**1NC - Trad**

### Framework

**I negate the resolution, Resolved: The Member Nations of the World Trade Organization ought to reduce intellectual property protections for medicines.**

**Definitions:**

#### Intellectual Property Rights:

WTO 21’

"intellectual property (TRIPS) - what are intellectual property rights?." None, None. <https://www.wto.org/english/tratop_e/trips_e/intel1_e.htm> Accessed on August 08, 2021. [No initials set.]  
"Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time. Intellectual property rights are customarily divided into two main areas: (i) Copyright and rights related to copyright.back to top The rights of authors of literary and artistic works (such as books and other writings, musical compositions, paintings, sculpture, computer programs and films) are protected by copyright, for a minimum period of 50 years after the death of the author. Also protected through copyright and related (sometimes referred to as “neighbouring”) rights are the rights of performers (e.g. actors, singers and musicians), producers of phonograms (sound recordings) and broadcasting organizations. The main social purpose of protection of copyright and related rights is to encourage and reward creative work. (ii) Industrial property.back to top Industrial property can usefully be divided into two main areas: One area can be characterized as the protection of distinctive signs, in particular trademarks (which distinguish the goods or services of one undertaking from those of other undertakings) and geographical indications (which identify a good as originating in a place where a given characteristic of the good is essentially attributable to its geographical origin). The protection of such distinctive signs aims to stimulate and ensure fair competition and to protect consumers, by enabling them to make informed choices between various goods and services. The protection may last indefinitely, provided the sign in question continues to be distinctive. Other types of industrial property are protected primarily to stimulate innovation, design and the creation of technology. In this category fall inventions (protected by patents), industrial designs and trade secrets. The social purpose is to provide protection for the results of investment in the development of new technology, thus giving the incentive and means to finance research and development activities. A functioning intellectual property regime should also facilitate the transfer of technology in the form of foreign direct investment, joint ventures and licensing. The protection is usually given for a finite term (typically 20 years in the case of patents). While the basic social objectives of intellectual property protection are as outlined above, it should also be noted that the exclusive rights given are generally subject to a number of limitations and exceptions, aimed at fine-tuning the balance that has to be found between the legitimate interests of right holders and of users."

**Observations:**

According to Cambridge dictionary, reduce is defined as

Cambridge 21’ <https://dictionary.cambridge.org/us/dictionary/english/reduce>.

to become or **to make** something become **smaller in** size, **amount**, degree, importance, etc.: Do nuclear weapons really reduce the risk of war? The plane reduced speed as it approached the airport. My weight reduces when I stop eating sugar. We bought a TV that was reduced from $600 to $400 in their spring sale. I reduced the problem to a few simple questions.

* **This means that Intellectual Property Protections are only being reduced, not removed entirely, reject affirmative arguments based on the entire removal of IPR. This also means that they cannot specify specific IP protections that would be beneficial if removed, because the resolution is a general principle.**

**Framework**

1. **The value is justice, defined as giving each their due.**

#### Finding a fair social structure is most important since the organization of society has a profound impact on an individual’s life path; the primary concern of justice must be to structure institutions such that arbitrary matters do not shape the entirety of someone’s life:

Rawls 85

Rawls 85: John Rawls Harvard Philosophy Professor Justice as Fairness: Political not Metaphysical, Philosophy and Public Affairs, Vol. 14, No. 3. 1985. 176-77.

Many different kinds of things are said to be just [:]and unjust: not only laws, institutions, and social systems, but also particular actions of many kinds, including decisions, judgments, and imputations. We also call the attitudes and dispositions of persons, and persons themselves, just and unjust. Our topic, however, is that of social justice. For us the primary subject of justice is the basic structure of society, or more exactly, the way in which the major social institutions distribute fundamental rights and duties and determine the division of advantages from social cooperation. By major institutions I understand the political constitution and the principal economic and social arrangements. Thus the legal protection of freedom of thought and liberty of conscience, competitive markets, private property in the means of production, and the monogamous family are examples of major social institutions. Taken together as one scheme, the major institutions define men’s rights and duties and influence their life prospects, what they can expect to be and how well they can hope to do. **The basic structure is the primary subject of justice because its effects are so profound and present from the start.** The intuitive notion here is that **this structure contains various** social positions and that men **[people] born into different positions [who] have different expectations of life determined, in part, by the political system as well as by economic and social circumstances.** In this way the **institutions of society favor certain starting places** over others. **These** are especially **deep inequalities.** Not only are they pervasive, but they **affect men’s initial chances in life; yet they cannot** possibly **be justified by** an appeal to the notions of merit or **desert. It is these inequalities,** presumably inevitable in the basic structure of any society, **to which the principles of social justice must** in the **first** instance **apply. These principles,** then, **regulate the choice of** apolitical constitution and **the** main elements of the economic and **social system.** The justice of a social scheme depends essentially on how fundamental rights and duties are assigned and on the economic opportunities and social conditions in the various sectors of society.

