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Research Article

The Strategic Role of Stakeholders in Healthcare Management of HIV/AIDS in Africa – Insights From Savior of Mankind

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Abstract

HIV/AIDS has affected millions of people's lives including their children and mothers all around the world, but mostly in Africa and particularly Sub-Saharan Africa. This case study extensively examines the role of stakeholders' collaboration (including healthcare professionals, medical doctors, nurses, etc.), community volunteers, social enterprises and NGOs, health departments and governments, pharmaceutical companies, multilateral healthcare, and multilateral donor agencies particularly, UNAIDS, WHO, UNICEF, UNITAID, UNPF, UNPF, Clinton Foundation, Bill and Melinda Gates Foundation, Medicines Patent Pool, etc.), innovations in related treatments (by a corporate entrepreneurial firm, CIPLA India as a major stakeholder), and intellectual property rights issues.

This case study avails the techniques of meta-inquiry of literature to unearth pertinent issues, challenges, and developments. Eight interviews from physicians (till saturation point) were taken who worked with WHO and served in Africa for HIV/AIDS control program. Their responses were transcribed, interpreted, and coded. Pertinent categories and themes were identified, analyzed, and matched with those found in literature. Utmost care was taken to avoid subjective reflexivity or researcher bias in forming any personal opinions. (The teaching notes of this case study are available separately with the authors). The findings are devised to aid in developing innovative and cost-effective healthcare solutions to HIV/AIDS patients and designing effective participation strategy of pertinent stakeholders. CIPLA Pharmaceutical India played a leading role in developing innovative and cost-effective solutions of HIV/AIDS drugs, which faced criticism on patents' violation, but was highly appreciated by other global stakeholders.

Keywords: *Corporate Entrepreneurship, Strategic Management, Stakeholders and Public-Private Partnership, Healthcare Management, Healthcare Innovations, Intellectual Property Rights, Pharmaceutical Marketing, Responsible Corporate Citizenship*

Introduction

On a cold day of January 2019, Dr. Yousuf Khwaja Hamied (chairman, 80 plus years' old man) and Umang Vohra (MD and CEO, a young man) of CIPLA met on a cup of coffee. Hamied said, "United Nations has set an ambitious goal of ending AIDS by 2030 and we must expedite our endeavors for contributing to such goal, but it appears very challenging." Vohra replied, "We are partnering with all

the strategic players in India, Africa, and worldwide to cure AIDS patients and treat them diligently. But the problem is about creating awareness among masses including marginalized communities, as they need to be well-aware of this most dangerous pandemic disease in the world. It requires huge marketing budgets and initiatives in individual countries, which requires partnerships and collaborations among all the stakeholders of the global healthcare industry." Then they discussed the front burner issues of the company and pharmaceutical industry. Chemical, Industrial, and Pharmaceutical Laboratories (CIPLA) Limited, commonly known as CIPLA Pharma India earned its corporate reputation by innovating and selling HIV/AIDS medicines to poor masses globally at incredibly low price. Thus, it felt onerous of eradicating such fatal disease. However, its global rivals accused it for copying their patents. Competition was getting stiffer domestically as well as globally.

The market dynamics seemed rapidly changing. Many companies were earmarking exorbitant resources and funds for marketing activities and campaigns. They called it an era of relationships and services marketing in pharmaceutical industry (Padela, Qureshi, & Bashir, 2019). The rising cost of raw materials, plants and equipment including quality control and assurance (QC&A) equipment, research and development (R&D) to acquire patents and sustain its leadership in innovated drug delivery system, promotional and marketing outlays, packages of manpower, inflation, and cost of doing business appeared never-ending issues. Thus, maintaining low-cost leadership strategy sounded a daunting task. The industry experts believed that the future of pharmaceutical technologies lied in biotechnology, biopharmaceutical, bio-similars, and naturaceutical. With entrepreneurial mindset, traits, characteristics, and teachings from father, this second-generation family businessman, Hamied worried that to stay competitive, CIPLA must adapt its strategic course in line with the shifting market dynamics (CIPLA, 2020).

