



# Global Inequalities of Health Issues for Adolescents and Children track to end HIV/AIDS by 2030, A Statistical Analysis

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## Abstract

The third Sustainable Development Goal (SDG-3) has a target to end the epidemic of HIV/AIDS by 2030 (Project 2030). This will be achieved when the number of new HIV infections and 'AIDS-related deaths' decline by 90% between 2010 and 2030. So far, the rate of drop in AIDS-related deaths is on track, whereas the rate of drop in new HIV infections is off track to achieve Project 2030. Even if Project 2030 was achieved, HIV would be an endemic health problem. Hence, HIV prevention and control programmes cannot close down for the foreseeable future. This rather demands a paradigm shift from a fully vertical to an integrated health systems response that provides services according to disease burden towards universal health coverage. This will ensure the sustainability of HIV services in the post-2030 era. These all entail unrelenting political commitment, and increased and sustainable funding from both national and global sources.

**Keywords:** HIV/AIDS, Epidemic, Ending Elimination Eradication, Adolescents, 2030.

## 1. Introduction

Progress in the prevention and control of HIV/AIDS during the last two decades has stimulated a debate on the possibility of ending HIV/AIDS as a public health threat.

### Global targets from the Super-Fast-Truck framework for ending AIDS in children, adolescents and young women by 2020

|                   |  |
|-------------------|--|
| <b>Start Free</b> | Eliminate new HIV infections among children aged 0-14 by reducing the number of children newly infected annually to less than 20,000 by 2020 |
| <b>Stay Free</b>  | Reduce the number of new HIV infections among adolescents and young women (aged 10-24) to less than 100,000 by 2020                          |
| <b>AIDS Free</b>  | Provide 1.4 million children (aged 0-14) and 1 million adolescents (aged 15-19) with HIV treatment by 2020                                   |

The Joint United Nations Programme on HIV/AIDS (UNAIDS) has widely promoted a slogan and goal to end HIV/AIDS by 2030 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2016b). The United Nations General Assembly took up this issue during a High-Level Meeting in 2016, and the third Sustainable Development Goal (SDG-3) included a target to end the epidemic of HIV/AIDS by 2030 (Project 2030) (World Health Organization (WHO), 2015).

|                                    |                                 |                             |   |
|------------------------------------|---------------------------------|-----------------------------|---|
| Target Groups                      | Collaborators                   | Youth Initiators            | Focus on working with and for youth towards effective development |
| Working for youth as Beneficiaries | Engaging with youth as partners | Supporting youth as Leaders |   |

A successful endgame of Project 2030 is defined, quantitatively, as a decline in the number of both new HIV infections and 'AIDS-related deaths' by 90% between 2010 and 2030 (Joint United Nations Programme on HIV/AIDS (UNAIDS), and the Whole world upto 2021 year percentage of HIV as given below, Highest number shows that as usual poor countries

