Ethiopia Health Care 2050

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Abstract

Introduction *The next 30 years to 2050 will be shaped by the effort to achieve universal health care (UHC) and the Sustainable Development Goals (SDGs). Because of rapid demographic, technological, financing, and behavioral and social changes, the health care system will be drastically different from what we know today. The long term perspective will require assessing the opportunities and challenges of the postindustrial revolution/ network age.*

Vision & supporting evidence *increasing population, urbanization and the triple burden of diseases could mean increased and complex health care needs. Ethiopia's long history and vast cultural and biodiversity could be tapped while creatively incorporating new developments. This implies designing a more integrated, person-centered, coordinated, and community-based and prevention oriented system. Sustainable financing strategies will have to be developed including strengthened community-based/social insurance and decreased donor dependence. Strong and skilled leadership, with focus at the decentralized/district level, is critical with the growth of digital health in particular. Ethiopia will therefore need to overcome the current health workforce crisis and develop a more coherent national system aligned with the changing models of delivery of health. Technologies, digital technology/artificial intelligence in particular, are bound to transform health care. While the potential benefits could be immense, issues related to quality, safety and confidentiality need to be addressed.*

Conclusions and call for action *By 2050, health care will be dramatically different and technology driven. Ethiopia will have to adapt moving from sick care to real health care with quality, improved, better coordinated and more equitable coverage. It will have to continuously revisit its visualization of the future with evidence base applying system thinking.*

1. Introduction

*"Long-range planning does not deal with future decisions, but with the future of present decisions" (*Peter Drucker as quoted in 1). The next 30 years to 2050 will be shaped by the effort to achieve universal health care (UHC) and the Sustainable Development Goals (SDGs) set by the United Nations (2, 3) and accepted by Ethiopia (4,5). However, 'every aspect of government and the economy has the potential to affect health and health equity'(6-10) thus challenging governments to identify the most urgent priorities for action (11) in the context of heavy pressure to ensure improved availability, access and delivery (10). This is even more so in the very diverse (12,13), challenging and weak health management information system (14) Ethiopian context.

In view of the rapid demographic, technological, financing, and behavioral and social changes, the health care system will be different from what we know today (15-19). The more so in Ethiopia and Africa in general where "Ensuring access to clean water and sanitation, battling ongoing communicable diseases and stemming the tide of preventable deaths still dominate the healthcare agenda in many countries" (15, see also 20), even though the burden of NCD and injuries are increasing (4,20-26).These rapid and less predictable changes (10) mean that "The public health community is currently situated at the fulcrum of many of society's greatest challenges" (27). Therefore, it is imperative to prepare for the future i.e. long term planning for the post-industrial (28,29)/ network age (30); not in the sense of predicting but in exploring alternative futures and rehearsing responses (31,32).

Thus, long term planning in the21st/postindustrial revolution (33,34)/network age (30) period is a formidable task. Ethiopia has a laudable track record in planning (13) and achieving 'better health at low

cost' (35-37) but continues to face several challenges. It suffers from: a triple burden of diseases - infectious diseases, NCD and accidents (4,22-24); problems of health system structure and staffing pattern; the exclusion trend of sectors other than health by the sector wide approach (SWAp); the (teething?) problems associated with decentralization; increasing disparities/inequities in health care; problems of public/private/NGO partnership; challenges of health care financing reform; increasing and retaining human resources for health HRH); and improving the quality of services and increasing their utilization; weak health management information system (HMIS) etc. All of these in the context of what seem 'constants' of the Ethiopian scene - war, poverty, famine, demographic pressure etc. (13,38).
Long term planning should address the several challenges of the next 30 years. The period "is immersed in transformative change. Most nations … are confronted with political and economic development challenges; even established world powers must transform or face decline" (39). This review focuses on health (care) and digital technology in the 2050 perspective.

2. Vision & supporting evidence

2.1. The need challenge

Population increase – global by 2billion (40) and Ethiopia by 72million (41) – , increasing urbanization (42), the threat of global pandemics (43,44), increasing morbidity from non-communicable diseases (NCD) – the triple burden (40), people's care needs also becoming more complex (45) means meeting health needs will be a major challenge. In the Ethiopian context, this is compounded by large and rugged terrain and limited infrastructure e.g. roads (fig) (13).

2.2. The culture challenge

The cradle of humanity (46,47), with a long history of statehood (48-50), Ethiopia presents a complex cultural context filled with opportunities and challenges. Its rich biodiversity (51) and traditional medicine (52-54) remains to be fully tapped. However, challenges including the 'gender divide' (55), harmful traditional practices (56) and the two MDGs goals not achieved - gender equality and empowerment; and improving maternal health (5) - will remain major challenges even though Ethiopia is reputed for "continuity, change and "creative incorporation" (57,58).

