

Archibong, Belinda; Annan, Francis; Ekhaton-Mobayode, Uche

Article

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KEY POINTS

- The COVID-19 pandemic and other recent epidemics have resulted in high human and economic costs, with consequences such as rising poverty, unemployment, gender inequality and the increased vulnerability of children and marginalized groups..
- The consequences of the COVID-19 pandemic may be especially devastating for poorer countries and these countries will need significant financing to fund efforts that aim at successfully mitigating the effects of the pandemic.
- Global governance institutions like the World Health Organization (WHO) can be instrumental in directing much needed financing to poorer countries during epidemics.
- We use evidence from WHO declarations of meningitis epidemics in Africa and find that although epidemics can have significant negative effects on economic activity and child health outcomes, the effects are reversed when the WHO declares an epidemic. Declaration of epidemics triggers inflows of health aid, resulting in more World Bank health projects being approved and funded during epidemic years.
- This influx of health financing has significant long lasting positive effects on human capital outcomes for countries in epidemics. Better targeting of health aid could lead to even greater positive effects for affected areas during epidemics.



KIEL INSTITUTE FOR THE WORLD ECONOMY
Kiellinie 66 | 24105 Kiel

E pegnet@ifw-kiel.de
www.pegnet.ifw-kiel.de

@PEGNetKiel

PEGNet Policy Brief

The role of global governance institutions in mitigating the adverse economic impacts of epidemics

Belinda Archibong, Francis Annan, Uche Ekhtor-Mobayode

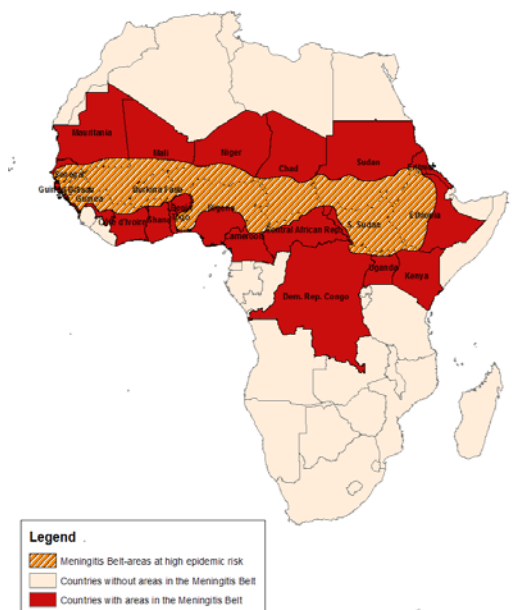
The COVID-19 pandemic has infected over 25 million people and resulted in more than 800,000 deaths as of September 2020 (Lai et al., 2020). The virulence and human cost of this and other epidemics in the past few decades have reignited policy discussions around strategies to mitigate the economic burden of infectious disease. Rising poverty, unemployment rates, worsening gender inequality and increasing vulnerability of children and marginalized groups around the world are just some of the ongoing effects of the pandemic. Some estimates report that the impact of COVID-19 may exceed that of the 2003 SARS epidemic in China, which infected around 8000 people and resulted in economic losses of between \$30 to \$50 billion or 0.1% of global GDP (Shretta, 2020). The consequences of the pandemic may be especially devastating for poorer countries in Africa and Asia, where a large poor population, high unemployment rates (23% in Africa as of 2014), inadequate health facilities and limited access to water and sanitation infrastructure may constrain implementation of risk-mitigating measures like hand-washing and increase vulnerability to infection from the disease. These regions will need significant financing to fund efforts that aim to successfully mitigate the effects of the pandemic. Global governance institutions like the World Health Organization (WHO) can be instrumental in directing this financing to poorer countries. In this policy brief we discuss the evidence on the role of global governance institutions in mitigating the effects of epidemics by boosting financing to poorer countries, with a focus on Africa and using lessons from meningitis epidemics in Sub-Saharan Africa.

The Economic Costs of Epidemics: Lessons from the African Meningitis Belt

Sub-Saharan Africa (SSA) is no stranger to epidemics and meningococcal meningitis is the disease associated with one of the most virulent epidemics in the region. Meningococcal meningitis is so endemic in SSA that a group of 23 countries from Senegal to Ethiopia, making up more than 700