| Country                          | Year | % People living with HIV who know their status | % People living with HIV receiving ART | % People living with HIV who have suppressed viral loads | HIV Incidence-to-Mortality Ratio | HIV Incidence per 1000 Population | HIV Incidence-to-Prevalence Ratio |
|----------------------------------|------|--|--|--|----------------------------------|-----------------------------------|-----------------------------------|
| Angola                           | 2021 | 57   | 41                                     | #N/A   | 1.02                             | 0.52                              | 5.41                              |
| Benin                            | 2021 | 85   | 84                                     | 66   | 0.8                              | 0.14                              | 2.45                              |
| Botswana                         | 2021 | 94   | 92                                     | 90   | 1.08                             | 3.48                              | 1.96                              |
| Brazil                           | 2021 | 88   | 73                                     | 69   | 2.72                             | 0.24                              | 5.22                              |
| Burkina Faso                     | 2021 | 88   | 84                                     | #N/A   | 0.62                             | 0.08                              | 1.9                               |
| Myanmar                          | 2021 |  | 70                                     | #N/A   | 1.46                             | 0.2                               | 4.03                              |
| Burundi                          | 2021 | 93   | 93                                     | 86   | 0.8                              | 0.14                              | 2.04                              |
| Cambodia                         | 2021 | 84   | 84                                     | 82   | 0.68                             | 0.07                              | 1.46                              |
| Cameroon                         | 2021 | 81   | 78                                     | 72   | 0.87                             | 0.56                              | 2.94                              |
| Côte d'Ivoire                    | 2021 | 80   | 76                                     | 64   | 0.41                             | 0.21                              | 1.46                              |
| Democratic Republic of the Congo | 2021 | 82   | 82                                     | #N/A   | 1.18                             | 0.18                              | 3.8                               |
| Dominican Republic               | 2021 | 85   | 55                                     | 47   | 1.59                             | 0.39                              | 5.4                               |
| El Salvador                      | 2021 | 79   | 59                                     | 54   | 1.43                             | 0.17                              | 4.36                              |
| Eswatini                         | 2021 | 93   | 91                                     | 89   | 1.39                             | 7.65                              | 3.12                              |
| Ethiopia                         | 2021 | 84   | 78                                     | 75   | 0.78                             | 0.12                              | 1.95                              |
| Ghana                            | 2021 | 71   | 71                                     | #N/A   | 1.41                             | 0.57                              | 4.9                               |
| Guatemala                        | 2021 | 88   | 73                                     | 67   | 1.34                             | 0.07                              | 3.74                              |
| Guyana                           | 2021 | 91   | 63                                     | #N/A   | 2.34                             | 0.62                              | 5.44                              |
| Haiti                            | 2021 | 85   | 85                                     | 73   | 1.68                             | 0.38                              | 2.88                              |
| Honduras                         | 2021 | 66   | 56                                     | 55   | 0.87                             | 0.08                              | 3.53                              |
| India                            | 2021 | 77   | 65                                     | 55   | 1.01                             | 0.05                              | 2.62                              |
| Indonesia                        | 2021 |  | 28                                     | #N/A   | 0.99                             | 0.1                               | 4.89                              |
| Jamaica                          | 2021 |  | 47                                     | 47   | 1.59                             | 0.5                               | 4.81                              |
| Kazakhstan                       | 2021 | 80   | 64                                     | 55   | 11.6                             | 0.18                              | 9.97                              |
| Kenya                            | 2021 | 92   | 78                                     | #N/A   | 1.04                             | 0.73                              | 2.4                               |
| Kyrgyzstan                       | 2021 | 75   | 50                                     | 45   | 2.81                             | 0.1                               | 6.83                              |
| Lao People's Democratic Republic | 2021 |  | ...                                    | #N/A   | 2.14                             | 0.11                              | 5.32                              |
| Lesotho                          | 2021 | 92   | 81                                     | 79   | 0.9                              | 4.76                              | 2.59                              |
| Liberia                          | 2021 | 66   | 61                                     | #N/A   | #N/A                             | #N/A                              | #N/A                              |
| Malawi                           | 2021 | 93   | 91                                     | 85   | 0.99                             | 1.13                              | 1.99                              |
| Mali                             | 2021 | 59   | 53                                     | #N/A   | 1.04                             | 0.26                              | 4.86                              |
| Mozambique                       | 2021 |  | ...                                    | #N/A   | #N/A                             | #N/A                              | #N/A                              |
| Namibia                          | 2021 | 92   | 91                                     | 84   | 1.38                             | 2.91                              | 3.07                              |
| Nepal                            | 2021 | 84   | 72                                     | #N/A   | #N/A                             | #N/A                              | #N/A                              |
| Nicaragua                        | 2021 | 90   | 53                                     | 46   | 2.1                              | 0.08                              | 4.88                              |
| Nigeria                          | 2021 | 90   | 90                                     | 86   | 1.03                             | 0.34                              | 3.85                              |
| Panama                           | 2021 |  | ...                                    | #N/A   | #N/A                             | #N/A                              | #N/A                              |
| Papua New Guinea                 | 2021 | 76   | 65                                     | #N/A   | 4.03                             | 0.43                              | 6.45                              |
| Philippines                      | 2021 | 65   | 41                                     | #N/A   | 13.94                            | 0.19                              | 15.65                             |
| Tajikistan                       | 2021 | 75   | 65                                     | 57   | 4.72                             | 0.1                               | 7.14                              |
| Rwanda                           | 2021 | 94   | 93                                     | 91   | 1.12                             | 0.34                              | 1.88                              |
| Senegal                          | 2021 | 81   | 79                                     | 69   | 1.26                             | 0.1                               | 3.95                              |

|                             |      |    |    |      |      |      |      |
|-----------------------------|------|----|----|------|------|------|------|
| Sierra Leone                | 2021 | 62 | 61 | #N/A | 1.03 | 0.5  | 5.14 |
| South Africa                | 2021 | 94 | 74 | 67   | 1.86 | 4.19 | 2.83 |
| South Sudan                 | 2021 | 35 | 27 | #N/A | 1.8  | 1.27 | 9.72 |
| United Republic of Tanzania | 2021 | 88 | 86 | 83   | 1.35 | 0.96 | 3.13 |
| Thailand                    | 2021 | 94 | 86 | 84   | 0.57 | 0.09 | 1.25 |
| Togo                        | 2021 | 80 | 76 | 68   | 0.93 | 0.38 | 2.89 |
| Trinidad and Tobago         | 2021 |    | 65 | 60   | #N/A | #N/A | #N/A |
| Uganda                      | 2021 | 89 | 82 | 78   | 1.99 | 1.3  | 3.78 |
| Ukraine                     | 2021 | 75 | 62 | 58   | 1.57 | 0.15 | 2.73 |
| Viet Nam                    | 2021 | 84 | 72 | 69   | 1.21 | 0.06 | 2.34 |
| Zambia                      | 2021 | 91 | 90 | 87   | 1.35 | 2.17 | 2.85 |
| Zimbabwe                    | 2021 | 96 | 91 | 85   | 0.84 | 1.51 | 1.75 |

Source: WHO

The United Nations General Assembly also agreed on fast-track targets (90–90–90), to be achieved by 2020, towards Project 2030 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2014b): 90% of people living with HIV (PLHIV) know their HIV status, 90% of people who know their HIV-positive status are accessing treatment, and 90% of people on treatment have suppressed viral loads. Meeting those targets should result in a reduction of new HIV infections and AIDS-related deaths to fewer than 500 000—approximately a 75% reduction in both measures between 2010 and 2020 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2017). Responses towards achieving these fast-track targets and Project 2030 call for continued exceptional and additional vertical funding (Kelly et al., 2018).