1. **The value criterion is minimizing death.**

**Prefer**

#### [1] Death outweighs—

#### [a] people can’t and won’t act if they fear for their deaths— this means life is a prerequisite to all other arguments

#### [b] Death is the worst form of evil since it destroys the subject itself.

Paterson 3 – Department of Philosophy, Providence College, Rhode Island (Craig, “A Life Not Worth Living?”, Studies in Christian Ethics.

Contrary to those accounts, I would argue that it is death per se that is really the objective evil for us, not because it deprives us of a prospective future of overall good judged better than the alter- native of non-being. It cannot be about harm to a former person who has ceased to exist, for no person actually suffers from the sub-sequent non-participation. Rather, death in itself is an evil to us because it ontologically destroys the current existent subject — it is the ultimate in metaphysical lightening strikes.80 The evil of death is truly an ontological evil borne by the person who already exists, independently of calculations about better or worse possible lives. Such an evil need not be consciously experienced in order to be an evil for the kind of being a human person is. Death is an evil because of the change in kind it brings about, a change that is destructive of the type of entity that we essentially are. Anything, whether caused naturally or caused by human intervention (intentional or unintentional) that drastically interferes in the process of maintaining the person in existence is an objective evil for the person. What is crucially at stake here, and is dialectically supportive of the self-evidency of the basic good of human life, is that death is a radical interference with the current life process of the kind of being that we are. In consequence, death itself can be credibly thought of as a ‘primitive evil’ for all persons, regardless of the extent to which they are currently or prospectively capable of participating in a full array of the goods of life.81  In conclusion, concerning willed human actions, it is justifiable to state that any intentional rejection of human life itself cannot therefore be warranted since it is an expression of an ultimate disvalue for the subject, namely, the destruction of the present person; a radical ontological good that we cannot begin to weigh objectively against the travails of life in a rational manner. To deal with the sources of disvalue (pain, suffering, etc.) we should not seek to irrationally destroy the person, the very source and condition of all human possibility.82

**Case**

#### Contention 1: Innovation

#### IP protections motivate innovators to take risks – that creates innovation and guarantees long-term development due to continuous incentives.

Bacchus '20

(James Bacchus; James Bacchus is a member of the Herbert A. Stiefel Center for Trade Policy Studies, the Distinguished University Professor of Global Affairs and director of the Center for Global Economic and Environmental Opportunity at the University of Central Florida. He was a founding judge and was twice the chairman—the chief judge—of the highest court of world trade, the Appellate Body of the World Trade Organization in Geneva, Switzerland.; 12-16-2020; "An Unnecessary Proposal: A WTO Waiver of Intellectual Property Rights for COVID-19 Vaccines"; https://www.cato.org/free-trade-bulletin/unnecessary-proposal-wto-waiver-intellectual-property-rights-covid-19-vaccines#, Cato Institute, accessed 7-21-2021; JPark)

With the belief that medicines should be “public goods,” there is literally no support in some quarters for the application of the WTO TRIPS Agreement to IP rights in medicines. Any protection of the IP rights in such goods is viewed as a violation of human rights and of the overall public interest. This view, though, does not reflect the practical reality of a world in which many medicines would simply **not exist** if it were not for the existence of IP rights and the protections they are afforded. Technically, IP rights are exceptions to free trade. A long‐​standing general discussion in the WTO has been about when these exceptions to free trade should be allowed and how far they should be extended. The continuing debate over IP rights in medicines is only the most emotional part of this overall conversation. Because developed countries have, historically, been the principal sources of IP rights, this lengthy WTO dispute has largely been between developed countries trying to uphold IP rights and developing countries trying to limit them. The debate over the discovery and the distribution of vaccines for COVID-19 is but the latest global occasion for this ongoing discussion. The primary justification for granting and protecting IP rights is that they are incentives for innovation, which is the main source for long‐​term economic growth and enhancements in the quality of human life. IP rights **spark innovation** by “enabling innovators to capture enough of the benefits of their own innovative activity to justify taking considerable risks.”18 The knowledge from innovations inspired by IP rights spills over to inspire other innovations. The protection of IP rights promotes the diffusion, domestically and internationally, of innovative technologies and new know‐​how. Historically, the principal factors of production have been land, labor, and capital. In the new pandemic world, perhaps an even more vital factor is the creation of knowledge, which adds enormously to “the wealth of nations.” Digital and other economic growth in the 21st century is increasingly ideas‐​based and knowledge intensive. Without IP rights as incentives, there would be less new knowledge and thus less innovation. In the short term, undermining private IP rights may accelerate distribution of goods and services—where the novel knowledge that went into making them **already exists**. But in the **long term**, undermining private IP rights would **eliminate** the **incentives** that inspire innovation, thus preventing the discovery and development of knowledge for new goods and services that **the world needs**. This widespread dismissal of the link between private IP rights and innovation is perhaps best reflected in the fact that although the United Nations Sustainable Development Goals for 2030 aspire to “foster innovation,” they make no mention of IP rights.19