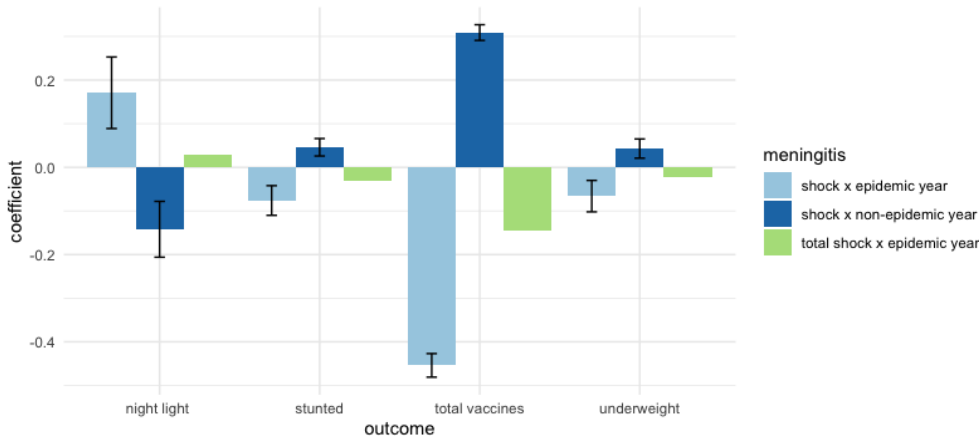
million people, has been labeled the “meningitis belt” due to recurrent exposure to meningitis epidemics as shown in Figure 1 (Archibong and Annan, 2017; 2020). Unlike COVID-19, which is caused by a virus, meningitis epidemics are caused by a bacterium and are characterized by an infection of the meninges or the thin lining covering the brain and the spinal cord. Like COVID-19, infection is

Figure 1: Countries in the African Meningitis Belt



associated with fevers, pain and in the worst cases permanent disability and long-term neurological damage and death. Also, like COVID-19, direct transmission is through contact with respiratory droplets or throat secretions- coughs and sneezes- from infected individuals. Unlike COVID-19, where older populations are more at risk, young children and teenagers are more vulnerable to infection from meningitis and the disease has a shorter incubation period of 3-7 days (WHO, 2018). Although vaccines have been introduced to limit the spread of the disease since the first recorded cases in SSA in 1909, the effectiveness of past vaccines has been limited due to the mutation and virulence tendencies of the bacterium (LaForce et al., 2009).

Figure 2: More economic activity, less stunting and underweight children if born in highly affected meningitis shock districts during a declared epidemic year*



*In meningitis shock, non-epidemic year districts, meningitis shock lowered economic activity and resulted in more stunted and underweight children. Potential crowd-out of routine vaccinations of children born in meningitis shock districts during epidemic years.

Past policy responses to meningitis epidemics have included a variety of recommendations from the WHO. Some of these include: the creation of crisis committees with groups like the Ministry of Health and the WHO to coordinate epidemic responses, dissemination of information to the general public, mass national vaccination campaigns, and disbursing funds and antimicrobial drugs for treatment (WHO et al., 1998). The disbursement of funds and health aid in particular have been an essential policy response to meningitis epidemics in this region given the relatively high costs of antibacterial therapy treatment for bacterial meningitis. The costs of full treatment ranged from \$10 to over \$250 as of 1998, and households reported spending up to 34% of per capita GDP per meningitis case on direct medical and indirect costs from infections during epidemic years, with the share rising to 58% of per capita GDP for households affected with long term associated conditions (WHO et al., 1998; Colombini et al., 2009). Costs were associated with direct medical expenses from spending on prescriptions and medicines and indirect costs from loss of caregiver income, loss of infected person income and missed school. Given these high costs from epidemics, some research has shown that financing targeted at shoring up health infrastructure and providing economic stimulus to households may be able to mitigate the negative effects of epidemics (Chigudu, 2020; Bloom and Canning, 2004). We present evidence from a new study highlighting the role of WHO epidemic announcements in mitigating the effects of meningitis epidemics by spurring inflows of health aid into affected countries (Archibong, Annan and Ekhaton-Mobayode, 2020)

Global Governance Institutions Can Mitigate the Effects of Epidemics: Evidence from WHO Epidemic Declarations

