

GLOBAL HEALTH

Combating corruption in global health

Tim K. Mackey,^{1,2,3,4*} Jillian Kohler,^{4,5} Maureen Lewis,^{6,7} Taryn Vian⁸**Corruption is a critical challenge to global health efforts, and combating it requires international action, advocacy, and research.**

Humanity has been plagued by corruption for as long as it has been fighting diseases. Yet only in the past 20 years has the international community fully recognized the immense costs and pervasiveness of corruption, including its devastating effect on human health (1, 2). Health-related corruption negatively affects society in areas of economic growth, development, security, and population health. Health sector susceptibility to corruption is accentuated by system complexity, large public spending, market uncertainty, information asymmetry, and many actors, all of which conspire to obstruct anti-corruption efforts (1).

Although the exact magnitude of health corruption is difficult to measure, estimates put it in the billions of dollars (1). However, the true cost for the millions of people who suffer from compromised access to lifesaving health services is immeasurable (1). Here, we discuss the multifactorial challenges of corruption and how it blocks the translation of global donor investments aimed at achieving positive health outcomes. We also explore how the Sustainable Development Goals (SDGs) of the United Nations (UN) can catalyze scale-up of anti-corruption tools, programs, evaluations, and policies (<https://sustainabledevelopment.un.org/sdgs>).

DIMENSIONS OF HEALTH CORRUPTION

Health-related corruption is diverse in its forms and broad in its scope. It can infiltrate various domestic and international health system components and stakeholders. Health-related corruption is pervasive in low- and high-income countries alike (1). Corruption also impedes attainment of the “right to health,” a fundamental human rights principle enshrined in interna-

tional law (including the Universal Declaration of Human Rights and the World Health Organization’s constitution). Poor governance, marked by weak institutions, absence of rule of law, and lax enforcement of health policy, creates conditions for corruption to thrive. This then can contribute to health system failure and deprive citizens of access to even basic health services (3).

Corruption is also linked to health security in the modern era of the globalized pathogen. Ensuring that international systems can prevent, detect, and respond to pandemics, such as the SARS outbreak of 2003 and the Ebola virus epidemic of 2014, requires public trust and confidence. However, this response capability is compromised by corruption, especially in fragile states with weak public institutions (1). For example, audits in Sierra Leone and Liberia during the 2014 Ebola virus outbreak found irregularities, including disbursements made without any documentation, corruption in procurement of medical equipment, and claims of Ebola “ghost workers” (that is, workers or staff who fraudulently forged identities to receive compensation or additional pay) (1). Hence, corruption affects multiple dimensions of global health and can undermine the delivery of lifesaving interventions, threaten health system capacity and emergency responses, and waste billions of dollars invested in domestic and global health programs.

CORRUPTION IN GLOBAL HEALTH

Global health is now a multibillion-dollar sector driven by \$37.6 billion in development assistance for health in 2016, according to the Institute for Health Metrics and Evaluation (4). Rapid growth in global health financing,

coupled with proliferation of funding sources and implementers, has created complexity and vulnerabilities enabling crimes of opportunity, especially in countries with weak governance.

The Global Fund to Fight AIDS, Tuberculosis and Malaria, a multistakeholder public-private partnership that has disbursed more than \$27 billion since 2002, has had firsthand experience with health-sector corruption. Corruption investigations of its portfolio have detailed mismanagement and misuse of funds, irregular procurement procedures, kickbacks, illegal drug diversion, inadequate oversight, collusion, faked documents, and other forms of outright fraud (5).

In 2011, corruption in Mali, Mauritania, Djibouti, and Zambia, first reported by the Inspector General of the Global Fund and, later, by the media, casts an unattractive spotlight on the Global Fund’s stewardship of its programs. In the fallout, several governments threatened to suspend funding, disbursements were frozen, and the then Inspector General was controversially fired (5). However, the \$34 million in missing funds represented less than 1% of the organization’s total grant portfolio.

The Global Fund responded with strong anti-corruption measures, including a campaign dubbed “I Speak Out Now!” designed to encourage reporting of violations. It also instituted a 2:1 penalty, punishing governments by withholding double the amount of new grant funds when lost funds were not recoverable (5). Despite these measures, corruption continues: More recent investigations uncovered \$9 million in fraud in Burkina Faso and another \$3 million in Nigeria. In total, Inspector General reports indicate that from 2008 to mid-2016, there have been 13 investigations in 32 different countries, totaling some \$104 million in “noncompliant expenditures,” although, reportedly, half of these funds have been recovered (www.gfpolicy.org/corruptionOIG/stmcorruption.html).