#### Pharmaceutical innovation is key to protecting against future pandemics, bioterrorism, and antibiotic resistance.

Marjanovic and Fejiao ‘20

Marjanovic, Sonja, and Carolina Feijao. Sonja Marjanovic, Ph.D., Judge Business School, University of Cambridge. Carolina Feijao, Ph.D. in biochemistry, University of Cambridge; M.Sc. in quantitive biology, Imperial College London; B.Sc. in biology, University of Lisbon. "Pharmaceutical Innovation for Infectious Disease Management: From Troubleshooting to Sustainable Models of Engagement." (2020). [Quality Control]

As key actors in the healthcare innovation landscape, pharmaceutical and life sci-ences companies have been called on to develop medicines, vaccines and diagnostics for pressing public health challenges. The COVID-19 crisis is one such challenge, but there are many others. For example, MERS, SARS, Ebola, Zika and avian and swine flu are also infectious diseases that represent public health threats. Infectious agents such as anthrax, smallpox and tularemia could present threats in a **bioterrorism con-text**.1 The general threat to public health that is posed by **antimicrobial resistance** is also **well-recognised** as an area **in need of pharmaceutical innovation**. Innovating in response to these challenges does not always align well with pharmaceutical industry commercial models, shareholder expectations and compe-tition within the industry. However, the expertise, networks and infrastructure that industry has within its reach, as well as public expectations and the moral imperative, make pharmaceutical companies and the wider life sciences sector an **indispensable** partner in the search for solutions that save lives. This perspective argues for the need to establish more sustainable and scalable ways of incentivising pharmaceu-tical innovation in response to infectious disease threats to public health. It considers both past and current examples of efforts to mobilise pharmaceutical innovation in high commercial risk areas, including in the context of current efforts to respond to the COVID-19 pandemic. In global pandemic crises like COVID-19, the urgency and scale of the crisis – as well as the spotlight placed on pharmaceutical companies – mean that contributing to the search for effective medicines, vaccines or diagnostics is **essential** for socially responsible companies in the sec-tor.2 It is therefore unsurprising that we are seeing indus-try-wide efforts unfold at unprecedented scale and pace. Whereas there is always scope for more activity, industry is currently contributing in a variety of ways. Examples include pharmaceutical companies donating existing com-pounds to assess their utility in the fight against COVID-19; screening existing compound libraries in-house or with partners to see if they can be repurposed; accelerating tri-als for potentially effective medicine or vaccine candidates; and in some cases rapidly accelerating in-house research and development to discover new treatments or vaccine agents and develop diagnostics tests.3,4 Pharmaceutical companies are collaborating with each other in some of these efforts and participating in global R&D partnerships (such as the Innovative Medicines Initiative effort to accel-erate the development of potential therapies for COVID-19) and supporting national efforts to expand diagnosis and testing capacity and ensure affordable and ready access to potential solutions.3,5,6 The primary purpose of such innovation is to **benefit patients** and wider **population health**. Although there are also reputational benefits from involvement that can be realised across the industry, there are likely to be rela-tively few companies that are ‘commercial’ winners. Those who might gain substantial revenues will be under pres-sure not to be seen as profiting from the pandemic. In the United Kingdom for example, GSK has stated that it does not expect to profit from its COVID-19 related activities and that any gains will be invested in supporting research and long-term pandemic preparedness, as well as in developing products that would be affordable in the world’s poorest countries.7 Similarly, in the United States AbbVie has waived intellectual property rights for an existing com-bination product that is being tested for therapeutic poten-tial against COVID-19, which would support affordability and allow for a supply of generics.8,9 Johnson & Johnson has stated that its potential vaccine – which is expected to begin trials – will be available on a not-for-profit basis during the pandemic.10 Pharma is mobilising substantial efforts to rise to the COVID-19 challenge at hand. However, we need to consider how pharmaceutical innovation for responding to emerging infectious diseases can best be enabled beyond the current crisis. Many public health threats (including those associated with other **infectious diseases**, **bioterror-ism** agents **and antimicrobial resistance**) are **urgently in need of pharmaceutical innovation**, **even if their impacts are not as visible** to society **as COVID**-19 is in the imme-diate term. The pharmaceutical industry has responded to previous public health emergencies associated with infec-tious disease in recent times – for example those associated with Ebola and Zika outbreaks.11 However, it has done so to a lesser scale than for COVID-19 and with contribu-tions from fewer companies. Similarly, levels of activity in response to the threat of antimicrobial resistance are still **low**.12 There are important policy questions as to whether – and how – industry could engage with such public health threats to an even greater extent under improved innova-tion conditions.

#### Bioterrorism leads to significant deaths – modern technologies can be used to isolate deadly pathogens and target vast populations.

