



## E-Government as tool to advance health

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### INTRODUCTION

Corruption has been a historic part of the organization, governance and financing of multitudinous entities worldwide.<sup>1</sup> Transparency International defines corruption as “the abuse of entrusted power for private gain.”<sup>2</sup> Due to the large number of actors involved in the health system, information asymmetry surrounding the goods and services provided, and the uncertainty in health markets (i.e. unpredictable timing of an illness or effectiveness of a treatment), the health sector finds itself particularly susceptible to corruption.<sup>2</sup>

Corruption can embrace multiple external cloaks due to the diversity of actors who are involved in the chain of healthcare delivery, including

- 1) embezzlement and theft (of user fees, government budgets, medicines),
- 2) corrupt procurement (as a result of bribes or collusion),
- 3) tainted payment systems (excessive billing, price-fixing),
- 4) health technologies and pharmaceutical mishandlings (theft, counterfeits), and
- 5) point of delivery incidents (under-the-table payments, bribe extortion).<sup>2</sup>

The main actors within the health system have been classified into 5 categories, and their complex interactions create many opportunities for corruption to infiltrate the health system. They most notably include government regulators, drug/equipment suppliers, providers (hospitals and health care providers), payers (insurance firms, social security), and other supplies (i.e. infrastructure firms).<sup>3</sup>

Due to the potential vacuum for exploitation within the health sector, governments have historically stepped in to facilitate the financing, provision, and governance of the health sector.<sup>4</sup> Corruption can increase the price of healthcare products and services, while reducing their output and decrease both investment in human capital and government revenue, in turn directly affecting the provision of quality care.<sup>5-8</sup> In countries with limited private healthcare markets, there may be a high burden from usage on the public system, extended waiting periods, and exercise of discretionary authority by government workers.<sup>4</sup> Yet even well-developed private markets will find many patients unable to pay for their care, exposing a huge vulnerability for abuse.<sup>4</sup>

Countries with less corruption experience a higher quality of health care and more efficient provision of services, and when examined further, experience improved health outcomes.<sup>4</sup> Corruption has the

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potential to become a deep-rooted cultural paradigm, largely attributable to existing widespread societal acceptance.<sup>2</sup> Without incentives for positive performance or consequences for misbehavior, a fertile ground for abuse is laid. Although the prevalence of corruption is well acknowledged in the health sectors across many nations, specific instances of corruption are much harder in reality to identify and substantiate with evidence. Without detailed information on health human resources, financial flows, and pharmaceutical and health equipment inventories, characterization of the nature of corruption hitting a particular region is challenging.

The interwoven relationship between healthcare and corruption has been of particular interest to international developmental agencies and societal groups for some time.<sup>2,9</sup> Recognized as a major barrier to access to health care, research on tools to address corruption have been growing in the last decade.<sup>10-11</sup> The association between corruption and its impact on health outcomes has been well-documented across a spectrum of health fields and the link between e-government and the abatement of corruption has been preliminarily explored by economists and policy analysts.<sup>12-14</sup>

#### FROM RESEARCH TO PRACTICE

Public policy reforms in countries worldwide have considerably concerned themselves with mitigating corruption in order to strengthen healthcare access and quality. The diversity of health systems naturally poses various arrangements for the structuring of health resources and their distribution.<sup>1,15</sup> To date, multiple analytical and international comparative studies have examined an array of anti-corruption tools available for nations, and one very potent strategy that has emerged, has been that of e-government.<sup>15</sup>

The mechanism of e-government operates on the premise of transparency and accountability. E-government formally refers to the use of information and communication technology (ICTs), such as Internet and mobile phones, to unmask government processes and facilitate citizen access to information.<sup>16</sup> Not only does it allow for the systematic publication of data available for public

viewing, ICTs provide a conduit for the delivery of services, such as scheduling and payment processes.<sup>16</sup> By amassing data on each transaction, each task performed within the electronic system can be subject to tracking, facilitating detection of any wrongdoings and identification of the wrongdoers.<sup>16</sup> Arbitrary decisions, such as drug fees or patient admissions, are standardized and the opportunity for arbitration by an authority is reduced.<sup>16</sup>