Introduction (HIV/AIDS Pandemic)

Human immunodeficiency virus / acquired immune deficiency syndrome (HIV/AIDS) falls among detrimental and fatal diseases in the world. Millions of people worldwide and mostly in Africa and particularly, Sub-Saharan African countries (including Angola, Burundi, Cameroon, Ethiopia, Ghana, Madagascar, Rwanda, South Africa, Sudan, Zimbabwe, etc.) were affected, whereas countless cases remained unrevealed or under-reported since many patients considered it as stigma and felt shyness to express about it (Awio, Northcott, & Lawrence, 2011; United Nations Population Fund, 2020). Globally, nearly 32 to 44 million deaths, nearly 75 to 98 million patients, 1000 plus deaths per day, and 1000 plus infections daily were the outcome of AIDS (ibid, 2010; World Health Organization, 2018). One-third of all adults in Africa suffered from AIDS (Deshpande, Winig, & Sucher, 2012). Some researchers conducted studies and found the self-serving corrupt and incompetent leadership accountable for mismanagement of AIDS (Awio, Northcott, & Lawrence, 2011). This disease spread from patient to patient and from expecting mothers to their babies i.e., innocent victims. Dearth of awareness especially in the least developing countries to developing countries appeared a major reason for its outbreak. The dream of sustainable communities could not be realized without controlling HIV/AIDS. Exhibit 1 to 8 portray various statistical and other data (collected by WHO, UNAIDS, Avert organization, and UNICEF, etc.) on people living with HIV, people receiving its treatment called, Antiretroviral (ART), East and Southern Africa's data on HIV/AIDS, global and regional trends (on HIV/AIDS), global summary of the AIDS epidemic, HIV prevalence by gender and area of residence in Sub-Saharan Africa, continuum of care for HIV/AIDS that involved almost all the healthcare stakeholders, and list of countries in the Sub-Saharan Africa region. A critical analysis of such facts and figures helps in comprehending the severity of facts.

The socio-economic effects of HIV/AIDS fall catastrophic for millions of people in Africa witnessing ailing patients, a long period of suffering of 2-15 years to get AIDS developed, involving several

ailments to death, lack of affordable medicines and treatments, orphan children, ailing to dying families and relatives, dearth of economic opportunities, and harsh economic realities (Ford, Odallo, & Chorlton, 2003). These situations degenerated economic opportunities of those patients as their livelihood diminished due to their physical conditions and poverty soared. Several studies documented HIV/AIDS and poverty nexus as patients lack awareness about the disease, its precautionary measures, treatments, and not being fit enough to do rigorous physical work on the job (Masanjala, 2007; Whiteside, 2002). Other studies revealed that AIDS affected people thought of it as stigma and felt afraid and shy to express about it (Ogunmefun, Gilbert, & Schatz, 2011; Skinner, & Mfecane, 2004). Many people in society started discriminating and neglecting them (ibid, 2004). Some studies uncovered the role of caregivers including older females (Ogden, Esim, & Grown, 2006; Ogunmefun, Gilbert, & Schatz, 2011). Researchers highlighted the severe need for sustainable response to HIV/AIDS through a global health policy and national health policies of individual countries with engagement of public and private sectors inclusive of the non-profit sector (Ogden, Esim, & Grown, 2006).

As the governments worldwide cannot provide healthcare facilities to all the populace, they partner with stakeholders inclusive of private hospitals, dispensaries, and clinics, pharmaceutical companies, and multilateral healthcare donor agencies. The health departments of the public sector contain primary, secondary, and tertiary healthcare system including dispensaries and hospitals' network. Healthcare professionals, medical doctors, paramedical staff comprising nurses and other technical staff, pharmacists, volunteers from the community, NGOs, and social enterprises (led by social entrepreneurs aspiring to solve local problems including healthcare) joined their hands to combat the serious menace of HIV/AIDS.

1.1. GENERAL CAUSES AND CONSEQUENCES OF HIV/AIDS

According to Avert (2019), HIV/AIDS transferred from chimpanzees (apes or specie of monkeys) in 1920s in Congo when people used to hunt and eat them (for suppressing hunger and taste of free meat by poor people) or they might be got infected from wounds or cuts caused by chimps. HIV spreads from a patient to others as a result of intimacy or sexual relations. From expecting mothers, it is transferred to their babies. Its transmission also occurs through feeding breast milk to babies. HIV impairs immune cells and assaults the defense mechanism of human bodies and results in a variety of diseases. Within 2-15 years (depending on individual immune power of various people), it can reach to an advanced stage that is AIDS, which can entail some types of cancers or severe infections that eventually lead to death. One misconception is that it spreads by ordinary touching or handshake with patients and sharing their food and water (World Health Organization, 2018). For more info on the causes of HIV/AIDS, please refer to Exhibit 4.