The experience of the Global Fund to Fight AIDS, Tuberculosis and Malaria illustrates several fundamental challenges in combating global health corruption. These include (i) inherent difficulties for donors and aid

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agencies operating in countries with endemic corruption and few safeguards, (ii) the potential negative effects of well-intended measures to increase transparency and accountability, (iii) difficulties in recovering misappropriated funds while ensuring continued operation of programs, and (iv) persistence of corrupt agents when millions of dollars are at stake. Assessing effectiveness of specific anti-corruption strategies is particularly challenging, given the difficulty of measuring the deterrence of corruption.

The cost of global health corruption also goes beyond human health and financial loss and is reflected in negative public perceptions. For example, surveys by the Kaiser Family Foundation have found consistently that Americans perceive corruption as the greatest challenge to improving health in developing countries (1).

EMERGING ANTI-CORRUPTION TECHNOLOGIES

Because billions in global health investments remain susceptible, rigorous design and implementation of interdisciplinary anti-corruption tools are needed. These include demonstrating the effectiveness of existing strategies, such as enhanced financial management, mechanisms to improve transparency, whistleblower protections, managing conflicts of interest, and ensuring that anti-corruption laws, policies, and programs are properly enforced (1).

Assessing the utility of emerging anti-corruption technologies is also critical because corruption becomes increasingly sophisticated and transnational. For example, popular social networking platforms are now ubiquitous and can be used as an educational tool (for example, increasing public awareness about corruption and citizens' rights) and as a social mobilization medium (6, 7). Social media and other information technology platforms can also be used for active surveillance of corruption-related activities or more intentionally to "crowd-source" information from whistleblowers and public reports (6).

Similarly, the importance of leveraging "big data" in anti-corruption efforts is gaining momentum. As government agencies, public procurement programs, and other financial transactions become digitized, so do calls for enhancing transparency and information sharing through open government, e-government, open contracting, and other transparency initiatives (1, 6). This, in turn, creates more data, which can deter corruption and, if used correctly, lead to better detection of corruption-related activities and actors.

Algorithmic big data mining technology is increasingly being used to detect fraud and abuse within health insurance systems around the world (8). Data mining uses statistical methods and machine learning to construct models based on pattern recognition. This allows the identification of specific claims and providers that fit fraud or abuse "profiles." Identifying high-risk areas through analysis of large reimbursement data sets can then increase the efficiency of audits and enforcement activity. However, information technology-based audit infrastructure needs to be strengthened, especially in low- and middle-income countries, and efforts must be made to identify data elements that best predict fraud (8).

Technologies for specific sectors have also been developed, such as in the pharmaceutical industry (1). For example, authentication (features used to enable verification of products, for example, holograms and forensic markers) and track-and-trace technologies (serialization and radio-frequency identification) can be used to prevent drug diversion and combat the international trade in fake medicines. When combined with mobile technologies, anti-counterfeiting solutions such as mPedigree can empower consumers to verify products and report fake drugs to regulators and law enforcement.

Fundamental to the effectiveness of all forms of anti-corruption technology is the ability of governments to track corrupt practices and prosecute illegal actions. However, governments have shown reluctance to take responsibility for identifying and addressing irregularities in the absence of policy mandates or specific indicators, pointing to the need for a unifying governance framework specific to health corruption.

SDGs: A FRAMEWORK FOR GLOBAL HEALTH ANTI-CORRUPTION

In 2015, UN member states adopted the SDGs, ushering in a new global agenda focused on shared goals of health, international development, education, climate change, justice, and poverty alleviation. Recognizing the importance of "health" and "corruption" in their respective spheres, SDGs 3 and 16 are specific to health and justice.

SDG 3 focuses on "ensuring healthy lives and promoting well-being," with targets including ensuring access to quality essential health services and medicines, increasing health financing, and strengthening country capacity to deal with health emergencies. Achievement of SDG 3 and its targets is threatened

by the presence of corruption. SDG 16 focuses on promoting access to justice and accountable and inclusive institutions, with target 16.5 specifically calling for "substantially reducing corruption and bribery in all their forms."

Although these goals are important, in isolation, they fail to address the unique and destructive consequences of global health corruption. This necessitates a more precise response under the SDG framework. Hence, we call for the UN Inter-agency and Expert Group on SDG Indicators to convene a working group or open consultation on global health corruption, soliciting partnership and expertise from UN specialized agencies (for example, World Health Organization, UN Office on Drugs and Crime, UN Development Programme, and the World Bank), civil society, the private sector, and communities disproportionately affected by health corruption.

The mandate of this working group would be to develop a set of specific SDG health corruption subindicators that could be incorporated into the existing SDG global indicator framework or used as a technical assistance mechanism. Health corruption subindicators could be deployed in a synergistic way to help countries implement, monitor, and report on progress toward cross-cutting SDG targets and existing indicators of SDGs 3 and 16.