Kellman ‘08

(Barry, Professor of Law, Director, International Weapons Control Center, International Human Rights Law Institute @ DePaul U., Futurist, May 2008, “Bioviolence: A Growing Threat,” http://www.britannica.com/bps/additionalcontent/18/31535413/Bioviolence-A-Growing-Threat)

According to the National Academies of Science, "The threat spectrum is broad and evolving – in some ways predictably, in other ways unexpectedly. In the future, genetic engineering and other technologies may lead to the development of pathogenic organisms with unique, unpredictable characteristics." For as far into the future as we can possibly see, every passing day it be- comes slightly easier to commit a vio lent catastrophe than it was the day before. Indeed, the rapid pace of advancing science helps explain why policies to prevent such a catastrophe are so complicated. Bioviolence Jihad? Some experts argue that terrorists and fanatics are not interested in bio- violence and that the danger might therefore be overblown. Since there have been no catastrophic bioviolence attacks, these experts argue, terrorists lack the intention to make bioweapons. Hopefully, they are correct. But an enormous amount of evidence suggests they are wrong**. From the dawn of biology's ability to isolate pathogens, people have pursued hostile applications** of biological agents. It is perilous to ignore this extensive history by presuming that today's villains are not fervent about weaponizing disease. Not a single state admits to having a bioweapons program, but U.S. intelligence officials assert that as many as **10 states** might have active programs, including North Korea, Iran, and Syria. Moreover, many **terrorist organizations have expressed interest** in acquiring biological weapons. Whatever weight the taboo against inflicting disease might have for nation-states, it is obviously irrelevant to terrorists, criminals, and lunatics. Deterrence by threat of retaliation is essentially meaningless for groups with suicidal inclinations who are likely to intermingle with innocent civilians. Al-Qaeda and affiliated Islamic fundamentalist organizations have abling them to spread in regions where there is no natural immunity. The **polio** virus **has been synthesized from scratch**; its creators called it an "animate chemical." Soon, it may be resynthesized into a form that is contagious even **among vaccinated populations**. Recreation of long-eradicated livestock diseases could **ravage herds** severely lacking in genetic diversity, **damage food supplies, and cause devastating economic losses**. Perhaps the greatest biothreat is the manipulation of the flu and other highly contagious viruses, such as Ebola. Today, scientists can change parts of a virus's genetic material so that it can perform specific functions. The genomic sequence of the Spanish flu virus that killed upwards of 40 million people nearly a century ago has been widely published; **any** savvy **scientist could reconstruct it**. The avian flu is even more lethal, albeit not readily contagious via casual aerosol delivery. A malevolent bio- scientist might augment its contagiousness. The Ebola virus might be manipulated so that it kills more slowly, allowing it to be spread farther before its debilitating effects al- together consume its carrier. A bit further off is genetic manipulation of the measles virus--one of the great killers in human history--rendering useless the immunizations that most of us receive in early childhood. Soon, laboratory resynthesis of smallpox may be possible. Advanced drug delivery systems can be used to **disseminate lethal agents to broad populations**. Bio- regulators--small organic compounds that modify body systems-- could enhance targeted delivery technologies. Some experts are concerned that new weapons could be aimed at the immune, neurological, and neuroendocrine systems. Nanotechnology that lends itself to mechanisms for advanced disease detection and drug delivery--such as gold nanotubes that can administer drugs directly into a tumor--could also de- liver weaponized agents deep into the body, substantially raising the weapon's effectiveness. Altogether, techniques that were on the frontiers of science only a dec- ade or two ago are rapidly mutating A looming danger confronts the world--the threat of bioviolence. It is a danger that will only grow in the future, yet we are increasingly failing to confront it. With every passing day, committing a biocatastrophe becomes a bit easier, and this condition will perpetuate for as long as science progresses. Biological warfare is as old as conflict, of course, but in terms of the objectives of traditional warfare-- gaining territory or resources, compelling the surrender of an opposing army--biological weapons weren't very effective. If the objective is to inflict mass death and panic on a mixed population, however, emerg- ing bioweapons offer remarkable potential. We would be irresponsible to presume that radical jihadists like al- Qaeda have ignored said potential.

#### IP has been key to fight COVID and will be key for the next pandemics.

EFPIA. “Intellectual Property: Europe’s framework of incentives and rewards for discovering and developing new treatments deliver access to today’s medicines and investment into tomorrow’s cures for patients who need them.”2021. https://www.efpia.eu/about-medicines/development-of-medicines/intellectual-property/