At the 2018 International AIDS Conference in Amsterdam, 3 years after the launch of Project 2030, there was less optimism on the feasibility of achieving Project 2030 (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2018b). Moreover, the International AIDS Society—Lancet Commission highlighted that the HIV pandemic is not on track to end; it may rebound if corrective action is not taken, and is likely to remain a major global challenge for the foreseeable future (Bekker et al., 2018a).

#### Summary of HIV Global data, stratified by HIV Prevalence

| Data                                | Low (<1.2%) | Medium (1.2-12.1%) | High (>12.1%) |
|-------------------------------------|-------------|--------------------|---------------|
| Number of Countries                 | 128         | 30                 | 6             |
| Epidemic Size                       | 13249458    | 13997600           | 10030000      |
| Mean prevalence                     | 0.30%       | 3.50%              | 19.30%        |
| Mean % of PWH on ART                | 58.20%      | 53.20%             | 80.30%        |
| Number of new annual infections     | 328119      | 634100             | 271900        |
| Number of annual HIV-related deaths | 188189      | 289900             | 107100        |

Source: WHO

We agree and think that it is necessary and timely to review progress towards achieving Project 2030, and the lessons learnt so far. There also needs to be some critique of the epidemiological terms and slogans used, and abused, in Project 2030, together with deep consideration of what will happen to HIV and the response after Project 2030. How, for instance, does this, and other vertical disease control programmes like malaria elimination/eradication and end tuberculosis (TB), integrate with universal health coverage (UHC), which is the new paradigm for health services delivery?

In this Viewpoint, we will discuss the progress towards ending the epidemic of HIV/AIDS, contend the feasibilities and argue on the epidemiological transition of HIV, and suggest what needs to happen towards Project 2030 and beyond, as we have endemic HIV for the foreseeable future, in the UHC era.

## 2. Global projections

Global projections based on current trends indicate that overall HIV risks

and vulnerability among children and adolescents will decline steadily

through 2030. However, gaps seem likely to persist in HIV response

effectiveness by age. Broadly speaking, decreases in the annual number of new HIV infections, the number of those living with HIV and the annual number of AIDS-related deaths are all projected to be much lower among those aged 10–19 years than among those aged 0–9 years.

In 2021, there were an estimated 2.7 million children and adolescents (0–19) living with HIV – accounting for only 7 per cent of all people living with HIV. But the number of deaths due to AIDS and the numbers of new HIV infections are greatly over-represented in this population. At 110,000 deaths (17 per cent of the total) and 310,000 new infections (21 percent of the total), these figures translate to 850 new infections and 301 AIDS-related deaths every day in children and adolescents 0–19 years (Figure 1).

As devastating as these data are, they represent impressive progress from the status in 2010, when there were an estimated 320,000 children aged 0–14 newly infected with HIV and 240,000 deaths from HIV-related causes in this population. By the launch of the Sustainable Development Goals in 2015, these numbers had already fallen considerably. New infections in children had reduced by 38 per cent to 200,000 and AIDS deaths in children had fallen by 42 per cent to 140,000. However, soon after, progress for children began to flatline across the board. Prevention of vertical transmission was most affected.

#### Global situation of children and adolescents with HIV and AIDS,2021

|   |              |              |              |
|---|--------------|--------------|--------------|
| Number of children and adolescents living with HIV                    | 2.7 Million  | 2.1 Million  | 3.5 Million  |
| Children aged 0-9   | 1 Million    | 820000       | 1.3 Million  |
| Adolescents aged 10-19  | 1.7 Million  | 1.2 Million  | 2.2 Million  |
| Number of new HIV infections, children and adolescents                | 310000       | 150000       | 530000       |
| Children aged 0-9   | 160000       | 110000       | 230000       |
| Adolescents aged 10-19  | 160000       | 46000        | 300000       |
| Adolescent girls  | 120000       | 24000        | 220000       |
| Adolescents boys  | 40000        | 7700         | 100000       |
| HIV incidence per 1,000 population, adolescents aged 15-19            | 0.26         | 0.08         | 0.49         |
| Adolescent girls  | 0.39         | 0.08         | 0.73         |
| Adolescent boys   | 0.13         | 0.02         | 0.32         |
| Number of AIDS related deaths children and adolescents                | 110000       | 80000        | 160000       |
| Children aged 0-9   | 85000        | 58000        | 120000       |
| Adolescent aged 10-19   | 29000        | 22000        | 37000        |
| Number of children aged 0-17 who lost one or both parents due to AIDS | 14.9 Million | 11.9 Million | 18.3 Million |
| Number of pregnant women living HIV                                   | 1.3Million   | 1Million     | 1.6 Million  |
| Mother-to child transmission rate of HIV                              | 11.9         | 9.5          | 14.7         |
| Perinatal transmission  | 6.8          | 5.1          | 9            |
| Post-natal transmission   | 5.1          | 4.4          | 5.7          |

