Policy Brief

Addressing Market Failures: The Role of CEPI in Bridging the Innovation Gap to Prevent the Next Pandemic

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Overview

The world was woefully unprepared to prevent or rapidly respond to the COVID-19 pandemic. This is the result of decades of failure by national and global policymakers to address pandemics as a systemic and growing threat. A glaring weakness is that the ecosystem for pandemic preparedness research and development (R&D) — the system that is meant to develop vaccines, treatments, and other tools for known and unknown health threats — is rife with market and systems failures that prevent it from operating efficiently, effectively, and equitably.

While pandemics can affect the whole world and create large, global markets for vaccines, treatments, and other technologies, those markets have repeatedly failed to respond with the foresight and urgency needed to match the scale, scope, and unpredictability of pandemic threats. Traditional market-based systems don't always incentivize product development so that people around the world can have tools for emerging infectious disease threats at the ready when they need them. This failure can lead to gross inequity in vaccine development and access — for example, as of October 1, 2021, over 6 billion COVID-19 vaccines have been administered globally, but only 2.3% of people in low-income countries have received one dose.

The world must urgently address the persistent market and systems failures in the global health R&D ecosystem to prepare for the next pandemic threat.

Types of Market & Systems Failures

Because emerging infectious diseases and pandemics are inherently unpredictable, market and systems failures can manifest differently before, during, and after a pandemic, and for each novel disease and moment in time. Broadly, failures in the pandemic preparedness R&D ecosystem fall into four categories:

Market Risk Aversion

Emerging infectious diseases and pandemics are uncertain, and R&D is expensive and time consuming. While private industry partners have the expertise, know-how, and resources that are critical to efficient vaccine development, their for-profit mandate is often at odds with R&D for emerging infectious diseases, which may never be used or generate low demand — often making it too risky for industry to tackle alone. Government funding and support for vaccine programs can be crucial to their progress. For example, in the case of COVID-19, significant government funding played a key role by de-risking COVID-19 vaccine development and actively engaging industry partners. However, the support for R&D during a health emergency is often pulled as soon as the crisis fades, whether or not vaccines and treatments have been fully developed and licensed, leaving industry partners on the hook for covering the final costs of finishing the R&D process.

Chronic Underinvestment in Pandemic Preparedness

Emerging infectious diseases feel like a distant threat, so investments in R&D are put off until it's an emergency. For example, from 2014-2018, only US$3.5 billion was invested in all stages of R&D for emerging infectious diseases, including for diseases prioritized by the WHO as those with epidemic and pandemic potential. In comparison, the economic costs of the COVID-19 pandemic have been estimated at US$375 billion per month. Prior to the COVID-19 pandemic, it had taken, on average, 15 years to develop a new vaccine, which meant that reactive R&D funding was too late to successfully develop and roll out urgently needed countermeasures at the peak of past emergencies. COVID-19 vaccines were able to be developed at record speed because of decades of prior investment in the underlying science and platform technologies.

Equity and Access Failures

Because the pandemic R&D ecosystem is largely supported by high-income countries, the agenda and outputs skew toward the needs of high-income countries. In practice, this imbalance prolongs pandemics and leaves the poorest and most vulnerable communities at greatest risk. Without changes to priorities and incentives to prioritize global access and equity, pandemic R&D will continue to leave a majority of the world's populations behind. Not only does this status quo perpetuate gross health inequities, but it is also especially dangerous when global response and access to medical countermeasures everywhere is needed to end a wide-reaching pandemic. The COVID-19 pandemic exemplifies this failure, as vaccines still have not reached the poorest, most vulnerable countries and communities, prolonging the pandemic for everyone and fueling the emergence of dangerous variants.

Collective Action Failures

Being prepared for pandemic threats is a global good, yet no global entity exists to coordinate and align R&D for pandemic preparedness. In the midst of a deadly crisis, political self-interest leads nations to pursue nationalist strategies that run counter to the collective global effort that's needed for an effective and equitable pandemic response. Akin to the prisoner's dilemma — everyone looks out for themselves at the expense of a coordinated and better global outcome. While global partners stood up the **Access to COVID-19 Tools (ACT) Accelerator**, and its vaccine arm **COVAX**, to address this gap and failure, entities had to essentially "build the plane while flying it." To date, COVAX has largely been unable to generate the funding, speed, and political will needed to overcome nationalism and country-based approaches.

CEPI's Role in Combatting Market and Systems Failures for Vaccine R&D

The Coalition for Epidemic Preparedness Innovations (CEPI) was built to leverage partnerships and incentives to counter market and systems failures for R&D against emerging infectious diseases and accelerate vaccines for the global good. Specifically, in response to the COVID-19 pandemic, CEPI moved quickly in coordination with its global health and scientific partners to accelerate vaccine development with a focus on driving equitable access for all people, everywhere. COVID-19 has exposed longstanding weaknesses in pandemic preparedness and response, and CEPI's experience demonstrates that it can help address many of these persistent market and systems failures.