2.3. The design challenge

As indicated above, people's need for care is changing radically and rapidly. Health care must move from treating episodic disease and injury to providing long-term, often complex, care. This implies redesigning health care system that is "more integrated[1], person-centred, coordinated[2], community-based and focused on supporting people's wellbeing and preventing crises" (45, see also 37) i.e. return to Alma Ata/Primary health care (44,59) emphasis on health promotion, disease prevention and integrated health service that are currently neglected (60**)**. Designs that are participatory[3], promote as evidence-based (61,62) as possible actions anchored in context and relationships and supports learning by doing through real time evaluation are required (10,63)**.**

2.4. The finance challenge

Achieving UHC implies implementing health financing reforms that include move towards: "a predominant reliance on compulsory (i.e. public) funding sources …reducing fragmentation in pooling to

[1] Move towards health services strengthening rather than vertical programs (72,73) but a persistent challenge in spite of efforts to overcome the decision dilemma (74-76)
[2] A leitmotiv of the health care system in Ethiopia, at least, from the BHS era (13).
[3] As noted by an informed observer of the Ethiopian health system, the approach to date has been top down and "was almost an emergency system; but the next stage will be getting people on board and incorporating local knowledge" (Balabanova as quoted by 15); a challenging task requiring major changes in policy and strategy See also 76).

enhance re-distributional capacity … strategic purchasing, which seeks to align funding and incentives with promised health services" (64). Ethiopia's health care financing strategy (65) has gone through several phases to address these issues (66). Major efforts have been exerted to introduce and expand community-based and social insurance (67) and other reforms (13) but challenges remain and the system is under-funded and still highly dependent on unpredictable and poorly harmonized donor funding (68). Financial accessibility remains a major challenge (69,70). The yearly per capita expenditure on health, at about US$31, 2016 (71), is far below the $34-S40 considered by WHO as the minimum necessary to provide a population with basic health care. Financial constraints for health are universal but, the government recognizes (78) that "Sustainable financing strategies will be critical for Ethiopia to continue providing quality health care services, especially primary care, as the external funding landscape, health needs, and demand for quality of care change with the transition into a middle-income country by 2035" (79).

2.5. The leadership challenge

Governance is an overarching health systems function on which resolution/mitigation of all the other challenges depend (76) as it implies "exercising authority, setting roles and responsibilities and shaping interactions of the different health actors" (64). Strong and skilled leadership (10,77), in critical short supply everywhere but in countries such as Ethiopia in particular, is required at all levels, district in particular – 'a hidden crisis' (80) - at times of rapid changes (45) or crisis such as epidemics (81). The more so as there is strong pressure to rollout digital health which presents new ethical **(**82) and equity (83) challenges but "standardized approaches for formalizing national stewardship[4] responsibilities and ensuring that digital health is a routine, mature, sustainable, and country-owned component of the health system are lacking" (84). It is important to underscore "…at the same time that we are being introduced to new (digital) ways of delivering health services, people's choices are what counts in health" (17).

2.6. The workforce challenge

The health workforce "is the component of the health sector that determines the efficiency with which all others function" (85). Globally, the shortage of healthcare workers was expected to rise to about 12.9 million by 2015 (86). While the shortage holds for all health workers, it is more acute in public health leadership (10 see above, 80). Ethiopia is in a deep health workforce crisis (87-90). There have been some laudable efforts to address the crisis through task shifting (91) and accelerated training, 'the flooding strategy' but major issues in quality of training; career structure and continuing professional development; management, motivation and retention (attrition/brain drain) persist (90).

Human resource for health (HRH) planning is difficult anywhere but the more so in the Ethiopian context. Thus, even though the accelerated pace of human resource development (HRD) in recent years is denting the problem, there is a long way to go yet to train the appropriate type and number of staff and retaining them in the public sector in particular. Even with the accelerated pace of additional health officers and health extension workers (HEW), the health workforce density was well below the WHO threshold (2.3/1000) and far behind most African countries (Fig) (87,90,92-95).

ILO (96) underscores that "Population dynamics, globalization, technology and environmental and geopolitical factors will radically alter the way health workers deliver health services in the future". As recommended for NHS, "there needs to be a more coherent national system to develop and oversee workforce strategy and ensure its alignment with the changing models of delivery of health and social care" (97) using digital technology which has the potential to improve training, motivation, support, monitoring, and payment of health workers (40).

[4] Ethiopia noted for strong ownership (98)

2.7. The technology challenge[5]

In what has been labeled as post-industrial revolution/network age (28) breakthroughs in technology – biotechnology, genomics, nanotechnology, information and communications technology (ICT) etc. - are opening major avenues of development in health care and human development in general but also challenges. Technologies are advancing more rapidly (doubling in less than two years), more fundamentally (e.g. genetic engineering) and reducing costs more dramatically (28, 99-103). While all are bound to impact on health development, the focus here will be on digital technology – "the number one mega trend that will transform medicine" (18) - and health care for which there is a strong promotion (70).

