and China can make low-cost, high-quality drugs for markets around the world. These companies have been hailed as public-health heroes and global equalizers, by making the same cures available to the wealthy and impoverished. But many of the generic drug companies that Americans and Africans alike depend on, which I spent a decade investigating, hold a dark secret: they routinely adjust their manufacturing standards depending on the country buying their drugs, a practice that could endanger not just those who take the lower-quality medicine but the population at large. These companies send their highest-quality drugs to markets with the most vigilant regulators, such as the U.S. and the European Union. They send their worst drugs — made with lower-quality ingredients and less scrupulous testing — to countries with the weakest review. The U.S. drug supply is not immune to quality crises — over the last ten months, dozens of versions of the generic blood pressure drugs valsartan, losartan and irbesartan have been subject to sweeping recalls. The active ingredients in some, manufactured in China, contained a probable carcinogen once used in the production of liquid rocket fuel. But the patients who suffer most are those in so-called “R.O.W. markets” — the generic-drug industry’s shorthand for “Rest of World.” In swaths of Africa, Southeast Asia and other areas with developing markets, some generic drug companies have made a cold calculation: they can sell their cheapest drugs where they will be least likely to get caught. In Africa, for instance, pharmaceuticals used to come from more developed countries, through donations and small purchases. So when Indian drug reps offering cheap generics started arriving, the initial feeling was positive. But Africa soon became an avenue “to send anything at all,” said Kwabena Ofori-Kwakye, associate professor in the pharmaceutics department at the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana. The poor quality has affected every type of medication, and the adverse impact on health has been “astronomical,” he told me. Multiple doctors I spoke to throughout the continent said they have adjusted their medical treatment in response, sometimes tripling recommended doses to produce a therapeutic effect. Dr. Gordon Donnir, former head of the psychiatry department at the Komfo Anokye teaching hospital in Kumasi, treats middle-class Ghanaians in his private practice and says that almost all the drugs his patients take are substandard, leading him to increase his patients’ doses significantly. While his European colleagues typically prescribe 2.5 milligrams of haloperidol (a generic form of Haldol) several times a day to treat psychosis, he’ll prescribe 10 milligrams, also several times a day, because he knows the 2.5 milligrams “won’t do anything.” Donnir once gave ten times the typical dose of generic Diazepam, an anti-anxiety drug, to a 15-year-old boy, an amount that should have knocked him out. The patient was “still smiling,” Donnir said. Many hospitals also keep a stash of what they call “fancy” drugs — either brand-name drugs or higher-quality generics — to treat patients who should have recovered after a round of treatment but didn’t. Confronted with the ailing boy at the Mulago hospital, Westerberg’s colleagues swapped in the more expensive version of ceftriaxone and added more drugs to the treatment plan. But it was too late. In the second week of his treatment, the boy was declared brain dead. Westerberg’s Ugandan colleagues were not surprised. Their patients frequently died when treated with drugs that should have saved them. And there were not enough “fancy” drugs to go around, making every day an exercise in pharmaceutical triage. It was also hard to keep track of which generics were safe and which were not to be trusted, said one doctor in Western Uganda: “It’s anesthesia today, ceftriaxone tomorrow, amoxicillin the next day.” Westerberg, shaken by his newfound knowledge, flew back to Canada and teamed up with a Canadian respiratory therapist, Jason Nickerson, who’d had similar experiences with bad medicine in Ghana. They decided to test the chemical properties of the generic ceftriaxone that had been implicated in the Ugandan boy’s death. Another of Westerberg’s colleagues brought him a vial from the Mulago hospital pharmacy. The drug had been made by a manufacturer in northern China, which also exported to the U.S. and other developed markets. But when they tested the ceftriaxone at Nickerson’s lab, it contained less than half the active drug ingredient stated on the label. At such low concentration, the drug was basically useless, Nickerson said. He and Westerberg published a case report in the CDC’s Morbidity and Mortality Weekly Report. Although they couldn’t say with certainty that the boy had died due to substandard ceftriaxone, their report offered compelling evidence that he had. Some companies claim that, while their drugs are all high-quality, there may be some variance in how they are produced because regulations differ from market to market. But Patrick H. Lukulay, former vice president of global health impact programs for USP (formerly U.S. Pharmacopeia), one of the world’s top pharmaceutical standard-setting organizations, calls that argument “totally garbage.” For any given drug, he says, “There’s only one standard, and that standard was set by the originator,” meaning the brand-name company that developed the product. It’s not just those in developing markets who should be alarmed. Often, substandard drugs do not contain enough active ingredient to effectively cure sick patients. But they do contain enough to kill off the weakest microbes while leaving the strongest intact. These surviving microbes go on to reproduce, creating a new generation of pathogens capable of resisting even fully potent, properly made medicine. In 2011, during an outbreak of drug-resistant malaria on the Thailand-Cambodia border, USP’s chief of party in Indonesia Christopher Raymond strongly suspected substandard drugs as a culprit. Treating patients with drugs that contain a little bit of active ingredient, as he put it, is like “putting out fire with gasoline.” USP is so concerned about this issue that in 2017 it launched a center called the Quality Institute, which funds research into the link between drug quality and resistance. In late 2018, Boston University biomedical engineering professor Muhammad Zaman studied a commonly used antibiotic called rifampicin that, if not manufactured properly, yields a chemical substance called rifampicin quinone when it degrades. When Zaman subjected bacteria to this substance, it developed mutations that helped it resist rifampicin and other similar drugs. Zaman concluded from his work that substandard drugs are an “independent pillar” in the global menace of drug resistance. The low cost of generic drugs makes them essential to global public health. But if those bargain drugs are of low quality, they do more harm than good. For years, politicians, regulators and aid workers have focused on ensuring access to these drugs. Going forward, they must place equal value on quality, through an exacting program of unannounced inspections, routine testing of drugs already on the market and strict legal enforcement against companies manufacturing subpar medicine. One model is the airline industry, which through international laws and treaties, has established clear global standards for aviation safety. Without something similar for safe and effective drugs, the twin forces of subpar medicine and growing drug resistance will be so destructive that developed countries won’t be able to ignore them. As Elizabeth Pisani, an epidemiologist who has studied drug quality in Indonesia, put it, “The fact is, pathogens know no borders.”

