

# Appraisal of Existing HIV/AIDS Prevention and Control Measures and Presentation of Innovative Strategies to End HIV/AIDS Epidemic by 2030

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## Abstract

**Background:** Globally, UNAIDS report 2022 shows, there are 84.2 million people affected by HIV/AIDS and 40.1 million deaths from AIDS since the start of epidemic. In sub-Saharan Africa, women and girls accounted for 63% of all new HIV infections in 2021 with, six in seven new HIV infections among adolescents aged 15 - 19 years being girls. Key populations accounted for 70% of HIV infections globally in 2021, with 51% of these new HIV infections in sub-Saharan Africa. Reflecting on the 4 decades' journey of HIV epidemic amidst local, national and international efforts, the UN target of ending AIDS as a public health threat by 2030 remains questionable unless new innovative ways are used. This study aimed at analyzing existing HIV/AIDS interventions, discuss UN interventions in line with ending HIV/AIDS by 2030 then, suggest and discuss new innovative ways of ending HIV scourge by 2030. **Methods:** Systematic literature review methodology was used to extract existing published information on HIV prevention strategies from 1981 to 2023. The articles were previewed by 2 experts for quality and grouped by intervention. Of the 637 articles accessed, on HIV prevention/control only 45 met the inclusion criteria. Data were synthesized using a narrative synthesis approach following standard guidelines on synthesis without meta-analysis. Descriptive analysis was done, strength and limitations were identified. UNAIDS recommendations for ending HIV/AIDS by 2030 identified and analyzed. New Innovations in HIV/AIDS were presented and discussed. The scope of the reviewed literature was limited to HIV preventive strategies practiced between 1981 and 2023. **Results:** Findings show that, Uganda's HIV prevalence was at a peak in 1991 of 15% (30% among pregnant women in ur-

ban areas). ABC strategy is claimed to have turned sharply downward the prevalence through the mid-1990s and reached 5% (14% for pregnant urban women) by 2001. Analysis of the strategy showed that the achievements of the strategy could not be sustained, subsequently HIV prevalence rose again. This is because none of the ABC components can independently reduce HIV problem. In the real world, 100% abstinence has failed, condom use only reduces infection by 90% (WHO), and lifelong monogamy is impractical. Such limitations weaken ABC strategy. The study established that Post-exposure prophylaxis (PEP) *i.e.* taking HIV medicines within 72 hours (3 days) after a possible exposure to HIV infection is a safe, effective and a globally practiced HIV preventive intervention in emergency situations of HIV exposure. However, PEP is limited to care sought within 72 hours after exposure and yet timely access especially in rural areas and for key populations remains a big challenge. Oral PrEP was also identified as effective HIV preventive measure that can reduce HIV risk from sex by about 99% and from injection drug users by 74%. However, like PEP, timely access especially in rural areas and for key populations remains a big challenge. The UNAIDS 95-95-95 strategy (*i.e.* 95% of people know their HIV status, 95% with +HIV status be on sustained ART and 95% on ART get viral load suppression) formed the basis for setting the target of ending HIV/AIDS epidemic by 2030. However, our analysis shows that this target is unrealistic given the above highlighted limitations/barriers in preventive measures and the unlikely perfect adherence (100%) to ART by all enrolled HIV positive persons. **Conclusion:** Ending HIV/AIDS by 2030 cannot be achieved by implementing the current preventing strategies and control measures. This study established that most of the existing HIV preventive strategies and control measures have a number of limitations. However, with sustained UN 95-95-95 strategy supplemented with additional innovative ways, there is hope that the UN dream of ending HIV/AIDS though not necessarily by 2030, can in the long run be achieved.