Source: UNAIDS 2022 estimates

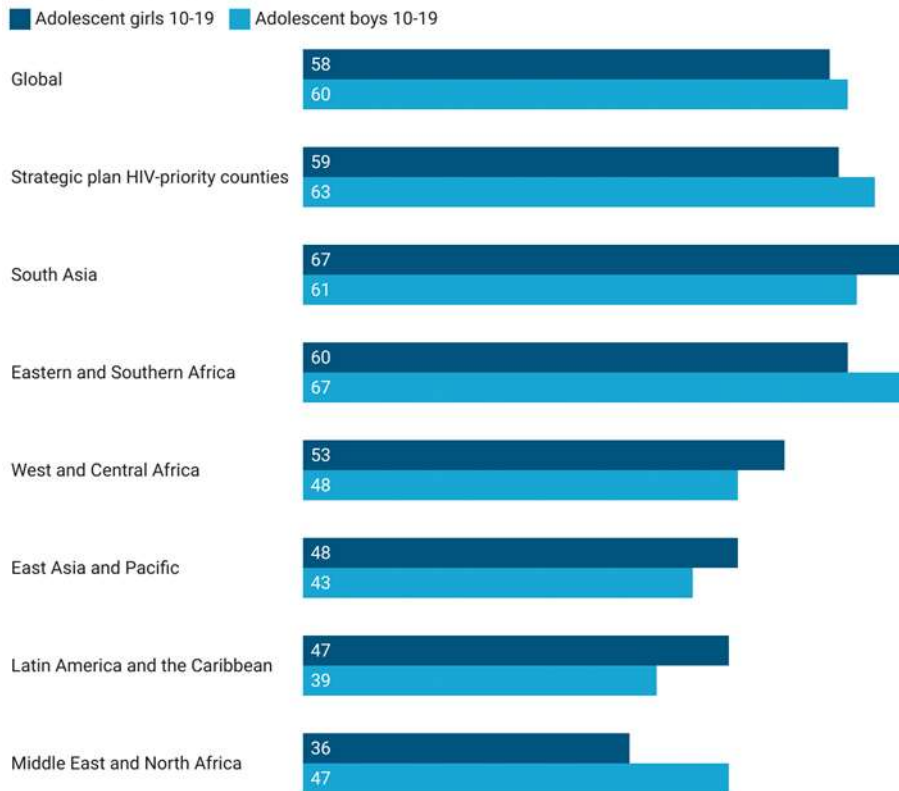
The widening age-specific gaps in those measures of HIV risk and impact underscore two recent trends: the relative success of global efforts to end vertical transmission of HIV and the comparative failure of prevention among adolescents. It is possible to achieve greater, more sustained success in both of these critical areas; the data indicate that more must be done to eliminate vertical transmission of HIV, and to address the specific HIV risks and prevention needs of adolescents. Gender must be considered as well. Globally, far more adolescent girls than boys are living with HIV and are newly infected every year. Although targeted prevention activities for girls has been and should remain a high priority, vulnerable adolescent boys, including those living with HIV, need similar levels of attention, because improvements for adolescent boys lag behind improvements for adolescent girls.

### 3. Regional projections

Although patterns of inequities across regions will become less stark over time, regional differences in HIV impact and response for the 0–19 age group are projected to still be evident in the year 2030. The differences will shift and become a bit less stark in general, however. Eastern and Southern

Africa will still be home to the majority of those aged 0–19 years living with HIV. But this region's absolute numbers of children and adolescents living with HIV will decrease over time, and its relative burden will be smaller. Less progress in West and Central Africa is the main reason for this shift.

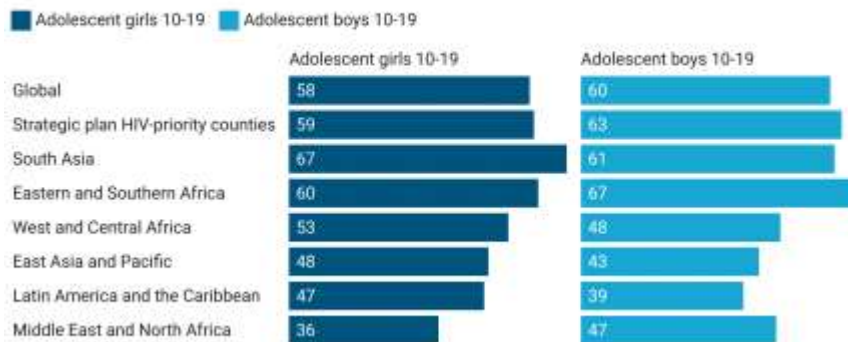
### [ Percent of children and adolescents living with HIV on ART,by age group,2010-2021 ]



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A slower decline in the annual number of new HIV infections in this region, combined with the world’s fastest growing populations of children and adolescents, suggests the global HIV burden among children and adolescents will become increasingly concentrated in

### [ Percent of children and adolescents living with HIV on ART,by age group,2010-2021 ]



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West and Central Africa. Latin America and the Caribbean and Eastern