## Nebel Specific to Medcines

#### Interpretation—the aff may not specify medicines

#### Violation – their plan specifies bioterror countermeasures. CX doesn’t check

#### Bare plurals imply a generic “rules reading” in the context of moral statements

Cohen 1 — (Ariel Cohen, Professor of Linguistics @ Ben-Gurion University of the Negev, PhD Computational Linguistics from Carnegie Mellon University, “On the Generic Use of Indefinite Singulars”. Journal of Semantics 18: 183-209, Oxford University Press, 2001, accessed 12-7-20, HKR-AM) \*\*BP = bare plurals

According to the rules and regulations view, on the other hand, generic sentences do not get their truth or falsity as a consequence of properties of individual instances. Instead, generic sentences are evaluated with regard to rules and regulations, which are basic, irreducible entities in the world. Each generic sentence denotes a rule; if the rule is in effect, in some sense (different theories suggest different characterizations of what it means for a rule to be in effect), the sentence is true, otherwise it is false. The rule may be physical, biological, social, moral, etc. The paradigmatic cases for which this view seems readily applicable are sentences that refer to conventions, i.e. man-made, explicit rules and regulations, such as the following example (Carlson 1995: 225):

(40) Bishops move diagonally.

Carlson describes the two approaches as a dichotomy: one has to choose one or the other, but not both. One way to decide which approach to choose is to consider a case where the behavior of observed instances conflicts with an explicit rule. Indeed, Carlson discusses just such a case. He describes a supermarket where bananas sell for $0.49/lb, so that (41a) is true. One day, the manager decides to raise the price to $1.00/lb. Immediately after the price has changed, claims Carlson, sentence (41a) becomes false and sentence (41b) becomes true, although the overwhelming majority of sold bananas were sold for $0.49/lb.

(41) a. Bananas sell for $0.49/lb.

b. Bananas sell for $1.00/lb.

Consequently, Carlson reaches the conclusion that the rules and regulations approach is the correct one, whereas the inductivist view is wrong.