### Keywords

HIV Prevention, Innovative HIV Strategies, UNAIDS 95-95-95, Ending HIV by 2030, ABC Strategy

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## 1. Introduction

The human immunodeficiency virus (HIV), is a virus that attacks the immune system, specifically CD4 cells or T cells [1]. Historically, the virus is transmitted through unprotected sex, sharing of needles for drug use, and through birth via bodily fluids such as blood, semen, vaginal fluids, anal fluids, and breast milk. Over time, HIV destroys CD4 cells that fight infections and diseases, eventually leading to the most severe form of HIV infection, Acquired Immunodeficiency Syndrome (AIDS) [2]. Though there is no cure for HIV/AIDS, early Initiation of antiretroviral therapy (ART) as soon as possible after diagnosis of HIV helps a person to live nearly as long as someone without the virus according to a study

published in 2022 [3]. Recent recommendations of the International Antiviral Society–USA Panel, is that, oral anti-viral treatment effectively halted the spread of HIV in a number of patients. For people who have achieved viral suppression with a daily oral regimen, long-acting injectable therapy with cabotegravir plus rilpivirine given as infrequently as every 2 months is now recent option recommendation [4]. Furthermore, other recent studies have showed that adherence and sustained use of ART does not only reduce risk of HIV, the risk is stopped completely. Further claims, indicate that ART is not only good for health of the one taking it, but also protects the partners. The protection however, depends on taking ART every day, having undetectable viral load for at least 3 - 6 months and continuing to take ARVs without missing. According to Professor Chloe Orkin UK researchers and guidelines U = U *i.e.* undetectable viral load equals un-transmittable HIV [5].

The Origin of HIV has been traced back to chimpanzees and monkeys [6]. In 1999, researchers identified a strain of chimpanzee SIV (simian immunodeficiency virus (SIV) called SIVcpz, which was nearly identical to HIV. Scientist later discovered that, hunters had eaten two smaller species of monkeys—red-capped mangabeys and greater spot-nosed monkeys that carry and infect the chimps with two strains of SIV. Researchers believe the first transmission of SIV to HIV in humans that then led to the global pandemic occurred in 1920 in Kinshasa, city in the Democratic Republic of Congo [7]. By early 1980's United States had registered cases and In September 1982, the CDC used the term AIDS [8], to describe the disease for the first time. Since the beginning of the HIV pandemic, a number of preventive and control strategies have been put in place and used across the Globe. These include the famous ABC strategy. The A, B, C, Abstinence, being safer (by being faithful or reducing the number of partners), and correct and consistent condom use. The ABC strategy is credited for bringing the HIV/AIDS epidemic under control in Uganda in 1990's [9]. By promoting abstinence, being faithful, and condom use, safe(r) behaviors' have been identified that are applicable to people in different circumstances. Others include HIV counselling and Testing, Antiretroviral Therapy (ART), Pre-Exposure prophylaxis (PrEP), post exposure Prophylaxis (PEP) and others. According to World Health Organization reports [10], the fight against HIV/AIDS is not yet about to be over despite the aforementioned interventions. Since the beginning of the epidemic in 1981 [11], globally 84.2 million [64.0 - 113.0 million] people have been infected with the HIV virus and about 40.1 million [33.6 - 48.6 million] people have died of HIV. Globally, 38.4 million [33.9 - 43.8 million] people were living with HIV at the end of 2021. The status quo on prevention and control is not enough to get us through the last mile; we need to deploy creative and innovative solutions at scale for the remarkable challenges ahead if we are to end HIV/AIDS by 2030 [12].

## 2. Background

Studies have found declines in life expectancy due to HIV in many of the hardest-hit countries in sub-Saharan Africa, including Botswana, South Africa, Swazil-

and, Zambia, and Zimbabwe [13]. The epidemic has already posed serious development challenges for the region, where most countries are already low-income and heavily or moderately indebted, thereby adversely affecting communities, families, livelihoods, and numerous sectors of society.

Eastern and southern Africa remains the region most heavily affected by HIV. Recent study findings [14], show that over 70% of persons living with HIV (PLWH) reside in sub-Saharan Africa, Eastern and South Africa (ESA) countries in particular record the highest rates of HIV prevalence in the world. Where resources for healthcare are disproportionately limited. Important to note also is that, the same region and countries, healthcare resources are disproportionately limited.

In view of the continued HIV problem amidst the existing strategies and interventions across the globe, the United Nations on 25<sup>th</sup> September 2015, while developing 2030 Agenda that would transform the world, the international community committed themselves to ending HIV/AIDS epidemic as a Public Health threat by 2030 [15]. This target looks overambitious, given the fact that HIV/AIDS has been around for now four decades and one year to be precise (41 years). The unanswered question in the researchers mind is that, should we continue doing business as usual and expect a miracle of getting away with HIV by 2030? The answer is a big no. The time line from to date 2023 to 2030 just, a period of 7 years compels all of us globally to do business unusual. The need for innovative preventive and control interventions is more than ever before. A reason why the researchers undertake this assessment to identify the existing HIV strategies strength and limitations, focus on the recent global interventions to eliminate HIV/AIDS and finally suggest and discuss innovative ways that can contribute to ending of HIV/AIDS in Africa and the globe at large by 2030.