In this new study, we examine the effects of sudden exposure to meningitis or meningitis shocks and the declaration of an epidemic

year from the WHO on short and longer-term economic activity and child health outcomes in affected countries in the meningitis belt. While individual regions or districts within countries may experience sudden higher than expected (relative to their historical case loads of the disease) levels of meningitis which we call meningitis shocks here, the WHO will not declare an epidemic in a country unless the national level of cases reaches an average of 100 cases per 100,000 population. This means that an individual district in a country could be experiencing a meningitis shock and essentially have a “local epidemic” without the WHO officially declaring an epidemic in the country. We assemble WHO data on meningitis gathered

between 1986 and 2008 as well as data on economic activity from the National Oceanic and Atmospheric Administration (NOAA) and data on child health outcomes in 8 countries in the African meningitis belt from the Demographic and Health Surveys (DHS): Benin, Burkina Faso, Cameroon, Ghana, Mali, Nigeria, Niger and Togo. As of 2019, the World Bank has classified the majority of these countries as low income, while three (Nigeria, Ghana and Cameroon) are classified as low-middle income countries. These countries also have significant health financing constraints. Per capita health spending is only \$47 on average, equivalent to 5% of per capita GDP and lower than both the Africa (5.6%) and world (10%) averages. Government spending per capita on health is also relatively low at 1.1% of per capita GDP versus 1.3% for the average in Africa and 7.4% for the world mean. In contrast, out of pocket spending on health is relatively high, at around 50% of total health spending, a figure higher than the Africa average (36%) and the world average (19%). External spending also features heavily in health expenditures in these countries, making up 19% of total health spending, and similar to the Africa-wide average of 20%.

When we examine the effects of meningitis shocks on economic activity and child health outcomes in our study countries, the results

Figure 3: More health projects approved and more dollars committed and disbursed to health projects during epidemic years, less to non-health projects

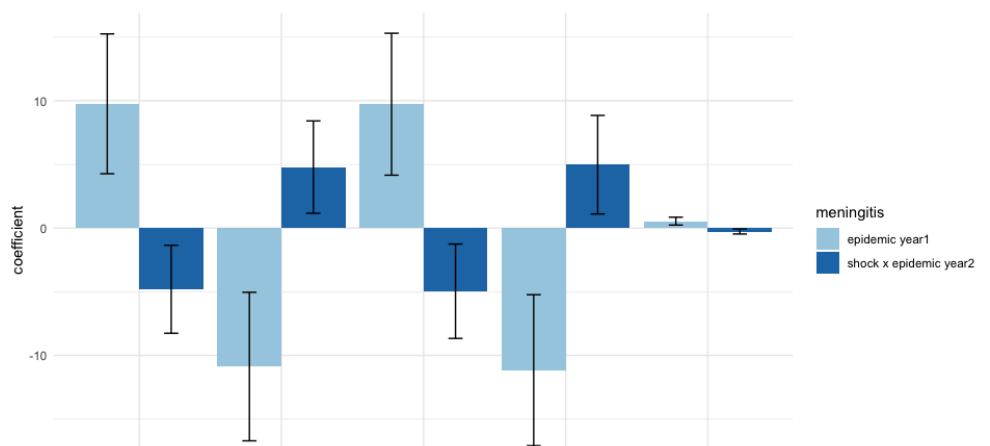


Figure 4: Top 5 World Bank health and non-health projects funded by project title in epidemic and non-epidemic years

Top 5 WB Project titles by Epidemic year and Health classification	Health project= 0	Health project=1
Epidemic year= 0	<ul style="list-style-type: none"> • Transport sector project • Transport sector program support project • Urban infrastructure rehabilitation project • Transport infrastructure rehabilitation project • Local urban infrastructure development project 	<ul style="list-style-type: none"> • Community action program • Social fund • Health, fertility and nutrition project
Epidemic year=1	<ul style="list-style-type: none"> • Road Transport project • Pilot private irrigation promotion project • Post-Primary education • Regional Hydropower development project • Village infrastructure project 	<ul style="list-style-type: none"> • Health sector development program • Economic recovery and adjustment credit (ERAC) project

are very different in non-epidemic years versus years where the WHO declared a national epidemic. While on average, meningitis shocks reduce economic activity (as measured by night-time light density, a proxy for per capita GDP) by 6.5%, the effect differs significantly in epidemic vs non-epidemic years. Meningitis shocks reduce economic activity by 14.2% in non-epidemic years, but the effect significantly reverses if the WHO declares an epidemic year. If the WHO declares an epidemic year, districts that experience meningitis shocks actually see a relative increase in their economic activity by up to 17.1%. Overall, declaring epidemic years during meningitis shocks reverses the negative economic effects of the disease and increases economic activity by up to 2.9% in affected districts.