IP is the key driver of innovation. It has enabled unprecedented collaborations between biopharmaceutical innovators and governments, universities and other research partners to speed up progress on hundreds of potential COVID-19 treatments, diagnostics and vaccines for patients. It is only because of intellectual property protection that we have over 30o treatments and more than 200 vaccines currently being explored for use against COVID-19. Fostering a research eco-system that can deliver that innovation rather than undermining it through challenges to IP, is the best way to protect citizens across Europe and around the world. Every new treatment or cure starts with the spark of an idea. Protecting that spark can involve ensuring funding for early-stage development of a new therapy, it can be creating the right environment for collaboration between research partners, it can be evolving the regulatory framework to keep pace with rapidly advancing science and protecting the spark means having a strong and effective intellectual property framework. Pharmaceutical intellectual property (IP) – incentives and rewards are the foundation on which innovation is built: they encourage and protect innovation, driving research and development investments into areas of unmet medical need. INTELLECTUAL PROPERTY DELIVERS ACCESS TO TODAY’S MEDICINES AND INVESTMENT INTO TOMORROW’S CURES The framework provides companies researching and developing new medicines the certainty that if a medicine makes it to the market, it will be protected from unfair competition for a limited period time. This is what they need to invest in the long, complex, risky and costly process of delivering new medicines to patients, to healthcare systems and to society. It helps companies turn ideas into assets that address unmet medical needs, improve the lives of patients and their families, create value and also jobs. This, in turn, attracts investment which helps to protect the company’s ideas, retain the knowhow required to convert ideas into therapies, and support further research into the next generation of treatments to improve people’s lives. With over 7000 medicines in development, the system of basic & overarching or targeted incentives is working: it enables a pipeline of this scale despite the high risk of failure.

#### Patents are the foundation of protecting innovation.

Blake Na. 4/19/19. “Protecting Intellectual Property Rights in the Pharmaceutical Industry. https://studentorgs.kentlaw.iit.edu/ckjip/protecting-intellectual-property-rights-in-the-pharmaceutical-industry/

A pharmaceutical company may apply for a patent from the PTO at any time in the development lifetime of a drug.[[12]](https://studentorgs.kentlaw.iit.edu/ckjip/protecting-intellectual-property-rights-in-the-pharmaceutical-industry/" \l "_edn12) A drug is patentable if it is non-obvious, new, and useful.[[13]](https://studentorgs.kentlaw.iit.edu/ckjip/protecting-intellectual-property-rights-in-the-pharmaceutical-industry/" \l "_edn13) The drug must be non-obvious when comparing the drug with another previously invented drug, i.e., it does not bring the same type of information as the other drugs. The drug must also not exist, and it must have a purpose.

Intellectual property rights, especially patent rights, are the foundation of the pharmaceutical industry. The industry heavily depends on the future profits which innovation (and as a result, exclusivity) enable. Drug patents grant the originator company to market exclusivity for a fixed term of 20 years from the patent’s original filing date. By giving this 20-year patent term in which the government cannot regulate the price, market exclusivity allows pharmaceutical companies to have a monopoly over the market. To maximize their profit, pharmaceutical companies work on extending the exclusivity of a drug. For example, AbbVie extended the manufacturing exclusivity of Humira by delaying generic companies from manufacturing generic entrants until 2023. The market exclusivity can be lengthened anywhere between 180 days to 7 years. Thus, due to efforts to derive profits from patents, pharmaceutical companies’ patents contribute to roughly 70-80 percent of their overall revenues. Patents in the pharmaceutical industry are normally referred to as their product portfolio and are the most effective method for protecting innovation and creating significant returns on investments. Accordingly, as mentioned above, patents help in recouping costs related to research, development, and marketing of a drug.

Patents not only help pharmaceutical companies recoup investments, they can also act as a shield against infringement claims. Strong patent protection can safeguard drugs from potential infringers. Without consent from the patentee, other competing companies cannot use, make, or distribute the invention. However, because a drug can be easily imitated by competitors, bringing an infringement suit can also protect a patentee’s rights. Recently, DUSA Pharmaceuticals, Inc.—an arm of the Indian pharmaceutical company Su Pharma and ranked among the top 50 global Pharma Companies—was recently granted injunctive relief from a U.S. court against Biofrontera Inc. in a patent infringement case[[14]](https://studentorgs.kentlaw.iit.edu/ckjip/protecting-intellectual-property-rights-in-the-pharmaceutical-industry/" \l "_edn14). The court’s order prohibited Biofrontera from making use of information, including sales data, marketing data, technical information, and unpublished clinical data, of DUSA Pharmaceuticals[[15]](https://studentorgs.kentlaw.iit.edu/ckjip/protecting-intellectual-property-rights-in-the-pharmaceutical-industry/" \l "_edn15). Although bringing an infringement suit is a valuable remedial measure for patentees, pharmaceutical companies often face difficulty with the high costs and uncertainty of litigation.

#### Sending or producing large numbers of extra vaccines will not solve low vaccination rates in countries.

#### Many countries lack enough facilities to store vaccines adequately. A large supply of new vaccines will result in them being stored incorrectly and becoming unusable.