### 3. Methods

The purpose of this investigation was to review the existing HIV/AIDS control measures and then suggest and discuss new innovative ways that could help Africa and rest of the world meet the global agenda 2030 of ENDING HIV/AIDS pandemic. This assessment adopted a systematic Literature review methodology of the available and used intervention in HIV/AIDS control. Building one's research on and relating it to existing knowledge is the building block of all academic research activities, regardless of discipline [16]. By systematic literature review methodology, data on existing and published information was extracted. We focused on published information on HIV prevention and control strategies since the early days of HIV pandemic in 1981.

Descriptive analysis of the existing strategies was done reflecting on the strength and limitations of such interventions Recent international recommendations in line with the global transformation agenda (SDGs 2030) of ending HIV/AIDS by 2030 were also identified, analyzed, strength and limitations discussed.

#### 3.1. Search Strategy

The search strategy aimed to find published studies reported in English Lan-

guage from 1981 to 2023 in PubMed/Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science and Google Scholar electronic data bases. Studies were considered eligible if they met all the following inclusion criteria: 1) Conducted primary data collection; 2) Were related to any of the HIV prevention or control methods; 3) Were conducted between 1981 and 2023; 4) Were in English language.

### **3.1.1. Methodological Quality**

Papers selected for retrieval were assessed by two independent reviewers for methodological quality and to determine the extent to which a study addressed the possibility of bias in its design, conduct and analysis, prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute (JBI) [17].

### **3.1.2. Data Extraction**

Data were extracted from papers included in the review using the standardized data extraction tool from the Joanna Briggs Institute Qualitative Assessment and Review Instrument. This review considered any studies that reported HIV prevention or control as an intervention. This review considered studies that included the following HIV intervention methods: Abstinence, being Faithful and Condom use (ABC), Post-exposure prophylaxis (PEP), Pre-exposure prophylaxis (PrEP,) and early antiretroviral therapy (ART). Data extraction tool was formulated around PICO (Population, Intervention, Comparator and outcome) elements of systematic reviews. Two reviewers used MS Excel spread sheets to extract and summarize the following information: authors, year of publication, and country of study, HIV intervention, study design, settings/context, study participants, key findings/outcomes, and main conclusions.

## **3.2. Data Synthesis**

Studies were grouped by HIV intervention and assessed for effect or no effect (whether there is evidence for significant effect?). We followed standard guidelines on synthesis without meta-analysis [18]. Data were synthesized using a narrative synthesis approach.

Descriptive analysis of the existing strategies was done reflecting on the strength and limitations of such interventions. Recent international recommendations in line with the global transformation agenda (SDGs 2030) of ending HIV/AIDS by 2030 were also identified, analyzed, strength and limitations discussed. Finally innovative HIV/AIDS preventive and control interventions are presented and discussed. The scope of the reviewed literature was limited to preventive strategies from 1981 to 2023.

## **4. Findings (Results)**

### **4.1. Studies Screened and Synthesized**

Total database search generated 637, where 72 articles were on HIV preven-

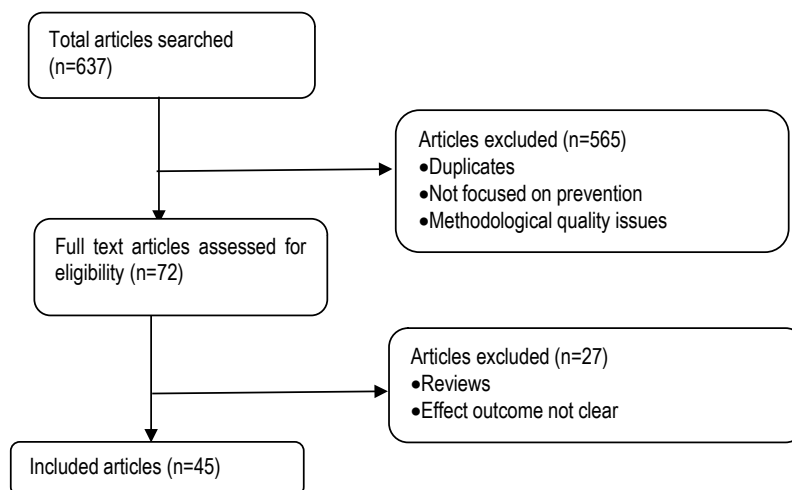
tion/control of which 45 met the inclusion criteria and were synthesized (refer to **Figure 1**: flow chart of included studies).