Many medical doctors or paramedical staff especially in the developing countries use one syringe on various patients (for the sake of convenience or cost-saving), thus from the blood spots of one AIDS patient, it is spread to others. Unsafe needles and syringes to blood transfusions and tissue transplantation are other examples. From surgeons and dentists to hairdressers and beauty expert ladies whoever use unsterilized equipment or instruments pose threat to patients. If they bleed, their blood drops can be infused in another patient's body, which can be affected. Similarly, when some people use any instruments like a knife, blade/razor, or anything on which blood drops of an AIDS patient appear, such things can lead to this most detrimental ailment, for which there is no complete cure, and usually, death is the ultimate outcome.

Marketing Campaigns

Awareness campaigns were initiated to disseminate information about the disease and related issues, consequences, and treatments, and fund raising. From flyers to newspapers, radio and television, and

social and digital media were capitalized to spread awareness among masses. Volunteers believing in altruism came forward to assist the healthcare workers. Individual volunteers from the community to those being members or employees of not-for-profit organizations and social entrepreneurs initiated voluntary services for the noble cause. Police to ordinary community members were prepared to identify any patients in the local community who suffered from HIV/AIDS, but had fear to express and reach to hospitals for treatment. If they learned about any such person, they informed the health workers or officers. Thus, everyone got acquainted and involved in the process of rescuing patients and community members from the spread of HIV/AIDS (Awio, Northcott, & Lawrence, 2011; Deshpande, Winig, & Sucher, 2012).

International donor agencies raised voice against HIV/AIDS in the developed countries and the global community. Such agencies generated funds and chipped in the precautionary measures related projects and programs. Few umbrella agencies of United Nations (UN) including World Health Organization (WHO), United Nations Children Fund (UNICEF), United Nations for AIDS (UNAIDS), United Nations Population Fund (UNPF), United Nations Development Program (UNDP), and World Bank (WB) became actively involved in curbing HIV/AIDS. They also raised funds and launched their programs and projects to assist suffering patients from the under-developed countries of Africa and all over the world. They partnered with the governments, healthcare departments, private sector healthcare actors, and the volunteers from NGOs, social enterprises, and local communities. Moreover, statistics were collected about the patients, treatments, costs, supply of medicines, geographic coverage, age and gender-wise data of victims, and so on. Monitoring and evaluation resulted in effective measures, analytics, and reports that assisted in futuristic strategic and operational frameworks (Deshpande, Winig, & Sucher, 2012).

Healthcare Management And Stakeholders' Collaboration

With the advent of the earliest effective treatments to enhance patients' lives from HIV/AIDS, the health departments and ministries of several countries in Africa, particularly in the Sub-Saharan region came into action. Strategic decisions and plans were framed and executed. The operational framework was designed. Pharmaceutical companies, mostly in the developed countries researched and invented new generation drugs to counter and minimize the hazards, so that a patient can have some relief in painful conditions and have some extended or bonus life. Healthcare companies developed diagnostic kits to identify positive signs of the disease. Medical doctors, nurses, and paramedical staff were continually trained and developed about the latest developments in treatments and patient care. Standard operating procedures (SOPs) were devised in hospitals to treat patients on priority basis. Pertinent medicines and solutions were made available at pharmacies, medical stores, and dispensaries to hospitals. The logistics departments of health departments filled their depots/warehouses with approved medicines for which qualified vendors were short-listed who supplied such stock. The diagnostic laboratories stocked diagnostic kits to identify positive signs of the disease (Office of the U.S. Global AIDS Coordinator, 2008; World Health Organization, 2015). In preventive measures, patients to ordinary people were advised to use condoms and limit sex to their life partners only. However, condoms' usage was discouraged by Christens and Muslim clerics in Africa. NGOs and other volunteers assisted patients and healthcare service providers. Many of them provided food, medicines, material support like mattresses, blankets, etc. to educational support (Awio, Northcott, & Lawrence, 2011). However, in the developed part of the world, even children get sex education in schools, and thus, society plays its due role in awareness creation. Some authors conducted studies in Africa and found out positive attitude and caring behavior of nurses towards AIDS patients, but concluded that they appeared scared of dealing with patients, and most of them had lack of training (Delobelle, Rawlinson, Ntuli, Malatsi, Decock, & Depoorter, 2009); others stressed on their vocational counseling (Wagener, Miedema, Kleijn, van Gorp, & Roelofs, 2015).