Similarly, for child health outcomes, children born in high disease, meningitis shock regions during a year declared by the WHO as an epidemic year are 6.6 percentage points (pp) less underweight and 7.6 pp less stunted than their peers born in meningitis shock regions during non-epidemic years. In contrast, children born in meningitis shock districts in years not declared epidemic years are up to 4.3 pp more underweight than their peers born in epidemic years. Finally, the results show evidence of the crowd-out of routine childhood vaccinations for diseases like polio, tuberculosis (BCG), and diphtheria, pertussis and tetanus (DPT) during epidemic years. A child born in a meningitis shock district during a declared epidemic year is less likely to have all her vaccinations than her peers born in a meningitis shock district during a non-epidemic year. The effect size is equivalent to a 12% reduction in relative vaccinations for children born in meningitis shock districts during a declared epidemic year. The results, shown in Figure 2, are in line with discussions from the health aid literature and WHO epidemic response recommendations, showing that health aid in response to epidemics tends to crowd out routine vaccination as response efforts are concentrated on treating the infectious disease, instead of routine vaccination (Brautigam and Knack, 2004).

The Role of Health Aid in Response to WHO Epidemic Declarations: Evidence from World Bank Projects

One primary explanation for the positive reversal in economic activity and child health outcomes following WHO meningitis

epidemic declarations is an inflow of disaster aid in response to the announcement of an epidemic year. We use aid data from World Bank projects to examine the effect of declaring an epidemic on the share of World Bank health aid projects approved and funded in the year. The results are shown in Figure 3. The declaration of an epidemic year significantly increases the proportion of health projects approved in the year. It also significantly increases the total amount of dollars committed and disbursed to health projects. There appears to be some redistribution in funding in response to WHO

epidemic announcements, with more funds going to health projects and less funds disbursed to non-health projects in epidemic years. Notably, the results do not show any evidence of targeting of health aid in the most affected meningitis shock districts. This may be because of the way World Bank projects are funded. Internal discussions with World Bank officials confirm that projects take relatively long times to be approved, with estimates of an average of 7 to 12 months to approve a single project. Projects must go through ‘concept approval, final design approval, then final package to Board’ before possibly being approved and funded. The shortest amount of time to approve projects in an ‘emergency’ setting is reported to be around 3 to 4 months.

What this means is that locations for World Bank health projects are chosen ex-ante relative to the declaration of an epidemic year, which makes it difficult to target specific areas for health aid/projects in response to an epidemic declaration (Ohler et al., 2017). The imperfect targeting mechanism explains why the results do not show significant differences in health projects funded in highly affected meningitis shock vs. less affected districts during epidemic years.

Interestingly, projects funded during declared epidemic years are 1.2 years shorter in duration than non-epidemic year projects, a 19% decrease in the duration of projects relative to a mean of 6.4 years. A typical health project funded during a non-epidemic year lasts for 1 year longer while a health project funded during an epidemic year lasts for a shorter period (1.5 years less) compared to its non-epidemic year counterpart. Health projects funded during epidemic years also receive worse ratings from independent evaluators than non-epidemic year projects. Despite this, highly affected meningitis shock districts that happen to receive a higher share of World Bank health projects see an increase in their economic activity. Examples of the types of health projects funded in epidemic versus non-epidemic years are shown in Figure 4. Projects titled “Economic Recovery and Adjustment Credit focused on providing funding to health sectors are the top projects funded during epidemic years, which may explain the stimulus effect on economic activity.

Conclusions

Epidemics of infectious disease may become more common in the future with global warming expected to increase the incidence

Authors**Belinda Archibong**

Columbia University
ba2207@columbia.edu

Francis Annan

Georgia State University
fannan@gsu.edu

Uche Ekhatör-Mobayode

University of Pittsburgh at
Bradford
uheckhatör@gmail.com

and alter the geographical distribution of epidemics. The current COVID-19 pandemic and many others prior have had significant harmful effects on human welfare and economic development. These effects have worsened gender inequality and increased vulnerability of children and marginalized populations globally, with effects particularly severe for poorer countries. The evidence and discussion above on the effects of epidemics, using evidence from meningitis epidemics in Africa, show that although these shocks can have significant negative effects on economic activity and child health outcomes, global governance institutions like the WHO can play an important role in mitigating these effects. WHO declarations reverse the negative effects of epidemics by triggering inflows of health aid, and we show evidence from World Bank health projects here. This influx of health financing has significant long lasting positive effects for countries in epidemics, and better targeting of health aid could lead to even greater positive effects for affected areas during epidemics. A more holistic approach to epidemic response that focuses on epidemic related vaccination but does not ignore routine vaccination is needed as well to avoid crowd-out of routine vaccination, which can be detrimental for long-term health outcomes. The results highlight the importance of global governance around health in mitigating the negative impacts of epidemics on economic outcomes, especially in poorer regions with less health financing and access to health infrastructure.

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provide information, analysis and key policy recommendations on important development and humanitarian topics. The views presented are those of the authors and do not necessarily reflect the views of PEGNet. In case of questions or comments, please directly contact the author.

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