## 4.2. Review of Existing HIV/AIDS Preventive and Control Strategies

### 4.2.1. The ABC Strategy

Abstinence, being Faithful and Condom use. The first cases of AIDS in Uganda were reported in 1982 from Rakai district in the south west of the country, bordering Tanzania [19]. The ABC strategy is credited for bringing the HIV/AIDS epidemic under control in Uganda. By promoting abstinence, being faithful, and condom use. Between the late 1980s and mid 1990s, at a time when HIV/AIDS was well on its way toward ravaging Sub-Saharan Africa, Uganda achieved an extraordinary feat [20]. The ABC strategy came into limelight of the world, when Ugandan President Yoweri Museveni, in his address to the International AIDS Conference in Bangkok [21], July 14, 2004. Popularized ABC strategy as a success story for HIV control in Uganda. Museveni explained to the world the ABC strategy as “Abstain from sex or delay having sex if you are young and not married, be Faithful to your sexual partner (zero-grazing), after testing, or use a Condom properly and consistently if you are going to move around. Since then the strategy was globally popularized as the ABC strategy”. Uganda’s HIV prevalence steadily increased until about 1991, when it peaked at about 15% (30% among pregnant women in urban areas) [22]. It then turned sharply downward through the mid-1990s and reached 5% (14% for pregnant urban women) by 2001, this was ABC at work.

The strength of the ABC strategy having been credited with much of the success in Uganda’s 2001 is that, the three components are closely inter twined, complement each other in much the same way like all the critical components of a car need to be in place for it to move. On the other hand, its limitation is that none of the components can independently bring down or reduce the HIV problem.



**Figure 1.** Flow chart of included studies.

World Bank report 2003 on ABCs of HIV prevention evidence from other Countries show that, while Uganda provides dramatic effect of ABC behavior changes on slowing the spread of HIV infection, there is growing evidence from Thailand, the first Asian country to face a serious AIDS epidemic, prostitution was the main source of HIV infection. In the early 1990s, the government instituted a “100 percent condom use” policy in brothels, which was widely credited with sharply reducing the spread of HIV infection [23]. Analyzing the three ABC components independently, there is no doubt that Abstinence is 100% effective if “used” with perfect consistency. But common sense suggests that in the real world, it can and does fail.

#### **4.2.2. Condom Use in HIV Prevention**

Does condom use guarantee safety from HIV infection? The real and bitter truth is that condoms have a failure rate, however minimal. Some studies claim that “consistent and correct” male condom use only reduces infection by 90% [24], while, Female condoms can reduce HIV transmission by as much as 94 percent when used correctly with every intercourse [25]. The second is that condoms institutionalize promiscuity, the behavior that is at the heart of the sexually transmitted epidemic. In Uganda Condoms are distributed in almost all public places except churches, but right use of the condom remains a mystery given increasing incidence of new HIV infections in Uganda and other countries. On the other hand, it should be noted that, In Uganda, condom use is affected by a range of socio-cultural factors. The negative attitude towards condom use in some families and in long-term relationship is seen as a lack of trust. While some people believe that, Condoms reduce sexual pleasure and may have physical side effects, using Uganda condoms that are free of charge is perceived as being cheap by women. According to Catherine Kemigabo, the district Health Educator Kabarole Uganda, some women claim that, men won’t pay for sex if a woman insist on condom usage. This implies that, some women are economically compelled into actions that could be easily avoided, but also reflects knowledge gap among men on HIV transmission. In our society, cultural reasons like polygamy also negatively impact on condom use. The need for periodic and intensified promotion of condom use across board could lead to positive behavioral change towards condom use in the African setting.