Pharmaceutical companies worldwide and particularly in the developed countries kept on researching and adding new molecules/medicines for effective care and enhancing lives of victims of HIV/AIDS. One pharmaceutical company in a developed country but emerging market, India formulated a distinct vision. CIPLA (Chemical, Industrial, and Pharmaceutical Laboratories) Limited, commonly known as CIPLA pharma India (established by Khwaja Abdul Hamied, a chemist qualified from Germany in 1935, which was later overseen by his son, Dr. Y.K. Hamied researched and launched innovative healthcare formulas and medicines at affordable prices in the wider interest of poor patients. CIPLA prioritized generic medicines, instead of launching research-based patented medicines. It researched for innovating and reengineering the processes of patented drugs. It also launched medicines having expired patents that met all the high-quality benchmarks, available at affordable prices. Not only this, but it combined a few distinct molecules of drugs used in the treatment of common diseases. Its scientists tested the new drugs and prepared their dossiers. In addition to new drug designs, they designed new drug-delivery forms like capsules, tablets, creams, or gels, etc. of some drugs that were previously available in injection form only or a few limited forms. They possessed over fifty drug delivery forms. Ultimately, these innovative medicines of high-quality, low-prices, and demand-driven solutions were aimed to serve ailing masses in India, Africa, and the world. CIPLA exported its medicines to numerous countries of the world (CIPLA, 2020; Deshpande, Winig, & Sucher, 2012). It firmly believed in the bottom of pyramid (BOP) philosophy of marketing, which aims to provide affordable products and solutions of quality to masses of the world, particularly lower and middle strata of global society (Prahalad, 2012) and cause or social-cause marketing (Bloom, Hoeffler, Keller, & Meza, 2006).

Healthcare Innovations And Intellectual Property Rights

U.S. and U.K. governments committed huge funds in research and development in AIDS preventive treatments. The global pharmaceutical giants like Pfizer, GlaxoSmithKline (GSK), Roche, Eli Lilly, Merck, Boehringer Ingelheim, etc. sold HIV/AIDS pills and treatments very expensively. The initial treatments incurred outlay of US$12000-15000 per patient, per year, whereas CIPLA sold its solutions for US$1200 per patient, per year, but it sold it for US$600 to hospitals and only US$350 to a French organization, famous as Doctors without Borders i.e., for less than $1 a day (Deshpande, Winig, & Sucher, 2012). Its chairman, Y.K. Hamied proudly states that

"We were pioneers in the world to launch 3-in-1 combination of antiretroviral drugs including Stavudine + Lamivudine + Nevirapine to combat AIDS and help millions of poor masses from India to Africa and rest of the world. We kept our margins extremely slim and priced our dosage for $1 per day, whereas the leading multinational companies charged $12,000-15,000 per patient, per year. We also introduced a convenient dosage for pediatric (of children) HIV. We believe that none should be denied from treatment because of poverty (CIPLA, 2019; 2020)."

CIPLA was heavily condemned worldwide for breach of patent rights by applying reverse engineering techniques to develop patented products of other pharmaceutical players. In South Africa, Nelson Mandela Act allowed import of generic pharmaceutical drugs as well as patented formulas of life-saving drugs and mandatory licensing of patented drugs by patent-holding pharmaceutical overseas companies to local manufacturers. There was resistance against this Act by MNCs. International humanitarian assistance organizations, NGOs, and South African government condemned cartelization of MNCs. In the wake of such resistance by the global community and particularly various agencies of United Nations, MNCs admitted the affordability issue in under developing countries, offered discounts, and reduced their prices of anti-AIDS drugs (Gellman, 2008).

Patents' Issues

World Trade Organization (WTO) and World Intellectual Property Rights Organization (WIPO), two organizations under UN umbrella, also emphasized effective implementation of patent rights to free and fair competition among companies and nations of the world. Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement governed patents and other intellectual property (trademarks, copyrights, etc.) among the member countries. India is also a member of WTO and WIPO and it continually faced immense global pressure to preclude CIPLA from reverse engineering others' patented formulas. MNCs insisted compulsory enforcement of patent laws particularly in under-developing economies with undermined patent rules (Third World Network, 2000). However, there were evidences that CIPLA's social commitment, capabilities, and contribution were lauded worldwide even at WIPO and other UN agencies (**Jewell, 2016)**.