In recent decades, nations have begun to adopt technological reform in favor of increased openness.<sup>17</sup> The Americas, Asia, and Africa have been experimenting with e-government in the last two decades, and national level research demonstrates that e-government exerted a positive impact on attenuating corruption by fostering greater trust with citizens external to the governance bodies and emboldening monitoring and evaluation of employee behaviors internally.<sup>18</sup>

There exist a multitude of case studies whereby ICTs have mitigated financial abuse. In one setting, a novel electronic land record system averted an average of 1.3 million lost work days and saved clients an aggregate of approximately 12 million US dollars.<sup>19</sup> One study concluded that implementation of e-government strategies has yielded reductions in corruption in non-OECD nations from 1996 to 2006.<sup>20</sup> Based on cross-country panel data, longer life expectancies, lower infant mortality rates, and lower under-five mortality rates for citizens were associated with countries that had lower levels of corruption, suggesting that a country's efforts to counter corruption could enhance the health status of its population.<sup>21</sup>

On a more applied level, several case reports of effective ICT implementation have been reported. In Asia, some nations have begun to issue smart cards to citizens, enabling their access to healthcare services and limiting the potential for superfluous cash payment exploitation.<sup>20</sup> In order to combat corruption in pharmaceutical procurement, Chile reformed their pharmaceutical purchasing system by introducing an electronic bidding platform that resulted in an estimated economic savings of US \$4 million and increased access of essential



pharmaceuticals for citizens of lower socio-economic status.<sup>22</sup> This model powerfully demonstrated that accountability and transparency achieved through ICT could mitigate the risk for corruption.

A recent 2016 Cochrane systematic review set out to assess the effectiveness of interventions in decreasing corruption within the health sector. Although a paucity of evidence demonstrating what strategies are most effective in tackling corruption was found, several auspicious strategies were noted, including the detection and disciplining of corruption and heightened transparency and accountability measures for co-payments, tasks that can be facilitated through the use of ICTs. The study urged all anti-corruption interventions and their impacts be monitored and reported in order to inform future endeavors.<sup>23</sup> Given that information technology and social media are emerging as powerful anti-corruption tools and that corruption affects every element of a health system, the investigation of e-government as a strategy to improve health outcomes worldwide will present a very fruitful area of research for health. Future local, regional, and national comparative analyses undertaken exploring the effectiveness of e-government (i.e. the implementation of information and communication technologies) on population health outcomes will serve as very powerful tools for health organizations, development agencies, and workers within the health sector to advocate for the transition to e-government in the name of patient health.

#### WHAT'S NEXT

Health is cross-cutting in nature and improvements in health outcomes and equity are best accomplished through inter-sectorial action that addresses the broader determinants of health.<sup>24</sup> Examination of empirically-validated effectiveness or failures of the various national and health system-specific governance frameworks is needed for stakeholders to engage in sound evidence-informed policy-making.<sup>15</sup> E-government is a promising tool propelling health systems and societies alike forward. There are several existing toolkits and strategies put forth by the United Nations, the World Bank, and Transparency International that have been developed and shared publicly for national and local governing

bodies. Research on the implementation of e-government strategies in health systems has demonstrated promising effects on health systems to date, and is likely to contribute to the advancement of the health of citizens worldwide.