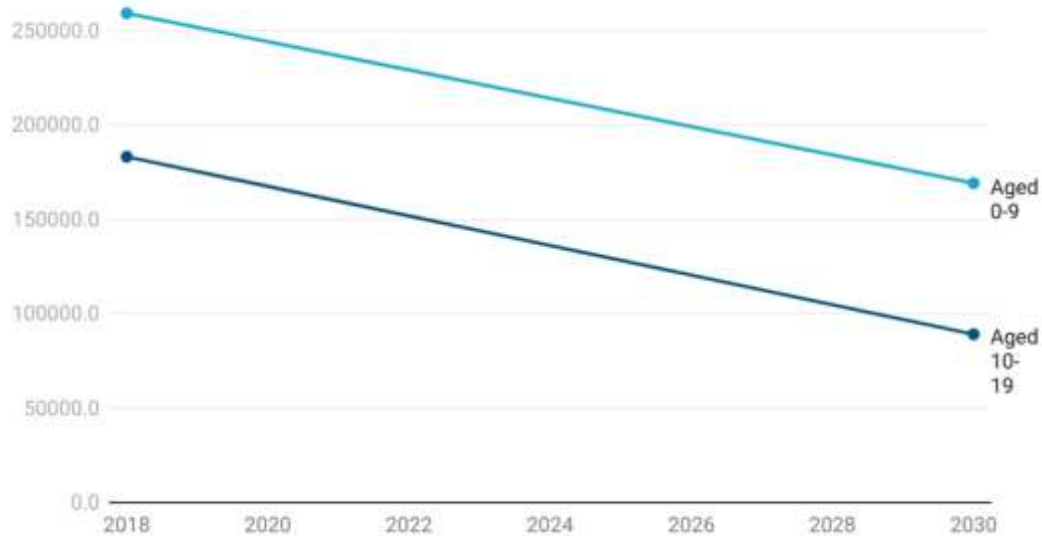
Europe and Central Asia are also projected to contribute more to the global burden of HIV among children and adolescents. The epidemics here are relatively small, but in recent years these regions have made little progress in reducing the number of new infections.

## [ Children aged 0-9 years are projected to experience the biggest decline in number living with HIV ]



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## [ Annual number of new HIV infections among children and adolescents by age 2018-2030 ]



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### 3. Data sources and methodology

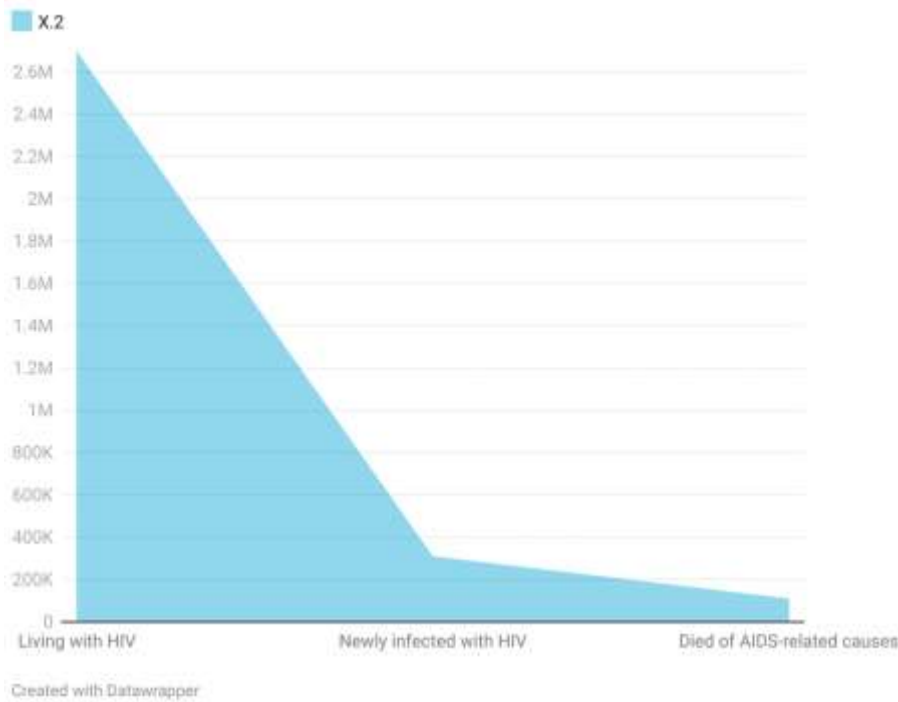
To monitor the HIV response and progress towards achieving global goals, countries submit national and subnational data on a host of indicators to the Global AIDS Monitoring (GAM) system. Annual submissions are reviewed and validated. Data consist of programmatic data for HIV prevention, testing and treatment. Other indicators require data from population-based surveys and surveys focused on key populations at risk of HIV infection. <https://www.unaids.org/en/global-aids-monitoring.UNAIDS> ESTIMATES AND SPECTRUM'S AIDS IMPACT MODEL

Each year, countries update their AIDS Impact Model in Avenir Health's Spectrum software to develop the latest estimates for the HIV epidemic. Supported by UNAIDS, WHO and UNICEF, these estimates are used to inform programme and policy decisions for the HIV response. NATIONALLY REPRESENTATIVE SURVEYS Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS), AIDS Indicator Surveys (AIS), Population-based HIV Impact Assessments (PHIA) reproductive health surveys, sexual behaviour surveys and other nationally representative surveys are currently used to collect data on HIV and AIDS

### 4. Data Analysis of HIV/AIDS for children and Adolescents:

Spectrum's 2018 AIDS Impact Model (AIM) was used to estimate the number of new HIV infections, AIDS-related deaths and children and adolescents aged 0-19 living with HIV, by age and sex. Model inputs include population statistics, survey data and HIV programme data, reviewed for completeness and quality by UNAIDS, UNICEF, WHO and other collaborating partners. Output indicators were projected from 2018 to 2030 in various Indicators of the children and adolescent and the results are shown below