While I share Carlson’s judgements, I do not accept the conclusion he draws from them. Suppose the price has, indeed, changed, but the supermarket employs incompetent cashiers who consistently use the old price by mistake, so that customers are still charged $0.49/lb. In this case, I think there is a reading of (41a) which is true, and a reading of (41b) which is false. These readings are more salient if the sentence is modified by expressions such as actually or in fact:

(42) a. Bananas actually sell for $0.49/lb.

b. In fact, bananas sell for $1.00/lb.

BP generics, I claim, are ambiguous: on one reading they express a descriptive generalization, stating the way things are. Under the other reading, they carry a normative force, and require that things be a certain way. When they are used in the former sense, they should be analysed by some sort of inductivist account; when they are used in the latter sense, they ought to be analysed as referring to a rule or a regulation. The respective logical forms of the two readings are different; whereas the former reading involves, in some form or another, quantification, the latter has a simple predicate-argument structure: the argument is the rule or regulation, and the predicate holds of it just in case the rule is ‘in effect’.

#### Rules readings are always generalized – specific instances are not consistent. Cohen 01

Ariel Cohen (Ben-Gurion University of the Negev), “On the Generic Use of Indefinite Singulars,” Journal of Semantics 18:3, 2001 https://core.ac.uk/download/pdf/188590876.pdf

In general, as, again, already noted by Aristotle, rules and definitions are not relativized to particular individuals; it is rarely the case that a specific individual¶ forms part of the description of a general rule.¶ Even DPs of the form a certain X or a particular X, which usually receive¶ a wide scope interpretation, cannot, in general, receive such an interpretation in the context of a rule or a definition. This holds of definitions in general, not¶ only of definitions with an IS subject. The following examples from the Cobuild¶ dictionary illustrate this point:¶ (74) a. A fanatic is a person who is very enthusiastic about a particular¶ activity, sport, or way of life.¶ b. Something that is record-breaking is better than the previous¶ record for a particular performance or achievement.¶ c. When a computer outputs something it sorts and produces information as the result of a particular program or operation.¶ d. If something sheers in a particular direction, it suddenly changes¶ direction, for example to avoid hitting something.

#### That outweighs—only our evidence speaks to how bare plurals are interpreted in the context of normative statements like the resolution. This means throw out aff counter-interpretations that are purely descriptive

#### The upward entailment and adverb quantification determine whether a bare plural is generic or existential

Leslie and Lerner 16 [Sarah-Jane, PhD Princeton director of the Program in Linguistics, and Adam, Postgraduate Research Associate in the Department of Philosophy at Princeton] "Generic Generalizations (Stanford Encyclopedia of Philosophy)," No Publication, https://plato.stanford.edu/entries/generics/ 4-24-2016 RE

Consider the following pairs of sentences:

(1) a. Tigers are striped.

b. Tigers are on the front lawn.

(2) a. A tiger is striped.

b. A tiger is on the front lawn.

(3) a. The tiger is striped.

b. The tiger is on the front lawn.

The sentence pairs above are prima facie syntactically parallel—both are subject-predicate sentences whose subjects consist of the same common noun coupled with the same, or no, article. However, the interpretation of first sentence of each pair is intuitively quite different from the interpretation of the second sentence in the pair. In the second sentences, we are talking about some particular tigers: a group of tigers in (1b), some individual tiger in (2b), and some unique salient or familiar tiger in (3b)—a beloved pet, perhaps. In the first sentences, however, we are saying something general. There is/are no particular tiger or tigers that we are talking about.

The second sentences of the pairs receive what is called an existential interpretation. The hallmark of the existential interpretation of a sentence containing a bare plural or an indefinite singular is that it may be paraphrased with “some” with little or no change in meaning; hence the terminology “existential reading”. The application of the term “existential interpretation” is perhaps less appropriate when applied to the definite singular, but it is intended there to cover interpretation of the definite singular as referring to a unique contextually salient/familiar particular individual, not to a kind.