The multinational companies (MNCs) claimed that they incurred outlays of approximately US1 billion to invent or innovate a drug molecule. Hence, they charge enough to recover their R&D investment including drug development to testing experiments on animals and humans, while paying heavy remuneration to any victims. They tried to build international pressure on CIPLA to forestall them from producing their HIV/AIDS treatment-related drugs. But surprisingly, global forces from UN to civic society actors put pressure on them to reduce their prices. Various experts in the global healthcare industry observed that many times MNCs are doing little innovation in their existing drugs just to acquire more patents and enjoy monopoly rights for further 20 years (Deshpande, Winig, & Sucher, 2012). Hamied stated that

"If we fight against these MNCs over patent rights issue, the cost of lawsuit stands US$50,000 per day."

Many thought of CIPLA as a pirate, on the contrary, others declared it as a paragon, angel, and savior of mankind who helped millions of poor patients of HIV/AIDS in the world, particularly in Africa and its Sub-Saharan region. CIPLA took them out of the door of death and assisted towards subsiding their pains and extending their life span.

Many of CIPLA's global rivals and advocates of patents and intellectual property rights (IPRs) accused it of serious infringement of such rights. Donor agencies like Gates Foundation (established by Bill Gates and Melinda Gates) refused procuring its cost-effective medicines of HIV/AIDS and stated that CIPLA should respect others' intellectual property rights (IPRs) (Bill and Melinda Gates Foundation, 2010). However, The Global Fund (a UN fund established under the aegis of WHO) and Clinton Foundation (established by Bill Clinton) procured its medicines for treatment of AIDS patients belonging to poor countries of Africa.

Going Forward

CIPLA pharma continued its journey of research and development (R&D) for innovations and inventions. It embraced intellectual property rights of other pharmaceutical companies and healthcare companies including global giants. Critics might consider it a devil and pirate but it helped saving millions of poor HIV/AIDS patients including innocent children. Otherwise, what could have been the fate of those millions of HIV/AIDS affectees comprising expecting mothers and innocent children? Africa and the entire world observed gradual decline in AIDS infections, suffering of patients, and deaths, and extension of patients' lives. The global giant pharmaceutical companies became literally astonished when two United Nations (UN) agencies, Medicines Patent Pool and UNITAID were established to support the philosophy that patents' restriction is not applicable to fatal diseases like HIV/AIDS. Medicines Patent Pool spurs pharmaceutical companies to issue licenses of their patented medicines of very injurious and fatal diseases like HIV/AIDS to other pharmaceutical companies in countries where a patent owner has no manufacturing facility and marketing operations, subject to conformance of quality yardsticks set by WHO and Food and Drug Administration (FDA) (Medicines Patent Pool, 2019; World Intellectual Property Organization, 2019).

Ultimately, one man, one company's vision, ideology, and dream came true that for fatal diseases, patents' constraints should be removed. Hameed foresaw difficulties and dangers of poor patients and eventually his doctrine was recognized and embarrassed globally by United Nations and other stakeholders. Think tanks and intellectuals can think of several ways to avoid patent rights in favor of pharmaceutical companies that spent millions of dollars to one billion US dollars on inventions or innovations of every new drug inclusive of HIV/AIDS after experiments and clinical trials conducted over several years. But there were millions of people who remained thankful to Hamied and CIPLA for their generous doctrine of doing business to help masses and saving millions of lives around Africa and the world. Many believed that Hamied deserved a noble prize for his contributions towards shielding millions from sufferings of AIDS and deaths. Indeed, in some way it acted like a social enterprise to attain its social mission.

Y.K. Hamied (chairman) pondered the futuristic strategy for CIPLA. Although he handed over the reign of the business to the board of directors (comprising directors from multiple religions and ethnicities) and Umang Vohra (MD & CEO), Hamied pondered about the future direction of the company after him, since he was eighty plus and too old to work vigorously. As part of sustainable development goals (SDGs), UN foresees to end AIDS around the world by 2030 (World Health Organization, 2019) and CIPLA aimed to play utmost prominent and differentiated role among all the stakeholders. The problem that it envisaged was creating thorough awareness about the hazards of AIDS among deprived communities and poor masses. No pharmaceutical company or government could work alone on it and it required commitment of heavy funds of billions of dollars for healthcare management to awareness-building social marketing campaigns for eradication of AIDS. Together global stakeholders including United Nations' umbrella agencies, other multilateral donor agencies, pharmaceutical companies, health sector, and humanitarian assistance organizations could strategize on effective control measures to combat HIV/AIDS, the success metrics, and sustainable ways for long-lasting partnerships among all the pertinent stakeholders.