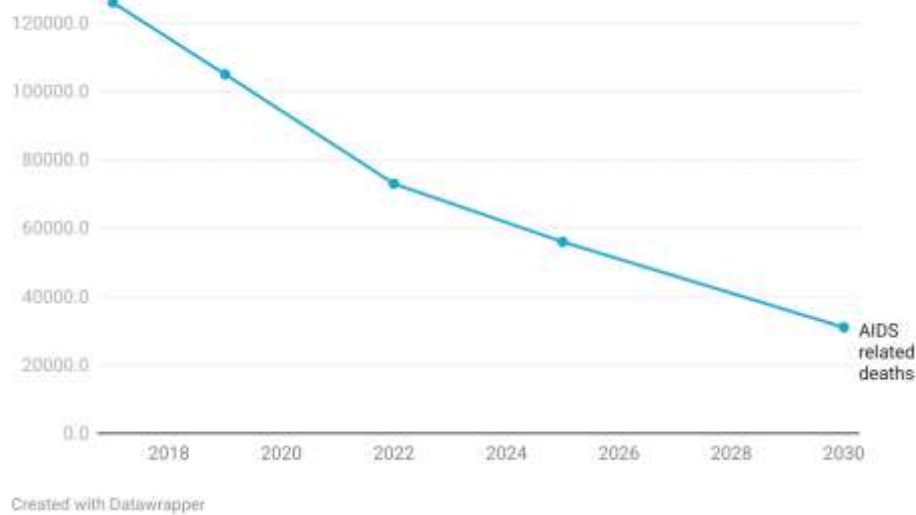
**[ Key facts for children and adolescents 0-19 years in 2021 ]**



The above diagram shows that the children as well adolescents are gradually declining newly infected with HIV as well Died cases

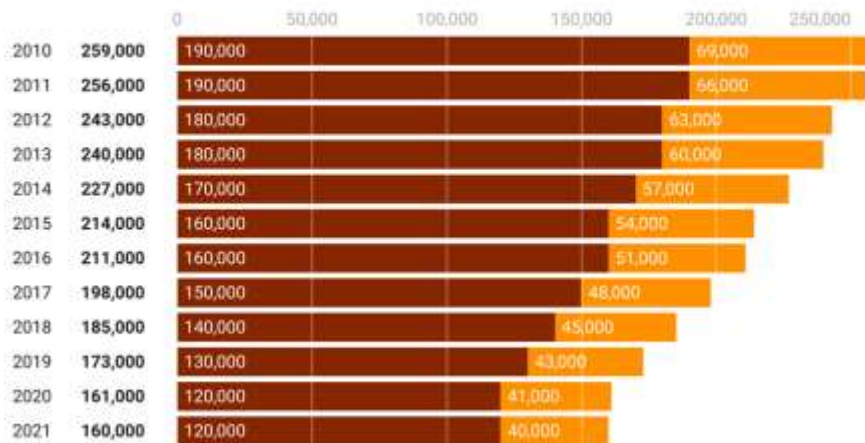
The Annual Number of deaths are completely declined compare than previous decades are shown as below

**Annual number of AIDS related deaths among children and adolescents status quo and global target scnerio 2017-2030**



The reduction since 2010 in child infections was about the same rate by period of transmission, perinatal (during birth) and postnatal (primarily through breastfeeding). In 2021, about 42 per cent of all cases of vertical HIV transmissions occurred during the breastfeeding/postnatal period (Figure ii), which is about the same shareas in previous years. Regardless of the period of infection, the global HIV response remains far behind the trget of reducing total new HIV infections from mother-to-child transmission by 95 per cent, to under 20,000.

**[ Annual number of new HIV infections among adolescents aged 10-19 years, by sex,2010-2021 ]**

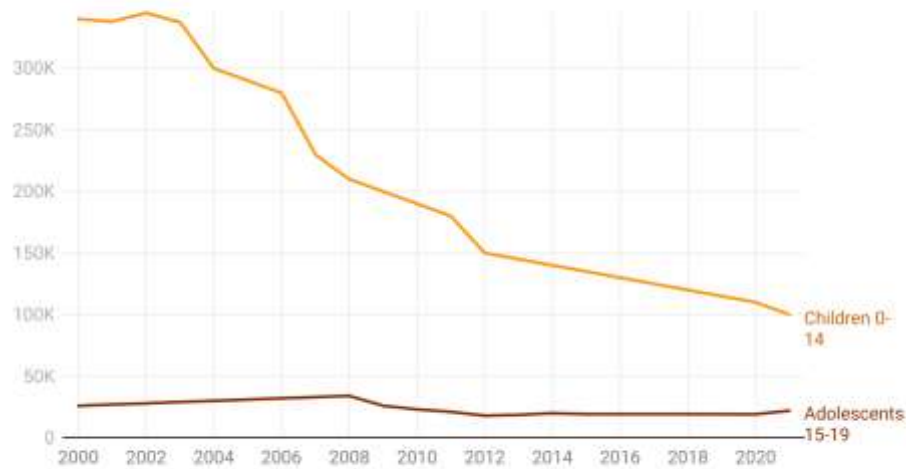


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At about 110,000, the number of deaths from AIDS among children (aged 0–9 years) in 2021 was 59 per cent lower than in 2010. The decline was smaller, about 46 per cent, over the same time period for AIDS-related deaths among adolescents aged 10–19 (Figure iv). Much of the progress in reducing deaths in both age groups occurred before 2015.