There are some tests that are helpful in distinguishing these two readings. For example, the existential interpretation is upward entailing, meaning that the statement will always remain true if we replace the subject term with a more inclusive term. Consider our examples above. In (1b), we can replace “tiger” with “animal” salva veritate, but in (1a) we cannot. If “tigers are on the lawn” is true, then “animals are on the lawn” must be true. However, “tigers are striped” is true, yet “animals are striped” is false. (1a) does not entail that animals are striped, but (1b) entails that animals are on the front lawn (Lawler 1973; Laca 1990; Krifka et al. 1995).

Another test concerns whether we can insert an adverb of quantification with minimal change of meaning (Krifka et al. 1995). For example, inserting “usually” in the sentences in (1a) (e.g., “tigers are usually striped”) produces only a small change in meaning, while inserting “usually” in (1b) dramatically alters the meaning of the sentence (e.g., “tigers are usually on the front lawn”). (For generics such as “mosquitoes carry malaria”, the adverb “sometimes” is perhaps better used than “usually” to mark off the generic reading.)

#### This applies to the res – 1] Upward entailment test – “The WTO ought to reduce intellectual property protections for medicines” doesn’t entail that “The WTO ought to reduce intellectual property protections for health treatments” because there are orthopedics, etc that perhaps shouldn’t shouldn’t do the plan 2] "nations generally ought to reduce IPP for medicines" doesn't substantially change the meaning

#### They have to win counter-definitions to both our Cohen and Leslie evidence—if we win a violation for either it proves they are outside the bounds of the topic

#### Violation—they specified []—

#### Vote neg:

#### 1] Precision – if we win definitions the aff is not topical. The resolution is the only predictable stasis point for dividing ground—any deviation justifies the aff arbitrarily jettisoning words in the resolution at their whim which decks negative ground and preparation because the aff is no longer bounded by the resolution.

**2] Limits:**

**A] Quantitative –– unlimited topics incentivize obscure affs that negs won’t have prep on – limits are key to reciprocal prep burden**

**B] Qualitative – they take away generic turns like WTO bad and functionally jettison "WTO" from the topic, which shifts away from the core topic lit of the WTO as an institution – also means there is no universal DA to spec affs**

**3] TVA solves – read the aff as advantage – most authors advocate for a change in WTO policy or TRIPS**

**4] No PICs offense – potential neg abuse doesn’t justify aff abuse because that would permit infinite 1AC abuse**

#### Topicality is a voting issue that should be evaluated through competing interpretations – it tells the negative what they do and do not have to prepare for—there’s no way for the negative to know what constitutes a “reasonable interpretation” when we do prep – reasonability is arbitrary and causes a race to the bottom, proliferating abuse

#### No RVIs—it’s your burden to be topical. NIBs exist and are fine – you need to be topical, follow speech times, etc. Time skew intrinsic to ld Word economy and speed drills solve 1AR timeskew is good-forces you to make strategic decisions. Turn – chills theory and legit shells

## Innovation DA

#### IP protection is critical to innovation – it incentivizes risk-taking by boosting investments

Ezell and Cory 19 [(Stephen, vice president, global innovation policy, at the Information Technology and Innovation Foundation, B.S. from the School of Foreign Service at Georgetown University, and Nigel, associate director covering trade policy at the Information Technology and Innovation Foundation, former researcher in the Southeast Asia Program at the Center for Strategic and International Studies, MA in public policy from Georgetown University) “The Way Forward for Intellectual Property Internationally,” Information Technology and Innovation Foundation, 4/25/2019] TDI

IPR reforms also introduce strong incentives for domestic innovation. Sherwood, using case studies from 18 developing countries, concluded that poor provision of intellectual property rights deters local innovation and risk-taking.47 In contrast, IPR reform has been associated with increased innovative activity, as measured by domestic patent filings, albeit with some variation across countries and sectors.48 For example, Ryan, in a study of biomedical innovations and patent reform in Brazil, found that patents provided incentives for innovation investments and facilitated the functioning of technology markets.49 Park and Lippoldt also observed that the provision of adequate protection for IPRs can help to stimulate local innovation, in some cases building on the transfer of technologies that provide inputs and spillovers.50 In other words, local innovators are introduced to technologies first through the technology transfer that takes place in an environment wherein protection of IPRs is assured; then, they may build on those ideas to create an evolved product or develop alternate approaches (i.e., to innovate). Related research finds that trade in technology—through channels including imports, foreign direct investment, and technology licensing—improves the quality of developing-country innovation by increasing the pool of ideas and efficiency of innovation by encouraging the division of innovative labor and specialization.51 However, Maskus notes that without protection from potential abuse of their newly developed technologies, foreign enterprises may be less willing to reveal technical information associated with their innovations.52 The protection of patents and trade secrets provides necessary legal assurances for firms wishing to reveal proprietary characteristics of technologies to subsidiaries and licensees via contracts.