On domestic grounds, the rivalry (for various drug categories) was getting stiff and global competition appeared even tougher. Rivals were making a lot of marketing investments on promotions, relationship building, and service providing (i.e., relationship and services marketing) to medical doctors. New technologies such as biotechnology, biopharmaceutical, bio-similars, and naturaceutical were emerging that received enormous attention of medical practitioners to general public. The cost of raw materials, inflation, and cost of doing business appeared ever-escalating. CIPLA's corporate entrepreneurial strategy rested on its core doctrine about social responsibility and helping ailing masses with innovative drugs at affordable prices. Despite CIPLA's core competitive advantage of its own patents and being a pioneer in designing new drug delivery systems, maintaining low-cost leadership strategy for AIDS drugs and serving its social mission to sustain its corporate legacy sounded very challenging.

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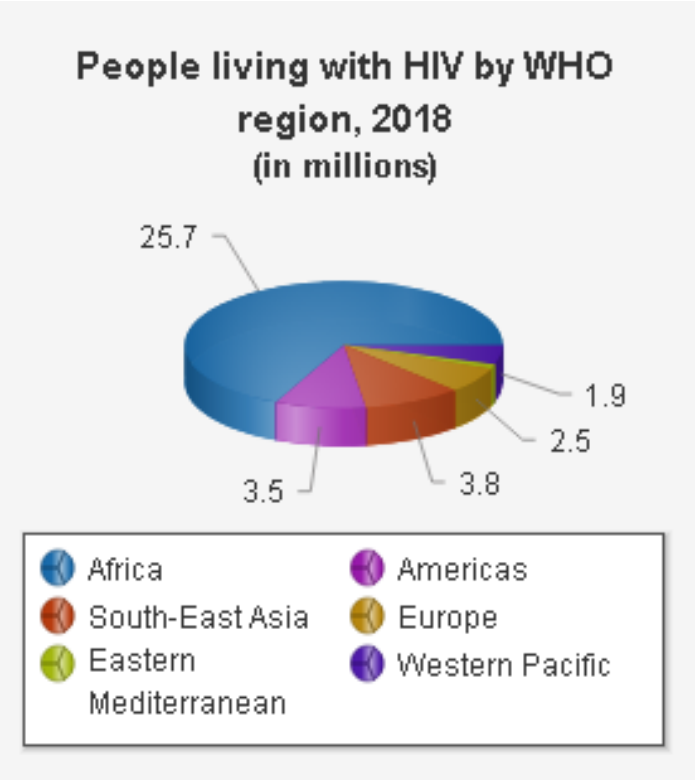

Exhibit 1. People Living with HIV by WHO
Source: World Health Organization (2019)