The question is whether promotion of condom use will lead us to the promised land of a HIV free world by 2030 and beyond. It goes without saying that condom use plays a significant role in prevention of a number of other STIs as well as a contraception. It is on record that Female condoms are up to 95 percent efficacious in preventing pregnancy [26], but even then, throughout all the aforementioned situations, high level consistent right use must be observed.

#### **4.2.3. The B Part of ABC Being Faithful**

According to the Guttmacher Report on Public policy volume 7, issue 4, (B) of ABC could mean lifelong monogamy, serial monogamy, faithfulness within a

polygamous marriage or an overall reduction in the number of one's casual sexual partners. While being faithful is a moral obligation for married people. Society is slowly taking diversionary direction of unfaithfulness, and this occasionally lead to acquisition of HIV /AIDS. Whereas a lot has been done to popularize this concept with no doubt that people understand and appreciate the concept, it is evident that peoples' practices do not much the concept's knowledge. The question remains what has gone wrong? Shall we maintain the status quo and expect to save the world from HIV problem? Probably the answer is that, we need to do things differently.

#### **4.2.4. Post-Exposure Prophylaxis (PEP)**

This is yet another tested and proven HIV preventive strategy. PEP stands for post-exposure prophylaxis [27]. The word "prophylaxis" means to prevent or control the spread of an infection or disease. PEP means taking HIV medicines within 72 hours (3 days) after a possible exposure to HIV to prevent HIV infection [28]. According to the Centers for Disease Control report 2022, PEP is the use of antiretroviral drugs after a single high-risk event to stop HIV seroconversion. PEP must be started as soon as possible to be effective—and always within 72 hours of a possible exposure. CDC explains exposure to HIV as a medical emergency because HIV establishes infection very quickly, often within 24 to 36 hours after exposure.

There are two recommend PEP preventive treatment regimen Tenofovir (TDF) (300 mg) + emtricitabine (F) (200 mg) once daily PLUS raltegravir (RAL) (400 mg) twice daily or dolutegravir (DTG) (50 mg) once daily TDF (300 mg) + F (200 mg) once daily PLUS darunavir (DRV) (800 mg) + ritonavir \* (RTV) (100 mg) once daily [29] [30]. Note that, PEP is not recommended when care is sought > 72 hours after exposure. Where it is indicted, PEP duration is a 28-day course of a three-drug antiretroviral regimen. Furthermore, unlike a few other preventive measures, it is on record that PEP is an important method of protecting pregnant mothers from getting HIV as it is indicated to pregnant mothers at any time during pregnancy. Studies have demonstrated that, PEP is a safe method of HIV prevention [31], a case-control study of occupational exposures demonstrated an 81% reduction in HIV infection in those who received AZT alone compared with those who did not receive any treatment. PEP was then strongly recommended/proposed for occupational exposure. However, it's unclear whether HIV prevention key populations in resource poor settings can access PEP as and when they need it. According to Junyan Jin of Beijing Youan Hospital china, the study earlier cited shows that poor uptake of PEP is due to individual, social and structural factors including lack of awareness, stigma and timely access.

In view of what is discussed above, PEP remains a relevant and effective preventive measure for HIV in emergency settings, if guidelines and right steps are followed, this one way that may contribute to achievement of HIV free world by 2030 and beyond.



#### 4.2.5. Pre-Exposure Prophylaxis (PrEP)

In September 2015, WHO recommended that people at substantial risk of HIV infection should be offered tenofovir disoproxil fumarate (TDF)-based oral PrEP as an additional prevention [32]. Pre-exposure prophylaxis (or PrEP) is medicine taken to prevent getting HIV. PrEP is highly effective for preventing HIV reduces the risk of getting HIV from sex by about 99%, and risk of getting HIV from injection drug use by at least 74%. This is in accordance with Centers for Disease Control on HIV prevention. We can be emphasized here that, Oral PrEP is highly effective at preventing HIV when used as directed and it remains an important choice as part of the comprehensive HIV preventive measure that can contribute to AHIV free world by 2030 and beyond.