Hinnant 20 [Lori Hinnant. . “Vaccine storage issues could leave 3B people without access”. 10-19-2020. AP NEWS. https://apnews.com/article/virus-outbreak-pandemics-immunizations-epidemics-united-nations-fc4c536d62c5ef25152884adb1c14168. Accessed 8-16-2021]

With the pandemic now in its eighth month, logistics experts warn that vast parts of the world lack the refrigeration to administer an effective vaccination program. This includes most of Central Asia, much of India and southeast Asia, Latin America except for the largest countries, and all but a tiny corner of Africa. The medical clinic outside Burkina Faso’s capital, a dirt-streaked building that serves a population of 11,000, is a microcosm of the obstacles. After its refrigerator broke last fall, the clinic could no longer keep vaccines against tetanus, yellow fever, tuberculosis and other common diseases on site, nurse Julienne Zoungrana said. Staff instead used motorbikes to fetch vials in insulated carriers from a hospital in Ouagadougou, making a 40-minute round-trip drive on a narrow road that varies between dirt, gravel and pavement. A mother of two who visits the Gampela clinic says she thinks a coronavirus inoculation program will be challenging in her part of the world. Adama Tapsoba, 24, walks four hours under scorching sun to get her baby his routine immunizations and often waits hours more to see a doctor. A week earlier, her 5-month-old son had missed a scheduled shot because Tapsoba’s daughter was sick and she could only bring one child on foot. “It will be hard to get a (COVID-19) vaccine,” Tapsoba said, bouncing her 5-month-old son on her lap outside the clinic. “People will have to wait at the hospital, and they might leave without getting it.” To uphold the cold chain in developing nations, international organizations have overseen the installation of tens of thousands of solar-powered vaccine refrigerators. Keeping vaccines at stable temperatures from the time they are made until they are given to patients also requires mobile refrigeration, reliable electricity, sound roads and, above all, advance planning. For poor countries like Burkina Faso, the best chance of receiving a coronavirus vaccine is through the Covax initiative, led by the [World Health Organization](https://apnews.com/article/virus-outbreak-health-united-nations-europe-8151f7f0ffbeb4c1cbbbab4d82da3234) and the Gavi vaccine alliance. The [goal of Covax](https://www.gavi.org/covax-facility) is to place orders for multiple promising vaccine candidates and to allocate the successful ones equitably. The United Nations’ children’s agency, UNICEF, began laying the global distribution groundwork months ago, in Copenhagen. At the world’s largest humanitarian aid warehouse, logistics staff are trying to foresee shortages by [learning from the past](https://apnews.com/article/virus-outbreak-pandemics-ap-top-news-global-trade-fresno-4354f8e8026cf8135b74fa19f0d0f048), especially the spring chaos surrounding global shortages of masks and other protective gear that were commandeered off airport tarmacs or stolen and traded on the black market. Currently, 42 coronavirus vaccine candidates are in clinical trials and another 151 are in pre-clinical evaluation, according to WHO. The ones most likely to end up in the Covax mix must be stored at 2 to 8 degrees Celsius (26-46 F). A Pfizer candidate is among the ones in advanced testing requiring storage at ultracold temperatures. The company, which has designed a special carrying case for its vaccine, has expressed interest in Covax and signed contracts with the United States, Europe and Japan. Medical freezers that go down to minus 70 degrees Celsius are rare even in U.S. and European hospitals. Many experts believe the West African countries that suffered through a 2014-16 Ebola outbreak may be the best positioned, because a vaccine against that virus also requires ultracold storage. For more than two-thirds of the world, however, the advanced technology is nowhere on the horizon, according to a [study](https://www.dhl.com/content/dam/dhl/global/core/documents/pdf/glo-core-delivering-pandemic-resilience-2020.pdf) by German logistics company DHL. Meanwhile, billions of people are in countries that don’t have the necessary infrastructure to maintain the cold chain for either existing vaccines or more conventional coronavirus candidates, the study said. Opportunities for vaccines to be lost expand the farther a vaccine travels. DHL estimated that 15,000 cargo flights would be required to vaccinate the entire planet against COVID-19, stretching global capacity for aircraft and potentially supplies of materials such as dry ice. “We need to find a bridge” for every gap in the cold chain, DHL chief commercial officer Katja Busch said. “We’re talking about investments ... as a society, this is something we have to do.” Gavi and UNICEF worked before the pandemic to supply much of Africa and Asia with refrigeration for vaccines, fitting out 40,000 facilities since 2017. UNICEF is now offering governments a checklist of what they will need to maintain a vaccine supply chain and asking them to develop a plan. “The governments are in charge of what needs to happen in the end,” said Benjamin Schreiber, who is among the directors of UNICEF’s vaccination program. Cracks in the global cold chain start once vaccines leave the factory. Container ships are not equipped to refrigerate pharmaceutical products with a limited shelf life. Shipping vaccines by air costs a lot more, and air cargo traffic is only now rebounding from pandemic-related border closures. Even when flights are cold and frequent enough, air freight carries other potential hazards. WHO estimates that as much as half of vaccines globally are lost to wastage, sometimes due to heat exposure or vials breaking while in transit. With coronavirus vaccines, which will be one of the world’s most sought-after products, theft is also a danger. “They can’t be left on a tarmac and fought over because they would actually be spoiled and they would have no value — or worse still, people would still be trying to distribute them,” said Glyn Hughes, the global head of cargo for the