Advocating for design and adoption of health corruption subindicators could catalyze (i) heightened political attention to the issue; (ii) increased funding for research, data collection, design, and program evaluation to rigorously demonstrate and document real-world feasibility and effectiveness of anti-corruption programs, policies, and interventions; and (iii) investments to scale up anti-corruption programs and policies to enhance prevention.

Design of subindicators should focus on three primary translational domains: (i) mapping out existing data, country coverage of data, and exploring proxy indicators in the health and governance sectors that can be used to measure progress toward subindicators; (ii) examining methodologies and technologies (for example, use of audits, survey data, key-informant interviews, community monitoring, health impact assessments, counterfactual evaluation designs, and "big data") as a means to improve data and enhance implementation of anti-corruption interventions; and (iii) conducting comparative analysis of anti-corruption laws, regulations, and policies to assess their implementation and effectiveness, improve their design, and assess how they can be applied in different jurisdictions (including measuring implementation of the

UN Convention against Corruption and its impact on policy coherence and coordination in health sector anti-corruption activities) (3, 9).

Mobilization should be aligned with SDG 17, which includes targets to improve policy and institutional coherence, encourage multi-stakeholder partnerships, and increase data availability and use of technology—all factors that are important in global anti-corruption efforts. SDG 17 can unify health corruption subindicators under the SDGs framework by promoting them as a multisectoral, interdisciplinary, cross-cutting issue in need of global partnerships.

CONCLUSION

In May 2016, world leaders from governments, civil society, and the private sector of more than 40 countries participated in an anti-corruption summit hosted by former U.K. Prime Minister David Cameron. The summit had lofty goals, headlined by its Global Declaration to “expose,” “pursue and punish,” and “substantially reduce corruption and bribery in all their forms.” However, the summit’s objectives mainly focused on illicit financial flows and traditional “vulnerable” sectors (for example, construction, customs, security, and

extractive industries). In total, only nine countries specifically mentioned “health” in their summit-specific commitments.

Almost universal adoption of the UN Convention against Corruption has set the tone for a rise in anti-corruption programs in key international institutions, but more action is needed in the context of health. Political advocacy needs to begin with consensus among world leaders about the unique and serious consequences of health-related corruption.

Until then, health corruption will remain resilient because it can be invisible, systemic, and diverse and can spread, infecting different communities, countries, and organizations. Although there is no single cure for the disease of health corruption, the adoption of the SDGs represents a critical opportunity to bridge the existing divide between shared “health” and “anti-corruption” global goals to ensure the integrity of health and human development for this generation and the next.

REFERENCES

1. T. K. Mackey, J. C. Kohler, W. D. Savedoff, F. Vogl, M. Lewis, J. Sale, J. Michaud, T. Vian, The disease of corruption: Views on how to fight corruption to advance 21st century global health goals. *BMC Med.* **14**, 149 (2016).
2. M. Hanf, A. Van-Melle, F. Fraisse, A. Roger, B. Carne, M. Nacher, Corruption kills: Estimating the global impact of corruption on children deaths. *PLOS ONE* **6**, e26990 (2011).
3. L. C. Rispel, P. de Jager, S. Fonn, Exploring corruption in the South African health sector. *Health Policy Plan.* **31**, 239–249 (2016).
4. Institute for Health Metrics and Evaluation, *Financing Global Health 2016: Development Assistance, Public and Private Health Spending for the Pursuit of Universal Health Coverage* (2017); www.healthdata.org/sites/default/files/files/policy_report/FGH/2017/IHME_FGH2016_Technical-Report.pdf.
5. A. D. Usher, Global Fund plays hard ball on corruption. *Lancet* **387**, 213–214 (2016).
6. J. C. Bertot, P. T. Jaeger, J. M. Grimes, Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Gov. Inf. Q.* **27**, 264–271 (2010).
7. I. Holeman, T. P. Cookson, C. Pagliari, Digital technology for health sector governance in low and middle income countries: A scoping review. *J. Glob. Health* **6**, 020408 (2016).
8. H. Joudaki, A. Rashidian, B. Minaei-Bidgoli, M. Mahmoodi, B. Geraili, M. Nasiri, M. Arab, Using data mining to detect health care fraud and abuse: A review of literature. *Glob. J. Health Sci.* **7**, 194–202 (2015).
9. M. Björkman, J. Svensson, Power to the people: Evidence from a randomized field experiment on community-based monitoring in Uganda. *Q. J. Econ.* **124**, 735–769 (2009).

10.1126/scitranslmed.aaf9547

Citation: T. K. Mackey, J. Kohler, M. Lewis, T. Vian, Combating corruption in global health. *Sci. Transl. Med.* **9**, eaaf9547 (2017).

Science Translational Medicine

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Sci Transl Med **9**, eaaf9547.
DOI: 10.1126/scitranslmed.aaf9547

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