#### 4.3. Early Treatment with Effective Antiretroviral Therapy

At the 20<sup>th</sup> International AIDS Conference in Melbourne, Australia, in 2014, UNAIDS launched new global targets for HIV treatment scale up. Known as the three 90's (by 2020, 90% of all people living with HIV will know their HIV status; 90% people diagnosed HIV receive sustained ART, 90% of people on ART get viral suppression [33]). The 90-90-90 HIV prevention intervention aimed at ending HIV/AIDS epidemic by 2030. In December 2020, UNAIDS released a new set of ambitious targets calling for 95% of all people living with HIV to know their HIV status, 95% of all people with diagnosed HIV infection to receive sustained antiretroviral therapy, and 95% of all people receiving antiretroviral therapy to have viral suppression by 2025. Adopted by United Nations Member states in June 2021 as part of the new Political Declaration on HIV and AIDS. One of the scholars Luisa Frescura [34] analyzed the concept of the 95-95-95 targets for all and described the strategy as a pathway to ending AIDS by 2030. Recent studies show that, there is already some light at the end of the tunnel on this strategy. According to the global fund Results report 2020 [35], Eswatini, a tiny country of just over a million people in Southern Africa, has one of the highest HIV prevalence rates in the world: 27% of adults live with the disease. But Eswatini, together with Switzerland, are the first countries on record to achieve the "95-95-95" global HIV target. This means that 95% of people living with HIV in Eswatini know their status that 95% of people who know their HIV-positive status are accessing treatment and that 95% of people on treatment have suppressed viral load. If the "95-95-95" ultimately year 2030, it means, Eswatini reached the target an entire decade in advance. Similarly, another African country Zimbabwe has made substantial progress in the fight against the HIV epidemic [36]. In 2020, the country had the sixth-highest HIV prevalence in sub-Saharan Africa, with 1.3 million people aged 15 to 64 years living with HIV. According to Zimbabwe statistics from the National Aids Council by June 2022, 96 percent of people living with HIV knew their status while 97 percent of those who knew their status were on treatment. Of those people on treatment, 95 percent were virally suppressed meaning the medication they were taking was working to suppress the HIV virus.

#### 4.4. Proposed Innovative Ways of Doing Business Unusual to End HIV/Aids

This section answers the third specific objective of the assessment. Identifying and proposing the new innovative ways of doing business unusual to contribute to the UN goal of bringing HIV epidemic to an end by 2030. The proposed innovations are presented and discussed under 4 themes for easy reader follow up.

**Theme 1:** Interventions that will empower women and children with HIV/AIDS survival skills in African setting in order to end the HIV/AIDS scourge.

**Theme 2:** Modalities of limiting children's access to destructive technologies. Ensure limited access and use of mass media technologies that display pornographic materials which motivate children engage in sex discovery at a young age.

**Theme 3:** Develop innovative crowd pulling and demand driven HIV/AIDS control interventions.

**Theme 4:** strengthen Governance structures in service delivery in the context of HIV/AIDS control and elimination in African setting. The need for community centered governance, political commitment and support, community participation and engagement in the eradication phase of HIV/AIDS is more than ever before.

**Theme 5:** Empower, invest and turn Key populations into strong allies in the fight against HIV/AIDS by fostering peer or community-led interventions other than reporting them in every forum as HIV transmitters and broadcasters.

##### 4.4.1. Presentation and Discussion of Theme 1

Explore interventions, which will empower women and children with HIV/AIDS survival skills in African setting in order to end the AIDS HIV/AIDS scourge.

Women and children are targeted in this objective, because world over, women are disproportionately infected and affected by HIV/AIDS [37]. This is mainly due to Gender in equality and harm social norms, gender based violence, the high school dropout rates for girls, the sugar daddy culture and transactional sex, limited access to Health services, the age restrictions to access services and last but far from least poverty and economic issues. In line with the above mentioned situation, one can assert that, an intervention which targets a woman in HIV control would to a greater extent succeed in reducing the spread as women appear to be a big pool or source of HIV infection that occasionally lead to sustained transmission in society.

Children are just the victims of the circumstance. They are either infected vertically from mother to child, raped when still young while others are lured into sex by men at a time when they have great social needs, but are financially disadvantaged. Recent Publications by Elizabeth Glazer Pediatric foundation [38] show that, more than 90 percent of HIV infections in children result from mother-to-child-transmission, where the virus is passed from a mother living with HIV to her baby during pregnancy, childbirth, or breastfeeding.