The relationship between IPR rights and innovation can also be seen in studies of how the introduction of stronger IPR laws, with regard to patents, copyrights, and trademarks, affect R&D activity in an economy. Studies by Varsakelis and by Kanwar and Evenson found that R&D to GDP ratios are positively related to the strength of patent rights, and are conditional on other factors.53 Cavazos Cepeda et al. found a positive influence of IPRs on the level of R&D in an economy, with each 1 percent increase in the level of protection of IPRs in an economy (as measured by improvements to a country’s score in the Patent Rights Index) equating to, on average, a 0.7 percent increase in the domestic level of R&D.54 Likewise, a 1 percent increase in copyright protection was associated with a 3.3 percent increase in domestic R&D. Similarly, when trademark protection increased by 1 percent, there was an associated R&D increase of 1.4 percent. As the authors concluded, “Increases in the protection of the IPRs carried economic benefits in the form of higher inflows of FDI, and increases in the levels of both domestically conducted R&D and service imports as measured by licensing fees.”55 As Jackson summarized, regarding the relationship between IPR reform and both innovation and R&D, and FDI, “In addition to spurring domestic innovation, strong intellectual property rights can increase incentives for foreign direct investment which in turn also leads to economic growth.”56

#### Medical innovations key to future

Remes et al 20 (<https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/ten-innovations-that-can-improve-global-health>, [McKinsey Global Institute](https://www.mckinsey.com/mgi/overview) Ten innovations that can improve global health July 15, 2020 | Article, [Jaana Remes](https://www.mckinsey.com/our-people/jaana-remes) is a partner of the McKinsey Global Institute, where [Jonathan Woetzel](https://www.mckinsey.com/our-people/jonathan-woetzel) is a director and [Sven Smit](https://www.mckinsey.com/our-people/sven-smit) is co-chair and a director. [Katherine Linzer](https://www.mckinsey.com/our-people/katherine-linzer) is a partner in McKinsey’s Chicago office. [Shubham Singhal](https://www.mckinsey.com/our-people/shubham-singhal) is a senior partner in the Detroit office. [Martin Dewhurst](https://www.mckinsey.com/our-people/martin-dewhurst) and [Penelope Dash](https://www.mckinsey.com/our-people/penny-dash) are senior partners in the London office, where [Kristin-Anne Rutter](https://www.mckinsey.com/our-people/kristin-anne-rutter) is a partner. [Matthias Evers](https://www.mckinsey.com/our-people/matthias-evers) is a senior partner in the Hamburg office. Matt Wilson is a senior partner in the New York office. Aditi Ramdorai is a consultant in the Berlin office.//lex AL)