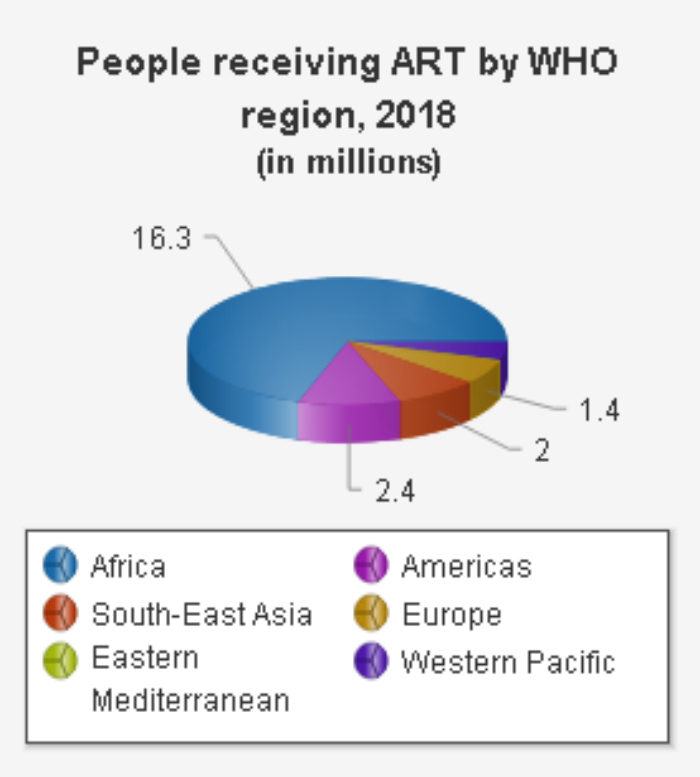

Exhibit 2. People Receiving Antiretroviral by WHO
Source: World Health Organization (2019)

Quantity	Description
20.6 million	People living with HIV
7%	Adult HIV prevalence (ages 15-49)
800,000	New HIV infections
310,000	AIDS-related deaths
67%	Adults on antiretroviral treatment
62%	Children on antiretroviral treatment

Exhibit 3. East and Southern Africa's Data on HIV/AIDS (2018)
Source: Avert (2019; United Nations AIDS, 2019)

HIV/AIDS spreads as a consequence of intimacy or sexual relations among infected people including sex workers and transgender people. It is a sexually transferred disease (STD), especially in gays and even lesbians (in some cases), which appears a cultural and homo-social issue from Africa to worldwide, including highly developed countries, because many people do not preclude their intimacy or sexual relations with their spouse only. In many cases, from friendship circle to work environment, men develop such relations with other men, even if they are married. The one who is affected by it spreads it to others due to such relations.

Exhibit 4. Sex related Causes of HIV/AIDS
Source: World Health Organization (2019)

	Estimate	Lower	Upper
Children aged 0-19 living with HIV	2.8 million	2.0 million	3.8 million
Children aged 0–9	1.1 million	870,000	1.5 million
Adolescents aged 10–19	1.6 million	1.1 million	2.3 million
New HIV infections among children aged 0-19	360,000	170,000	640,000
Children aged 0–9	160,000	110,000	260,000
Adolescents aged 10–19	190,000	59,000	380,000
AIDS-related deaths among children aged 0-19	120,000	76,000	180,000
Children aged 0–9	84,000	54,000	130,000
Adolescents aged 10–19	33,000	22,000	47,000
Children aged 0-17 who lost one of both parents to AIDS-related causes	14.9 million	11.3 million	19.1 million
Children aged 0-17 who lost one or both parents to any cause	147.1 million	143.0 million	151.9 million

Exhibit 5. Global and Regional Trends (on HIV/AIDS)
Source: United Nations Children Fund (2019)

Global summary of the AIDS epidemic | 2017

Number of people living with HIV	Total	36.9 million [31.1 million–43.9 million]
	Adults	35.1 million [29.6 million–41.7 million]
	Women (15+ years)	18.2 million [15.6 million–21.4 million]
	Children (<15 years)	1.8 million [1.3 million–2.4 million]
People newly infected with HIV in 2017	Total	1.8 million [1.4 million–2.4 million]
	Adults	1.6 million [1.3 million–2.1 million]
	Children (<15 years)	180 000 [110 000–260 000]
AIDS-related deaths in 2017	Total	940 000 [670 000–1.3 million]
	Adults	830 000 [590 000–1.2 million]
	Children (<15 years)	110 000 [63 000–160 000]

Exhibit 6. Global Summary of the AIDS Epidemic 2017
Source: World Health Organization (2018)