Use of digital technology in health care is becoming pervasive in the prevention, diagnosis, treatment and rehabilitation of diseases with over 100,000 healthcare apps already available (17-19,104) with potential to increased and more equitable access to health care (105,106) even in the most rural parts of Africa (15). Smartphones are playing major roles in everyday life and, in the 2050 perspective, healthcare provision could become proactive and continuous, rather than reactive (17,108-110).

In Ethiopia, access to digital technology, mobile phone in particular, is growing rapidly (111-113). The government has endorsed "the information revolution" (114-116) and the development of "the Connected Woreda Program" (117) promises rapid expansion. Already, mobile phones are used extensively in the health extension program by health extension workers/health development army (116-124), There are strong efforts to develop electronic Health Management Information System (eHMIS), Tele Education and Tele Medicine (22) even though adoption and functionality need improvement (115, 125).

However, harnessing technology, digital technology in particular, is not an easy task (107) because of divergent goals and incentives of institutional customers and technology developers and vendors and because "traditional clinical testing paradigm does not neatly apply to digital medicine" (126). There are a number of issues related to quality, safety and confidentiality (127). This is the more so for artificial intelligence (AI) which "is reshaping daily practices, personal and professional interactions, and environments" (128). There are attempts to establish an International Panel on Artificial Intelligence (IPAI) and most agree that IA development should not be left to the whims of the private sector alone (100, 101). As endorsed at the 71st World Health Assembly in May 2018, the onus is on governments to take ownership "for digital health scale-up, from establishing national technical standards to bolstering electrical and communications infrastructures at the proverbial last mile" (105).

3. Conclusions and call for action

By 2050, health care will be dramatically different (18,19) and Ethiopia will have to adapt moving from sick care to real health care and achieving its commitment to reach the most vulnerable with sustainable UHC (129, 130). A no mean task as overcoming the various challenges shown above in the context of a highly complex, rapidly evolving and globalizing world will be fraught with losers and winners (107).The problem lies in the multiple motivations of the several (and ever growing) actors involved in diseases controls and health care [WHO, other UN agencies, private foundations, numerous bilateral and

[5] AI a source of "A kind of AI arms race … For all the upsides, AI carries risks, from how facial-recognition technologies track and identify individuals, to the manipulation of elections." and bound to dominate the field by 2030 (100) "AI technologies promise advances in health care, transport and communications, and the nations that make fundamental breakthroughs in the field are likely to shape its future directions and reap the most benefits." (102). "… wealthy nations are also jockeying for a place in the world AI league. A kind of AI arms race is under way, and governments and corporations are pouring eye-watering sums into research and development. The prize, and it's a big one … For all the upsides, AI carries risks… [number of initiatives] Officials from Canada and France, meanwhile have been working to establish an International Panel on Artificial Intelligence (IPAI), to be launched at the G7 summit of world leaders in Biarritz, France, from 24 to 26 August" (100)

multilateral agencies, private industries, influential individuals, including Presidents and Prime Ministers, Ministries of Health, Finance, etc.]. In this cacophony, decisions tend to be based on piece-meal opinions rather than on empirical evidence; to the interest of immediate political/financial gains and to the detriment of long-term health gains (13, 131).

It is well recognized that hea1th cannot be attained by the efforts of the health sector alone and requires intersectoral collaboration with specific and legally sanctioned implementation measures including health-impact assessments of all government policies; specific plans for relevant government departments ("health proofing"); broader ministerial mandates (including, for example, children, the elderly, environment and food) which have eluded Ethiopia to date (13). While the promises of innovative technologies in resolving these problems are enormous, the choices, including equitable health outcomes (132) require evidence based policies in a rapidly changing and highly interconnected environment (133-135).

Shaping Ethiopia's health system in a globalizing world implies some visualization of what the future holds. Some attempts to look into the future have been made (4MOH 2015a) but drawing thought-through future scenarios for Ethiopia is an arduous and continuous task. Lessons could be drawn from attempts in the USA (136) and Europe (137) but it is important to continuously revisit our own scenarios in view of articulating the implications for health development and, consequently, position ourselves/negotiate for the best deal for Ethiopia in a changing and dynamic world-order. The aims would be a health system that protects and promotes population health and provision of preventive services and emergency preparedness ("public health"); provides health services and care for all according to need, and finances these according to ability to pay ("health services"); ensures training, surveillance and research for maintenance and improving of population health and health services and availability of skilled labor force ("human resources and knowledge") and ensures ethical integrity and professionalism, mechanisms of accountability, citizen rights, participation and involvement of users and respect of confidentiality and dignity in provision of services ("ethics and accountability") using the latest health forecasting methods (13). "Based on decades of experience in health systems strengthening and confronting challenges in implementation and scale-up, the health systems community increasingly recognizes that interventions interact with the complex context in which they are implemented, often leading to unpredictable effects. More adaptive, flexible implementation approaches, that can take account of these effects and adapt strategies accordingly – known as systems thinking –, are needed (138).

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