International Air Transport Association. Tinglong Dai, a Johns Hopkins University researcher who specializes in health care logistics, said creativity will be needed to keep the cold chain intact while coronavirus vaccines are distributed on a global scale. Gavi and UNICEF have experimented with delivering [vaccines by drone](https://apnews.com/article/deadly-shortages-3a830cc742ee3f727d9f215e9dcc621b). Indian officials have floated the idea of setting aside part of the country’s vast food storage network for the coronavirus vaccines. “If people can figure out how to transport ice cream, they can transport vaccines,” Dai said. Temperature-sensitive labels that change color when a vaccine is exposed to heat too long and no longer safe to use, and live delivery tracking to ensure vaccines reach their destinations as intended also have allowed for progress in delivering safe shots. Yet chances for something to go wrong multiply on the ground as vaccines are prepped to leave national depots. Since the cold chain is so fragile, logistics planning is crucial; syringes and disposal boxes must be available as soon as vaccine shipments arrive. By the end of the year, UNICEF expects to have [520 million syringes pre-positioned for coronavirus vaccines](https://www.unicef.org/press-releases/unicef-stockpile-over-half-billion-syringes-year-end-part-efforts-prepare-eventual) in the developing world and maps of where the refrigeration needs are greatest “to ensure that these supplies arrive in countries by the time the vaccines do,” Executive Director Henrietta Fore said. The last vaccine requiring cold storage that India’s national program adopted was for rotavirus, a stomach bug that typically affects babies and young children. Dr. Gagandeep Kang, who led the research for that vaccine, estimated that India has about 30% less storage capacity than it would need for a coronavirus vaccine. In countries such as India and Burkina Faso, a lack of public transportation presents another obstacle to getting citizens inoculated before vaccines go bad. Dr. Aquinas Edassery, who runs two clinics in one of India’s poorest and least developed regions, said patients must walk for hours to receive health care. The trip on a single road that winds 86 kilometers (53 miles) over steep hills and washes out for months at a time will pose an insurmountable barrier for many residents of the eastern district of Rayagada, Edassery said. As with most logistics, the last kilometer (mile) is the hardest part of delivering a coronavirus vaccine to the people who need it. In Latin America, perhaps nowhere more than Venezuela provides a glimpse into how the vaccine cold chain could go dramatically off course. When a blackout last year left much of the nation in the dark for a week, doctors in several parts of Venezuela reported losing stocks of vaccines. The country’s largest children’s hospital had to discard thousands of doses of vaccines for illnesses like diphtheria, according to Dr. Huníades Urbina, head of the Venezuelan Society of Childcare and Pediatrics. “We won’t be able to halt either the coronavirus or measles,” Urbina said. Preserving the cold chain has only grown more difficult since then. Gas shortages limit the ability to move vaccines quickly from one part of Venezuela to another. Dry ice to keep vaccines cool during transport is harder to find. And after years of economic decline, there also are fewer doctors and other professionals trained to keep the chain intact. “I’m not optimistic on how the vaccine would be distributed in the inner states because there is no infrastructure of any kind to guarantee delivery — or if it gets delivered, guarantees the adequate preservation under cold conditions,” Dr. Alberto Paniz-Mondolfi, a Venezuelan pathologist, said. Venezuela presents [an extreme example](https://apnews.com/article/virus-outbreak-lifestyle-health-latin-america-caribbean-e8dddafa0801d772d9fb775835131e86), but a coronavirus vaccine also is likely to test parts of Latin America with more robust health care systems. In Peru, private businesses that typically transport fish and beef have offered their trucks, though it remains unclear whether the Health Ministry will accept. Back in Burkina Faso, vaccination days became an ordeal at the Gampela clinic when the refrigerator went out, said Zoungrana, the nurse. Staff members on hospital courier runs must buy fuel they often can’t afford and make a second trip to and from the capital to return any unused doses. “We’re suffering,” said Zoungrana, who was run off the road on her motorbike just a few weeks ago. Days after journalists from The Associated Press visited the clinic this month, a long-awaited solar refrigerator arrived. With technicians in short supply, the clinic was waiting to be sure the appliance would function properly before stocking it with vaccines. Nationwide, Burkina Faso is about 1,000 clinical refrigerators short, and less than 40% of the health facilities that conduct vaccinations have reliable fridges, national vaccination director Issa Ouedraogo said. Multi-dose vials — the equivalent of bulk storage for vaccines — can drastically reduce global transportation costs. But once a vial is opened, its shelf life counts down even faster; if too few people show up for their jabs in time, whatever remains in the larger vials must be discarded. “It’s really upsetting to have wastage like that. It’ll result in loss of lives and pain and suffering. It’s a waste of resources, ” said University of Massachusetts at Amherst professor Anna Nagurney, who studies supply chain logistics. For now, UNICEF is betting on 20-dose vials of coronavirus vaccine and hoping that the amount wasted will stay below 3% for closed vials and 15% for open multi-dose vials that do not get used up, according to Michelle Siedel, one of the U.N. agency’s cold chain experts. If Burkina Faso were given 1 million doses of a coronavirus vaccine today, the country wouldn’t be able to handle it, Jean-Claude Mubalama, UNICEF’s head of health and nutrition for the African nation. “If we had to vaccinate against the coronavirus now, at this moment, it would be impossible,” he said.