The risk of this form of transmission increases in direct relation to the severity of the mother's HIV infection. UNAIDS estimates show that 1.8 million children

below the age of 15 years are living with HIV worldwide [39] Sub-Saharan Africa (SSA) is heavily burdened by HIV, with 85% of new infections among adolescents happening in the region. According to a report by Winnie Byaminyima a United Nations official in 2021 UN report. Gender inequalities increase women's HIV risks more especially in sub-Saharan Africa, where women accounted for 63 per cent of new HIV infections in 2021. Adolescent girls and young women (aged 15 to 24 years) are three times more likely to acquire HIV than adolescent boys and young men of the same age group in sub-Saharan Africa. In view of the situation highlighted above, prioritization of resources anywhere in the world to provide high-quality HIV prevention, care and treatment services targeting women and children, in families living with and affected by HIV and AIDS could save the world from the HIV pandemic.

#### 4.4.2. Presentation and Discussion of Theme 2

Innovative modalities of limiting children's access to destructive technologies. This calls for policy reforms that limit access and use of mass media technologies that display pornographic materials that motivate children engage in sex discovery at a young age.

**Discussion:** we appreciate the global technological advancement in Use of mass media, social media TVs, phones and computers. However, we cannot continue burying our heads in sand like an ostrich. Our children in homes, schools, and communities, level of awareness on sexual matters is extremely high. From what they see, watch and hear and copy from technology access. By nature and environment that encircles them, they experience inner propelling force, towards discovering what they perceive as hidden pleasures in sex not knowing that, "*the bees that keep the sweet honey also have the stings that punish those who sip the honey*". Therefore, children acquiring HIV at an early stage through sex discovery and experimentation is now inevitable in the 21<sup>st</sup> century at the expense of global technological advancement. Recent children surveys in England to explore their interest in pornography and feelings toward it [40] show that, 53% of the 11 - 16 years surveyed reported viewing online pornography. The percentages increased by year from 28% of 11 - 12-year-olds to 65% of 15 - 16-year-olds.

The situation is more upsetting in the USA [41]. A study of 1501 children and adolescents (aged 10 - 17 years) in the USA, found that 87% of youth seeking sexual images online are 14 years of age or older. No such/similar studies have been conducted in Uganda, despite the overwhelming evidence in society about children access to internet and pornographic material.

As parents, leaders, technocrats, Development partners and any interested stakeholder reading this report there is urgent need more than ever before to develop strategies and policies that limit our young children access to bad technology at home and in schools? Can we use technology to make phones, computers and TVs with inbuilt commands to limit children access adult content? Can we introduce policies in various countries that dictate the type of phone,

computer or screen one is to buy on proof of proper age certification? I implore scientists to help the world to Re-use advances in technology in fight against HIV/AIDs in young people other than having an open policy to accessing pornographic material that consequently fuel HIV transmission.

#### 4.4.3. Presentation and Discussion of Theme 3

Develop and identify innovate crowd pulling and demand driven HIV/AIDs control interventions.

**Discussion** and overview innovative 3: we cannot continue doing business as usual delivering ABC strategy and expect to eliminate AIDS by 2030. We must develop creative, interesting, attractive efficient and cost effective interventions targeting the most vulnerable (youth). We share one “business unusual innovation” used in Fort Portal City, Kabarole District Western Uganda to attract youth take up HIV testing services. According to Uganda HIV/AIDs burden, 2022 Fact sheet, the HIV prevalence among adults (15 - 49 years) in Uganda is 5.5% [42] The prevalence is higher among females 6.8% and low in males 3.9% In contrast however, Fort Portal city located in western Uganda, the prevalence is over and doubles the national figure [43].

According Catherine, the Kabarole district health educator, the Uganda AIDS Commission, 2020 report ranked Kabarole district in Western Uganda as the district with the second-highest HIV/AIDs prevalence rate, at 14.6%. Previously, the district’s prevalence rate had reduced to 7.3%. Kabarole district comes second after Kalangala district, at 18.8% followed by Mbarara 13.1%.