 **Market Risk Aversion**	CEPI's R&D investments are designed to cost-share and de-risk vaccines for emerging infectious diseases, incentivizing the industry to act. For COVID-19 vaccines, CEPI moved quickly, announcing its first vaccine partnerships on January 23, 2020, when there were just 581 confirmed cases of COVID-19 globally. CEPI has since invested in a diverse portfolio of 14 vaccine candidates, with 12 presently in active development — one of the largest COVID-19 vaccine portfolios to date. Plus, CEPI has played a key role to support manufacturing at risk — reserving manufacturing capacities and vital components for production, like glass vials, at the same time as vaccines were being developed.
 **Underinvestment in Pandemic Preparedness**	CEPI was launched to invest proactively in translational research for just-in-case vaccines for a specific set of neglected diseases and just-in-time platforms for serious emerging infectious disease outbreaks. Within three weeks of the publication of the genome sequence for COVID-19, CEPI initiated vaccine investments of US$44 million — months before other investors. CEPI is now funding vital research to advance the next-generation of COVID-19 vaccine candidates, including innovative technologies aimed at protecting against multiple SARS-CoV-2 variants.
 **Equity and Access Failures**	CEPI had the foresight to build a large portfolio of COVID-19 vaccine investments that, while not as large in dollar value as those of some high-income country funders, was well diversified by technology, product profile, geography, and supplier — with key features to promote equity in product design and delivery — even before COVAX was formed. Specifically, CEPI incorporated access agreements into its COVID-19 vaccine contracts to enable priority populations worldwide to access doses, if proven safe and effective. CEPI has also invested in at-risk manufacturing for vaccines suitable for low-resource settings and in R&D based in low- and middle-income countries to help drive global access and equity.

Collective Action Failures

As one of the lead agencies of ACT-A and COVAX, CEPI continues to experience both the successes and challenges of the multilateral effort to accelerate R&D of COVID-19 tools.

Going forward, CEPI's experience in bringing partners together, identifying and filling gaps in the ecosystem, and building diversified product portfolios for the global good will be key parts of building on lessons learned for enhanced global cooperation and coordination to prevent and prepare for emerging epidemic and pandemic threats.

Building a Better Ecosystem for Pandemic Preparedness R&D

The COVID-19 pandemic continues to devastate lives and livelihoods around the world — but it also represents a critical opportunity to build back better systems and structures, so the world is better prepared to prevent deadly and costly epidemics and pandemics. It is vital that we capitalize on the rare alignment of political will, practical experience, and technical and scientific progress emerging from this pandemic to prevent such devastation from happening again.

CEPI's nimble tools and incentives, along with its globally-oriented mandate, make it an essential partner for pandemic preparedness and response. Reflecting on lessons learned from COVID-19, CEPI has set out a bold new US$3.5 billion five-year strategy to bolster its effectiveness in pandemic preparedness and build a better R&D ecosystem. While it cannot fill all the market failures and gaps in a complex and evolving pandemic R&D landscape, if fully resourced, CEPI is well-positioned to address some of these critical failures in global vaccine development and access. **CEPI's new five-year strategy would enable it to:**

To help prevent the next pandemic, the world must act now to build a better resourced and better coordinated pandemic preparedness R&D ecosystem.

Investing in a more robust CEPI is an important place to start.

- **Accelerate pandemic preparedness and counter chronic underinvestment** by investing in technologies and processes to advance a 100-day goal for pandemic vaccine development and build a library of novel vaccine technologies against emerging threats. This also includes advancing the development of all-in-one coronavirus vaccines to protect against emerging SARS-CoV-2 variants and novel coronaviruses in the future.
- **Deploy a flexible set of incentives to counteract market risk aversion**, attracting private industry R&D actors into the space, and coordinating closely with national governments, philanthropy, and other actors who can bring additional and needed resources for risk-sharing in product development.

- **Ensure access and equity are front and center in pandemic vaccine R&D efforts** by continuing to prioritize vaccine product profiles that are appropriate for diverse and low-resource settings, linking CEPI funding to access provisions, and partnering with downstream actors to facilitate the affordable, efficient manufacture and delivery of vaccines once they are developed.
- **Partner with other global actors** to build a more robust preparedness R&D ecosystem and facilitate end-to-end vaccine development to ensure timely, affordable vaccine access for all in the face of the next deadly epidemic or pandemic. This includes supporting the efforts of low- and middle-income countries to develop local infrastructure, build local capacity, and establish national and regional vaccine manufacturing.

Key Recommendations

The world cannot and should not wait for the next pandemic to bolster investments in R&D and preparedness for emerging infectious disease threats.

Governments, industry, philanthropy, multilateral, academic and research institutions, and civil society must come together to:

- **Invest in CEPI's 100-day goal for pandemic vaccine development by ensuring full funding for CEPI's US$3.5 billion plan** to support the global COVID-19 response and reduce the risk of epidemics and pandemics, enabling equitable access to life-saving innovations for the most vulnerable communities.
- **Build a smarter pandemic R&D ecosystem** so that it can efficiently, effectively, and equitably have medical countermeasures ready-to-go for emerging infectious disease threats for all people, everywhere. This requires:
    - Alignment, coordination, and priority-setting across the many diverse actors contributing to R&D;
    - A global divide-and-conquer strategy to maximize human and financial resources;
    - Increased and sustained financing across the spectrum of preparedness and response, including development, manufacturing, procurement, and delivery, to support public-private partnerships and other initiatives;
    - Flexible, nimble incentives for all partners;
    - A global framework/commitment to enable access and equity for the most vulnerable.

To learn more, read the full analysis: *Addressing Market Failures: The Role of CEPI in Bridging the Innovation Gap to Prevent the Next Pandemic*.