#### High vaccine hesitancy in developing countries and lack of infrastructure prevent vaccines from reaching the population in developing nations

**Mwai 21** [Peter Mwai. . “Covid-19 vaccines: Why some African states can't use their vaccines”. xx-xx-xxxx. BBC News. https://www.bbc.com/news/56940657. Accessed 8-16-2021]

Many countries failed to prepare adequately before receiving the vaccines, Phionah Atuhebwe, from the WHO in Africa, says. "That is one of the reasons we are seeing the slow pace of rollout," she says. South Sudan says in addition to the problem of limited financial resources, the country has also struggled because of a reluctance by health care workers to get vaccinated. A health ministry official there has also pointed out that its parliament was slow in approving the vaccines, along with delays in training health workers for the task. "The continent as a whole knows how to vaccinate and has been vaccinating for other diseases," says John Nkengasong, head of the Africa Centres for Disease Control (CDC), "but the key is how do you scale that up - and... at speed?" For DR Congo the problem is not only weak health services but also a very poor transport network - making the delivery of vaccines to remote areas a major issue. To complicate matters further, the country suspended its AstraZeneca vaccine rollout in mid-March, amid safety concerns, resuming on 19 April - more than a month later. Is vaccine hesitancy a problem in African countries? Some experts and politicians blame concerns over the safety and efficacy of vaccines in general for the slow uptake in many countries in Africa - but it is hard to quantify that impact. "It took a while to convince people," Sierra Leone Health Minister Austin Demby tells BBC News "So it is not just vaccine hesitancy, it is like [having] vaccine sceptics to start with." Ghana is one of the few countries in Africa to have fully utilised its vaccine supplies Malawi virologist Gama Bandawe says mistrust of vaccines has played a role in the country being unable to use all the supplies it has received. And South Africa's decision to stop using the AstraZeneca vaccine, amid concerns around cases of blood clots, may have added to these doubts. "The government did the best they could - but perhaps the general public has not been as receptive as was expected," he says. A study commissioned by the Africa CDC on Covid-19 vaccine perceptions in 15 countries indicated [a significant proportion of people had concerns around vaccine safety](https://africacdc.org/download/covid-19-vaccine-perceptions-a-15-country-study/). On average, about 20% of respondents said they would not have a vaccine - but the proportion varied from below 10% in Ethiopia, Niger and Tunisia to 41% in DR Congo.

#### Creating medicine is extremely expensive. Patents are the best way.

World Intellectual Property Organization (WIPO), "International Patent Filings Dip in 2009 amid Global Economic Downturn," press release, February 8, 2010, <http://www.wipo.int/pressroom/en/articles/2010/article_0003.html>.

By granting time-limited, exclusive monopolies on the market for a product, patents generate above-market financial returns that are believed to enable pharmaceutical inventors to recoup the costs of R&D and to invest in future innovations. By some estimates, the cost to drug researchers and manufacturers for creating a single new medicine is upwards of $800 million.[13](https://www.everycrsreport.com/reports/R40607.html" \l "fn13) Pointing to the high costs and uncertainty associated with R&D, supporters of patents argue that they are important for innovation in medicine by allowing right holders to recoup the costs of R&D, earn profits, and invest in future R&D.

Proponents maintain that financial incentives for innovation may be even more critical now with the global economic downturn. Some fear that tighter credit markets may compel pharmaceutical companies to reduce current R&D spending.[14](https://www.everycrsreport.com/reports/R40607.html" \l "fn14) For example, the World Intellectual Property Organization (WIPO) reported a drop of 4.5% in international patent filings in 2009.[15](https://www.everycrsreport.com/reports/R40607.html" \l "fn15)

Others are skeptical of the reportedly high estimates of the costs of R&D in the creation of new medicines. Some critics argue that PhRMA's cost estimate includes both the actual expenditures and the economic opportunity costs of developing new drugs. They also contend that a growing proportion of the financial returns generated from patented drugs is not directed toward new innovations, but rather to commercial marketing and political lobbying activities.[16](https://www.everycrsreport.com/reports/R40607.html" \l "fn16)

Additionally, pharmaceutical companies often use publicly-funded research to develop drugs for commercialization.[17](https://www.everycrsreport.com/reports/R40607.html" \l "fn17) For instance, in the United States, the National Institutes of Health (NIH) and the Centers for Disease Control (CDC) provide funding for health-related research. In general, the public sector funds R&D that is focused on basic scientific research. Pharmaceutical companies then build on this research to develop products that are patentable and commercially marketable.