By 2040, new technologies could reduce the total burden of disease by 6 to 10 percent. Today’s interventions are the innovations of the past. Without them, healthy lifespans would not be as long as they are. Innovation continues to be critical to tackle diseases without known cures and to help increase uptake and adherence to interventions that work. As part of the report [Prioritizing health: A prescription for prosperity](https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/prioritizing-health-a-prescription-for-prosperity), the McKinsey Global Institute identified ten promising innovations, now in progress, that could have a material impact on health by 2040. Focusing on technologies that address the greatest unmet needs, we determined the impact of these innovations by interviewing experts and evaluating the current biological understanding of each disease, as well as the effort and excitement surrounding the new techniques as measured by funding. Identifying and sizing the potential scope of innovations now in the pipeline is inherently difficult, but we estimate that these technologies could reduce the burden of disease by a further 6 to 10 percent, assuming aspirational yet realistic adoption rates by 2040—on top of the 40 percent from known interventions. Some of these innovations could not only fully cure a number of diseases but also significantly extend healthy lifespans by tackling the underlying biology of aging and therefore postponing the onset of several age-related conditions. These possibilities make a sharp contrast with the innovations of the past 30 years, many of which reduced the symptoms or delayed the progression of diseases but rarely prevented or cured them. In addition, the innovations we have identified here are more digitally enabled than those of the past; for example, [artificial intelligence](https://www.mckinsey.com/featured-insights/artificial-intelligence/applying-artificial-intelligence-for-social-good) (AI) systems make advances in omics and molecular technologies, such as gene editing, faster and more accurate. How can we improve health globally over the next two decades? Omics and molecular technologies These technologies—key components of the [Bio Revolution](https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/the-bio-revolution-innovations-transforming-economies-societies-and-our-lives)—are therapeutics or diagnostics that harness the various types of molecules within cells (such as DNA, RNA, and proteins). Some omics and molecular technologies (for instance, genome editing) engineer these intracellular components or analyze them (such as proteomics and transcriptomics). Example: CRISPR and curbing malaria The current treatment includes antimalarial prophylactics and nonpharmaceutical measures (such as indoor residual spraying and insecticide-treated bed netting) and antimalarial medications. Genetically modifying malaria-carrying mosquitos by using gene-editing technologies, such as [CRISPR](https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/programming-life-an-interview-with-jennifer-doudna), may significantly reduce disease levels by propagating the modified genes across the mosquito population. Next-generation pharmaceuticals Newer iterations of traditional chemical compounds (small molecules) and classes of molecules could be used as medicinal drugs, possibly with multiple and concurrent target structures. Example: Senolytics and the regulation of cellular aging Cellular aging (senescence) is considered an unavoidable physiological process that is not a viable field for drug development. But senolytics (a class of small molecules) may decrease or eliminate aging cells that can cause cellular inflammation, dysfunction, and tissue damage. This has implications for delaying age-related diseases. Cellular therapy and regenerative medicine Cellular therapy is a biological product, derived from living cells, used for therapeutic purposes to replace or repair damaged cells or tissues. Regenerative medicine has the power to restore diseased or injured tissues and organs, potentially decreasing reliance on transplantation. Example: CAR T-cell therapy and the treatment of solid tumors Today, treatment is based primarily on unspecific radiotherapy and chemotherapeutic agents, plus surgical interventions. In many cases, these approaches are ineffective. [CAR T-cell therapy](https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/driving-the-next-wave-of-innovation-in-car-t-cell-therapies) reprograms a patient’s T-cells (immune-system cells) to target tumor cells. When infused into the patient, the T-cells bind to an antigen on tumor cells, attacking and destroying them. Innovative vaccines Vaccines stimulate the immune system to respond to and destroy a bacterium or virus. Historically, they have eradicated or controlled the spread of