The Fort Fest Music concert, held in Fort Portal city every quarter. This is a youth gathering event (music concert by local musicians) the idea behind the Fest is to gather over 1000 youths and other people in one place. The music is tailored to HIV prevention and control. The concert leaves no one behind. Over 700 HIV tests are done in one day, the sick linked to care, none sick empowered by music to stay HIV free. Assuming such events are done in the entire Africa setting, how long would it take us to stamp out new infections of HIV? We implore the rest of the African countries to emulate the Fort Fest innovation which is more inclusive and leaves no youth behind in accessing HIV preventive services. Only then shall the world realize what seem to be overambitious target of ending HIV/AIDs by 2030.

#### 4.4.4. Presentation and Discussion of Theme 4

Strengthen Governance structures in service delivery in the context of HIV/AIDs control and elimination in African setting. The need for community centered governance, political commitment and support, community participation and engagement in the eradication phase of HIV/AIDs is needed more than ever before.

**Discussion.** We need to strengthen the service delivery systems in our respective countries at all levels of service delivery in the context of HIV/AIDs control and eradication. This requires, leaders, political wing, technocrats, governance

bodies and structures to work together and create a responsive Health system that will result in HIV/AIDS demand driven services. Countries with good governance appear to have low, stable HIV prevalence rates with stronger health systems [44]. It is evident that, developing stronger health systems and good governance leads to a lower more stable HIV prevalence rate. Our clients therefore, need first to trust and believe in health technocrats, the leaders and partners that, we care about them and every one with HIV and that we are doing everything possible to put to an end AIDS scourge. People will understand that we need to protect future generations against HIV and that the resources invested in HIV control could be used to provide services for other unavoidable challenges like cancer. Let's ensure a more inclusive Community Leadership approach, a sustained leadership that includes women and key populations and ensure the available resources now and in the future are appropriated accordingly as suggested here above. This innovation if adopted and implemented; *i.e.* Good governance, political support, caring Human resource for health, community involvement with positive behavioral change will drive all of us to the Promised Land and new era of HIV free society post 2030.

#### 4.4.5. Presentation and Discussion of Theme 5

To empower, invest and turn Key populations into strong allies in the fight against HIV other than reporting them in every forum as HIV transmitters or broadcasters.

**Discussion.** Available data in Uganda show that, Key populations bear the highest burden of HIV. Globally, such individuals and their partners could constitute over 70 percent of new HIV infections. In Uganda, recent studies [45] show that, 25% of new HIV infections are among the key populations and their partners. It is estimated that key populations in Uganda total approximately 310,000 individuals; of whom: 130,000 are female sex workers, 22,000 are men who have sex with men, 7500 are people who inject drugs, and more than 150,000 are people in prisons. In an event that no African nation at the moment, can meet 100% the needs of the key populations and therefore eliminate this category in society. *Can we therefore innovatively turn the key populations into our strong allies in the fight against HIV/AIDS?*

We implore the global community that time is today not tomorrow when we should develop modalities of working with Key populations, sex workers, MSW and Boda Boda riders [46] who have a high HIV prevalence of over 9% reported in recent studies. All should be actively engaged in the fight against HIV/AIDS. The big monies we share in HIV+ workshops, the fuel we burn in the land cruisers and Road master vehicles to attend HIV review meetings and conferences. Why not invest such resources in empowering the Key populations in the world to spear head the HIV fight among their peers and enable them have equal access to life saving combination HIV prevention and treatment services including PrEP and PEP.

## 5. Conclusion

Having a HIV free generation, society and population by 2030 cannot be attained by doing business as usual by holding big conferences and workshops to discuss HIV/AIDS transmission, risk factors and preaching the ABCs prevention approach, rather it requires empowering and engaging those at high risk of HIV and those already infected with HIV to appear at the fore front and spear head the fight against HIV/AIDS.

## Study Limitations

Synthesis without meta-analysis does not provide information about size or direction of the intervention effect.

## Ethical Issues

Not applicable. The assessment did not physically engage Human study subjects.

## Author's Contribution

**Dr Mathias Tumwebaze:** Corresponding author of the manuscript, prepared the draft manuscript, edited made final corrections and submission.

**Professor John Rubaihayo:** Prepared and proof read the manuscript, aligned the report sections and participated in compilation of final manuscript.

**Mpairwe Harold:** Environment scientist; assembled the literatures sources of information and participated in compilation of the final manuscript.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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