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#### REFERENCES

1. Vian T. Review of corruption in the health sector: theory, methods and interventions. *Health policy and planning*. Mar 2008;23(2):83-94.
2. Transparency International. Global corruption report 2006: corruption and health. [http://www.transparency.org/whatwedo/publication/global\\_corruption\\_report\\_2006\\_corruption\\_and\\_health](http://www.transparency.org/whatwedo/publication/global_corruption_report_2006_corruption_and_health). Feb 2016.
3. Savedoff WD. Transparency and corruption in the health sector: a conceptual framework and ideas for action in Latin American and the Caribbean. CDC: Inter-American Development Bank. Washington, DC. May 2007
4. Gupta S, Davoodi HR, Tiongson E. Corruption and the provision of health care and education services. *International Monetary Fund*. Jun 2000.
5. Acemoglu D, Verdier T. The Choice Between Market Failures and Corruption. *American Economic Review*. Mar 2000;90(1):194-211.
6. Shleifer A, Vishny RW. Corruption. *Quarterly Journal of Economics*. Aug 1993; 108 (3): 599-617.
7. Ehrlich I, Lui FT. "Bureaucratic Corruption and Endogenous Growth," *Journal of Political Economy*. Dec 1999; 107(6): S270-93.
8. Filmer D, Hammer J, Pritchett L. Health policy in poor countries: weak links in the chain. *Policy Research Working Paper Series, The World Bank*. <http://EconPapers.repec.org/RePEc:wbk:wbrwps:1874>. 1998.
9. Transparency International. Real lives, true stories. *Transparency International*. [https://issuu.com/transparencyinternational/docs/2014\\_truestoriesbooklet?e=2496456/9031449](https://issuu.com/transparencyinternational/docs/2014_truestoriesbooklet?e=2496456/9031449). 2014.
10. Bouchard M, Kohler JC, Orbinski J, Howard A. Corruption in the health care sector: A barrier to



- access of orthopaedic care and medical devices in Uganda. *BMC Int Health Hum Rights*. May 2012;3(12):5.
11. Hills G, Fiske L, Mahmud A. Anti-Corruption as Strategic CSR: A Call to Action for Corporations. FSG Social Impact Advisors. [http://www.karmayog.org/relateddocumentsoncsr/upload/26538/Anti\\_Corruption\\_as\\_Strategic\\_CSR.pdf](http://www.karmayog.org/relateddocumentsoncsr/upload/26538/Anti_Corruption_as_Strategic_CSR.pdf). May 2009.
  12. Lewis M. Governance and Corruption in Public Health Care Systems. Center for Global Development. [http://www1.worldbank.org/publicsector/anticorrupt/Corruption%20WP\\_78.pdf](http://www1.worldbank.org/publicsector/anticorrupt/Corruption%20WP_78.pdf). Jan 2006.
  13. Azfar O, Gurgur T. Does corruption affect health outcomes in the Philippines? *Econ Gov*. Jan 2007;9:197.
  14. Collignon P, Athukorala PC, Senanayake S, Khan F. Antimicrobial resistance: the major contribution of poor governance and corruption to this growing problem. *PLoS One*. Mar 2015;10(3):e0116746.
  15. Saltman R, Busse R, Figueras J. Decentralization in health care: strategies and outcomes. McGraw-Hill Education, United Kingdom. Dec 2006.
  16. Bhatnagar S. E-government and access to information. *Global Corruption Report 2003*. 2003:24-32.
  17. Kierkegaard, S. Open access to public documents—more secrecy, less transparency. *Computer Law & Security Review* 2009;25(1):3-27.
  18. Shim DC, Eom TH. E-government and anti-corruption: empirical analysis of international data. *International Journal of Public Administration* 2008;31: 298-316.
  19. World Bank. Making Services Work for the Poor. *World Development Report*. World Bank. <https://openknowledge.worldbank.org/handle/10986/5986>. 2004.
  20. Andersen TB. E-Government as an anti-corruption strategy. *Information Economics and Policy*. Aug 2009;21(3):201-210.
  21. Lio MC, Lee MH. Corruption costs lives: a cross-country study using an IV approach. *Int J Health Plann Manage* 2015;31(2):175-190.
  22. Cohen JC, Carikeo MJ. Using technology to fight corruption in pharmaceutical purchasing: lessons learned from the Chilean experience. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.2132&rep=rep1&type=pdf>. Feb 2001.
  23. Gaitonade R, Oxman A, Okebukola P, Rada G. Interventions to reduce corruption in the health sector. *Cochrane Database Syst Rev*. Aug 2016;(8): 1-77.
  24. World Health Organization. Adelaide Statement on Health in All Policies. World Health Organization. [http://www.who.int/social\\_determinants/publication/s/isa/hiap\\_statement\\_who\\_sa\\_final.pdf?ua=1](http://www.who.int/social_determinants/publication/s/isa/hiap_statement_who_sa_final.pdf?ua=1). 2010.