Number of AIDS-related deaths among children aged 0–9 years and adolescents aged 10–19 years, 2000–2021

**[ Number of AIDS-related deaths among children aged 0–9 years and adolescents aged 10–19 years, 2000–2021 ]**



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Preventing vertical transmission Globally, over the period from 2010 to 2021, there has been a greater than 50 per cent decrease in new HIV infections in children aged 0–14 resulting from vertical transmission. However, the data vary considerably by region (Figure 3). The 55 per cent decline observed across sub-Saharan Africa was driven by the 60 per cent fall in Eastern and Southern Africa, with a much smaller decrease, at 39 per cent, in West and Central Africa. Progress was poor in East Asia and the Pacific, where a

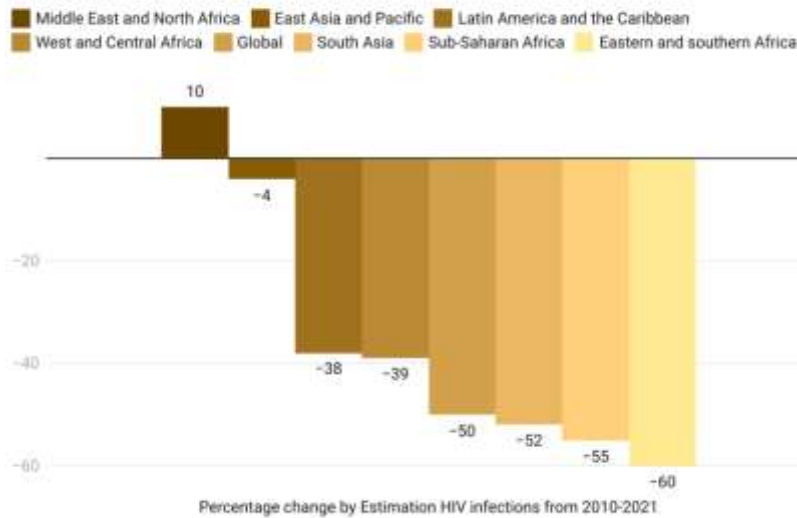
decline of just 4 per cent in new child infections was seen from 2010 to 2021. In the Middle East and North Africa, new infections were estimated to be 10 per cent higher in 2021 than in 2010, although that estimate is based on limited data sets.

These variations in the number of new HIV infections averted among children is closely correlated with the regional variation in access to HIV treatment for pregnant and breastfeeding women. In 2021, treatment coverage for pregnant and breastfeeding

women ranged from a high of 89 per cent in Eastern and Southern Africa to a low of 28 per cent in the Middle East and North Africa. In West and Central Africa, the region with the second highest Percentage of change of New infections are completely declined some of the regions



### [ Percentage change in the estimated number of new HIV infections among children (aged 0–14), by region, 2010–2021 ]



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#### Global targets for children and adolescents by 2025

- Reduce the number of new HIV infections among adolescent girls and young women to below 50,000
- Ensure that 95% of children and adolescents living with HIV know their status, 95% of those that are positive are accessing treatment and 95% of those on treatment have suppressed viral loads
- Ensure that all pregnant and breastfeeding women living with HIV are receiving life-long antiretroviral therapy, with 95% achieving and sustaining viral suppression before delivery and during breastfeeding by 2025

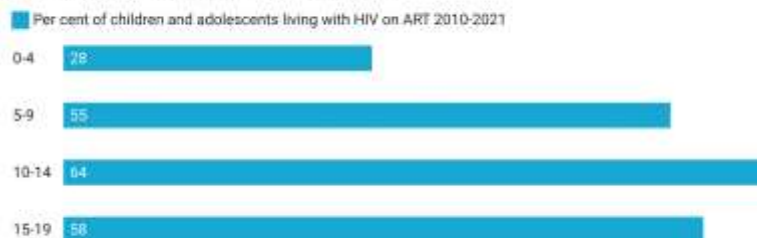
#### Treatment for children and adolescents living with HIV

Inequities can also be seen in the notable differences in treatment access by age group in those younger than 20 years of age living with HIV. Among 70 countries reporting data by five-year age bands, more than two thirds (72 per cent) of children living with HIV aged 0–4 years were not on ART in 2021. This dismal statistic, which corresponds to 324,000 children aged 0–4 living with HIV in 2021 not receiving potentially lifesaving treatment, stands in sharp contrast to the relatively

higher levels of coverage in other age groups. By country, the coverage of ART in children under 15 varied widely, ranging from under 10 per cent in some countries to over 95 per cent in others. Regionally, ART coverage for children was lowest in

Given that Eastern and Southern Africa and West and Central Africa combined have a 88 per cent share of all children living with HIV, rapid improvements in ART access are required in sub-Saharan Africa to lift global coverage and close the treatment gap.

### [ Percent of children and adolescents living with HIV on ART, by age group, 2010–2021 ]



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## 5. Scenario analysis:

Countries around the world have committed to global HIV targets, including the UNAIDS Fast-Track agenda and the Super-Fast-Track framework for ending AIDS in children, adolescents and young women by 2020. Meeting those targets would significantly improve all major indicators of HIV among

children and adolescents by 2030, yet progress towards them is lagging substantially, and the time for effective action is quickly running out. Meeting global targets could result in long-lasting positive impacts for children and adolescents.

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## 6. Innovative solutions to change the course of the HIV epidemic

The projections described in this report point to shortfalls in the HIV response for children and adolescents. Progress in preventing HIV in young children, through PMTCT, has slowed; and combination prevention approaches that address the behavioural and structural drivers of the epidemic have not succeeded in reducing the vulnerabilities of adolescents. Many children and adolescents living with HIV don't know their status, and among those who are tested and initiated on treatment, the levels of treatment adherence are low; their viral loads are too high to break the cycle of HIV transmission and AIDS-related mortality. Only when all those living with HIV are identified, treated and retained in care will the benefits of 'treatment as prevention' be fully realized.