infectious diseases around the world. In the future, vaccines may target noncommunicable diseases, such as cancer. Example: The AT04A vaccine and the lowering of cholesterol At present, patients take statins (lipid-lowering medicines) to control or lower high cholesterol levels in the blood. Patients with cardiovascular disease must take these daily, but adherence is often poor. AT04A is a vaccine made up of molecules that bind to blood cholesterol and degrade it. The vaccine would be required only once a year, potentially improving outcomes. Advanced surgical procedures These include treating injuries or disorders of the body with minimally invasive incisions or small instruments (including robotic surgery), as well as any technique that improves surgery-related processes outside the operating room. Example: Suspended animation for severe-trauma patients After patients suffer acute trauma (such as an accident) it may take time to get them to hospitals for surgery. That significantly decreases their chances of survival. Suspended animation for severe-trauma patients would involve, for example, injecting a cold saline solution into them on first contact to cool the body to 10–15ºC and stop its normal functions. This would give the surgeon time to operate before resuscitating the patient. Connected and cognitive devices Portable, wearable, ingestible, or implantable devices can monitor health and fitness information, engage patients and their communities of caregivers, and deliver self-regulated therapies autonomously. Example: E-tattoos for heart diagnostics Today’s technology relies on a Holter monitor (a battery-operated device) to monitor the heart continuously. The monitor’s batteries last for no more than 48 hours, and the procedure can cause immense discomfort for patients. Ultrathin e-tattoos can monitor hearts for longer periods and make patients more comfortable while providing a wider range of data to enhance clinical decision making. Electroceuticals Small therapeutic agents can target the neural circuits of organs. Such therapies map neural circuitry with neural impulses (administered by an implantable device) delivered to these specific targets. Example: Implantable microchips to mitigate chronic pain Today, managing chronic pain involves nonindividualized treatment with multiple drugs (including opioids) and relatively ineffective late-stage surgery. But one technique now under development—stimulating the spinal cord—can improve the patient’s quality of life by increasing mobility, enhancing sleep, and reducing the need for pain medication. Robotics and prosthetics A wide variety of programmable, self-controlled devices consisting of electronic, electrical, or mechanical units and of artificial substitutes or replacements for body parts are now under development. Example: Next-generation exoskeletons and mobility support Today’s mechanical mobility aids do not fully restore movement in the elderly, so they do not prevent a loss of independence and the risk of accidental injuries. Next-generation exoskeletons, powered by small motors that mimic human muscles, could allow older patients to recover their autonomy while reducing the likelihood of accidents and falls. Digital therapeutics These preventive and therapeutic evidence-based interventions, for a broad spectrum of physical, mental, and behavioral conditions, are controlled by software. Example: An AI-powered app to change behavior Apart from brief consultations, doctors now have few tools to help patients with chronic conditions adopt healthy lifestyles. In the future, digital therapeutics, powered by AI, patient data, and behavioral science, can use gamification and other forms of engagement to help patients adopt and sustain healthy behaviors. Tech-enabled care delivery These ways to deliver care incorporate new and larger data sets, use new analytics capabilities to generate insights, and help providers apply them to patients to improve the outcome, experience, and efficiency of care. Example: Multichannel care delivery Inefficient data management and poor communication among patients, payers, and providers hinder the continuity of care and therefore make treatment significantly less efficient. Innovative multichannel care delivery using online platforms may facilitate data sharing and make treatment more efficient. This is particularly relevant for chronic diseases, such as diabetes, because the glucose levels and other vital signs of patients are continuously shared with clinicians. Innovation—in the form of new medicines, procedures, medical devices, technologies, and delivery models—will clearly be critical to go on improving the health of the world’s population. Realizing these innovations, however, will require continual R&D investments by pharmaceutical companies, medical and other technology companies, and academia.