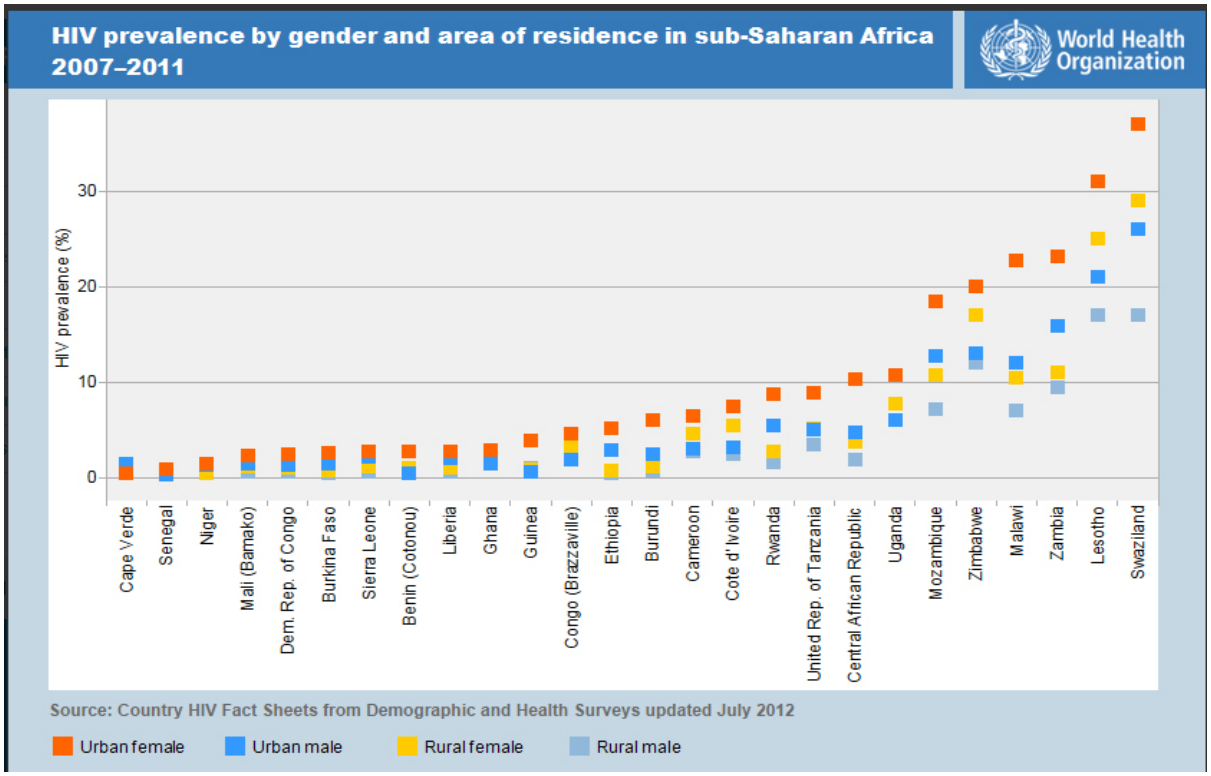

Exhibit 7. HIV Prevalence by Gender and Area of Residence in Sub-Saharan Africa 2007-2011
Source: World Health Organization (2012)

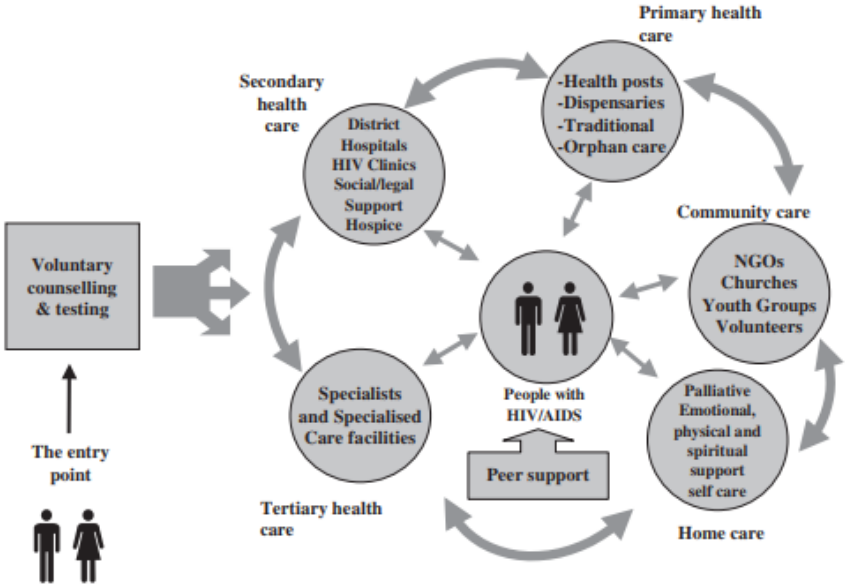

Exhibit 8. Continum of Care for HIV/AIDS
Source: Ogden, Esim, & Grown (2006)

Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Democratic Republic, Congo, Republic, Cote D'ivoire, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe

Exhibit 9. Countries of Sub-Saharan Africa
Source: World Bank (2019)