Evidence from around the world suggests nine approaches supported by UNICEF to addressing these persistent gaps from both prevention and treatment angles. They are

interconnected components of strengthened efforts, centred on the individual and in the family and community, to reduce new HIV infections and improve uptake of and adherence to treatment. Some of these approaches are new and innovative,

while others have been used in local settings but have not been brought to greater scale. If adopted, these approaches could have transformative effects in the HIV response among children and adolescents into 2030.

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## 7. PREVENTING NEW INFECTIONS

1. Digital platforms to improve HIV knowledge Digital platforms and new media can be used to increase adolescents' awareness of HIV and their inclination and ability to get tested and take other measures to protect themselves and their sexualpartners. These digital options must be well-designed and reassuringly confidential to be effective, however.

2. Biomedical interventions for HIV prevention for adolescents Evidence showing the preventive benefits of antiretroviral drugs calls for innovative models to expand access to biomedical options, such as pre-exposure prophylaxis (PrEP) for adolescents at high risk and others in the pipeline. Such biomedical interventions must be paired with essential support services (e.g., repeat HIV testing, psychosocial support, etc.) in adolescent-friendly settings.

3. Other emerging biomedical innovations Innovative biomedical solutions including long-acting, injectible ARVs and HIV vaccines offer potential paradigm shifts in ending AIDS. Simplified treatment options and new avenues for prevention could overcome the access and adherence barriers faced by children and adolescents who face a more rapid progression of HIV and a lifetime of treatment.

### 7.1 TREATMENT AND RETENTION IN CARE

4. Family-centred testing The targeted, family-centred testing approach aims to identify and treat children living with HIV but not yet diagnosed and link them to antiretroviral treatment. It applies an indicator of high risk within the family unit, such as a sibling or parent who is known or has been found to be living with HIV, as an entry point to promote the testing of all children in the family.

5. Point-of-care testing The scale-up of point-of-care (POC) diagnostic technologies for early infant diagnosis and viral load monitoring through provider-initiated testing at multiple entry points can contribute significantly to efforts to increase access to antiretroviral treatment, end AIDS-related deaths and improve children's well-being. With POC testing for HIV, it is possible to receive results and begin treatment all on the same day.

6. Peer support for improving access to HIV services and retention in care Evidence from the HIV response has demonstrated that people with shared experiences are those most likely to influence each other's behaviour. Community-based peer support initiatives include women living with HIV serving as mentors to other women accessing HIV services, male role models for partner engagement, and adolescent leaders who reach out to peers and support them in accessing HIV testing, treatment and adherence.

### 7.2 CROSS-CUTTING APPROACHES

7. Adolescent-friendly services Adolescent-friendly services are essential to the effectiveness of programmes in areas such as sharing knowledge about HIV, getting tested for HIV and other sexually transmitted infections, and accessing and adhering to PrEP and ART. These services are most successful when shaped by adolescents and communicated in ways they understand, and might include peer educators and outreach to places where adolescents feel comfortable.

8. 'Cash + care' Cash grants provided as part of broader social protection interventions can greatly reduce HIV risk among adolescents and improve retention in care. They work by offering cash as an incentive to clinic or school attendance, or to treatment uptake and adherence. 'Cash + care' seems especially useful for adolescents living in poverty, as well as for adolescent girls.

9. Targeted community outreach for adolescents Targeted community outreach efforts show promise for increasing entry points to HIV services, either as standalone activities (such as drop-in centres for adolescents) or when integrated into a range of community activities (such as child health days). Such approaches can help reach highly vulnerable and stigmatized populations who normally cannot access health facilities

## 8. KEY GLOBAL RESULTS

The most recent global data show that the total number of people under 20 years of age living with HIV in 2021 was about 2.7 million, slightly lower than the previous year and 24 per cent lower than in 2010. Children and adolescents aged 0–19 account for about 7 per cent of all people living with HIV, compared with 12 per cent in 2010. They

are represented far more significantly in two other important overall indicators: 21 per cent of all new HIV infections in 2021 and 17 per cent of all AIDS-related deaths that year. New infections are a signal of where current gaps exist and, therefore,

where improvement is most needed. In 2021, around 160,000 younger children (aged 0–14 years) were newly infected with HIV, the vast majority due to vertical transmission of HIV from mother to child. This is a considerable decline of 52 per cent since 2010. By contrast, for adolescents aged 15–19 years, the number of new HIV infections in

2021 was only about 40 per cent lower than in 2010 (Figure i). Both of these improvements based on 2021 estimates were far greater than the decline in adults (29 per cent) from 2010. However, progress in preventing vertical transmission slowed over the past several years, with only a 22 per cent decline in new infections from 2016 to 2021 among those aged 0–14.

## 9. Conclusions

Enormous gains have been made towards Project 2030; however, progress is off track to end HIV. Even if we achieve Project 2030, HIV would remain an endemic public health problem; consequently, there is no endgame for HIV prevention and control beyond 2030. A paradigm shift, from a vertical and exceptional response to an integrated and normalized health systems response, is required to provide services according to disease burden and population need. This entails unrelenting political commitment, and increased and sustainable funding from both national and global sources, redirected towards health systems strengthening.

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