## CP

#### Text: The member nations of the World Trade Organization ought to eliminate restrictions on the production, import, and export of bioterror countermeasures for the duration of a bioterror attack and it’s ensuing effects, and take measures to prevent patent evergreening

#### It’s competitive – reduce is permanent

Reynolds 59. Judge (In the Matter of Doris A. Montesani, Petitioner, v. Arthur Levitt, as Comptroller of the State of New York, et al., Respondents [NO NUMBER IN ORIGINAL] Supreme Court of New York, Appellate Division, Third Department 9 A.D.2d 51; 189 N.Y.S.2d 695; 1959 N.Y. App. Div. LEXIS 7391 August 13, 1959)

Section 83's counterpart with regard to nondisability pensioners, section 84, prescribes a reduction only if the pensioner should again take a public job. The disability pensioner is penalized if he takes any type of employment. The reason for the difference, of course, is that in one case the only reason pension benefits are available is because the pensioner is considered incapable of gainful employment, while in the other he has fully completed his "tour" and is considered as having earned his reward with almost no strings attached. It would be manifestly unfair to the ordinary retiree to accord the disability retiree the benefits of the System to which they both belong when the latter is otherwise capable of earning a living and had not fulfilled his service obligation. If it were to be held that withholdings under section 83 were payable whenever the pensioner died or stopped his other employment the whole purpose of the provision would be defeated, i.e., the System might just as well have continued payments during the other employment since it must later pay it anyway. The section says "reduced", does not say that monthly payments shall be temporarily suspended; it says that the pension itself shall be reduced. The plain dictionary meaning of the word is to diminish, lower or degrade. The word "reduce" seems adequately to indicate permanency. Aside from the practical aspect indicating permanency other indicia point to the same conclusion. From 1924 (L. 1924, ch. 619) to 1947 (L. 1947, ch. 841) a provision appeared in the Civil Service Law which read substantially as follows: "If the pension of a beneficiary is reduced for any reason, the amount of such reduction shall be transferred from the pension reserve fund to the pension accumulation fund during that period that such reduction is in effect." (See L. 1924, ch. 619, § 2 [Civil Service Law, § 58, subd. 4]; L. 1947, ch. 841 [Civil Service Law, § 66, subd. e].) This provision reappears in the 1955 Retirement and Social Security Law as subdivision f of section 24. This provision is useful for interpretative purposes. Since it prescribes that moneys not paid because of reduction should be transferred back to the accumulation fund the conclusion is inescapable that such reductions were meant to be permanent. If temporary suspensions were intended this bookkeeping device would result in a false picture of the funds, i.e., the reserve fund would be depleted when it would contain adequate funds to meet eventual payments 57\*57 to present pensioners. Likewise, the accumulation fund would be improperly inflated with respect to the present pensioners. Section 64 of the Retirement and Social Security Law (§ 85 under the 1947 act) provides that any disability pension must be reduced by the amount payable pursuant to the Workmen's Compensation Law if applicable. In Matter of Dalton v. City of Yonkers (262 App. Div. 321, 323 [1941]) this court interpreted "reduce" to mean "offset" in holding that under then section 67 (relating to Workmen's Compensation benefits as do its successors sections 85 and 64), pensions were to be offset by compensation benefits. This is merely another indication that "reduce" means a diminishing of the pension pursuant to a given formula rather than a mere recoverable, temporary suspension during the time other benefits or salaries are being received by the pensioner. (Also, cf., Retirement and Social Security Law, § 101 [§ 84 under the 1947 act].)

#### Solvs Lindley 21 because it prevents blocking competitors + spamming patents for hundreds of years

#### Solved Mullowny and Harris 13 because it eliminates the delay

## Case

#### Son is BS – no warrant it just talks about association between patent systems and cl not about innovation

### AT Bioweapons

#### No bioweapon threat – too risky & behavior uncertainty

Morrow 17 (John, PhD in genetics, University of Washington, authored over 60 peer-reviewed publications reporting original research in genetics, immunology, developmental biology, evolution, cancer biology and animal science, “Bioweapons: An Existential Threat?”, Legend Web Works LLC, March 6, <http://www.newportbiotech.com/pages/blog/entry/48/>, [CORNELL DEBATE](note: //// indicates par.breaks)[AT WINTER 18])

Today, large scale production, storage, protection and field testing of weaponized bacteria or viruses are beyond the abilities of a small group or a terrorist cell. However, a number of countries in the world have demonstrated the ability – and the will – to unleash horrific attacks upon their perceived enemies. They undoubtedly are following the current advances in gene manipulation technology with great interest. For now though, such advances in gene manipulation, while making the process faster, simpler and more accessible, are still quite a challenge to carry out. //// CRISPR/Cas9 is the best of a new generation of tools for manipulating genes, and is being used to develop cures for diseases, improve agricultural products and engineer organisms that can carry out a variety of industrial processes. It is undergoing constant improvement, making it faster and easier to employ. //// Fortunately, there are many obstacles to the execution of a credible biological warfare program, perhaps the greatest is the uncertainty of the behavior of these agents once released into the environment. In the commercial realm of engineered agricultural products (herbicides, pesticides, fertilizers), all manner of living and inert substances undergo arduous evaluation (usually for years) before they can be released to the environment; yet these new inventions still have phenomenal failure rates. //// Given that engineered bacteria and viruses are lethal materials, their handling and use in battle would be extremely risky, and loading them with a burden of genetic modifications could affect their behavior outside of the laboratory in unpredictable ways. In order to be confident that the bioweapon would have its desired effect, it would be essential to have field data, which could require years of testing. Would a terrorist be content to keep deploying flawed product until hitting the motherlode?

#### Terrorists wouldn’t be able ot get ti from countries because they literally are illegal countries would keep it hidden

### AT stopping dev

#### Companies can just license them

#### Companies would prefer licensing over IP stuff