

Executive summary

Every day worldwide, the World Health Organization (WHO) estimates that there are one million new infections with any one of four curable sexually transmitted infections (STIs, gonorrhoea, chlamydia, syphilis, or trichomoniasis) among 15 to 49 year olds. When untreated, these STIs are they are associated with a range of poor health outcomes, particularly for women and newborn babies. There is widespread belief that these curable STIs receive low priority on policy agendas, especially in comparison with HIV.

There has been no previous systematic analysis of what drives the attention paid to curable STIs as a global public health issue and why these infections gain priority as conditions for health policy makers to pay attention to. Public policy decisions are driven by a mix of factors including the scale and size of the problem, how the issue is framed and the value attached to the problem. This project addressed the question of what drives the position of STIs on the global policy agenda through three specific objectives.

1. Determination of factors that influence the political prioritisation of STIs as a global health issue. We used a published conceptual framework for understanding agenda setting, interviewed 20 international experts in global health, sexual health and STI control from July 2021 to February 2022 and triangulated findings with policy and research literature. Political priority at the global level was high during the late 1980s and 1990s. A strong global policy community agreed on evidence about the burden of STIs and on solutions. STI control through treatment of people with symptoms of the most common STI syndromes was framed as a plausible, low-cost intervention for controlling the rising HIV/AIDS epidemic. The level of importance decreased from around 2000, when further research did not find an impact of STI control interventions on HIV incidence. Cohesion within the STI community has decreased with looser actor structures with less power. The syndromic approach to STI management remains the mainstay for programmes in primary healthcare but new framing of the problem or solutions have not been identified. Using financial resource allocation as a proxy for assessing policy salience, there is a shortfall from WHO estimate of requirements for STI control broadly. Overseas development assistance for STIs has also fallen as a proportion of funding in the broader category of sexual and reproductive health. Congenital syphilis elimination and human papillomavirus vaccination (HPV) are effective and cost-effective interventions, which do receive funding. These issues are framed as improving newborn health and as preventing death from cancer, rather than as reducing STIs, which might influence the priority received.

2. Determination of conditions that contribute to the overall burden of STIs and examination of non-fatal consequences of the most common curable STIs, using the Global Burden of Disease 2019 (GBD 2019) study. GBD 2019 reports the burden of disability-adjusted life years (DALYs) for HIV and other STIs. Cervical cancer, caused by HPV, is not part of the group of STIs in the GBD study. The contributions of STIs or sexual transmission to other conditions, including preterm birth complications and viral hepatitis, have not been estimated. HIV and cervical cancer contribute most to the STI DALY burden. Congenital syphilis is the next largest contributor to years of life lost. There are unexpected findings in GBD 2019 estimates of non-fatal consequences, such as higher estimates of years lived with disability from trichomoniasis than chlamydia and gonorrhoea, despite causing milder disease. Improvements in both empirical evidence and modelling processes are needed for more accurate and complete STI burden

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estimates. Insofar as disease burden influences prioritisation, however, curable STIs result mainly in non-fatal consequences and fewer DALYs than HIV or cervical cancer.

3. Examination of community views and concerns about STI care and prioritisation in Zambia and Papua New Guinea. From July 2021 to June 2022, we conducted interviews with 23 health care workers delivering antenatal and STI care and key informants providing HIV/STI policy and programmatic technical support and with 43 pregnant women across both settings. We used a published framework to examine themes from the data from key informants. Within communities, stigma, blame and traditional beliefs about the causes of STIs were challenges to talking openly about STIs. Participants showed knowledge, commitment and recognition of importance of STIs. They also mentioned lack of up to date training, shortages and stockouts of diagnostic tests and treatment, suggesting low priority given to STIs at district and national levels. Participants noted that STIs receive less priority than HIV and saw benefits in better integration of services. Among pregnant women, key themes that emerged were the blame and stigmatisation of other women with STIs within the community and the view that there was more information about, and testing for, HIV than STIs.

Synthesis: Prioritisation of STIs as a global health issue should succeed when three streams come together: there is consensus on the evidence of STI burden or on the problem to be addressed, there is a policy to deliver effective and cost-effective interventions, and a politics stream frames STIs as a means to reach a politically palatable goal. A main reason for funding is related to framing, which was achieved when STIs control interventions were a route to prevent HIV transmission. Since 2000, the scientific evidence no longer supports this premise, so new framing of the issue is needed. HPV vaccination is one example of an effective biomedical intervention which receives funding but is not 'owned' by the STI community because it was developed for, and is framed as, cancer prevention and mostly delivered outside STI services. At community level in PNG and Zambia, healthcare workers and local programme staff showed commitment to STIs prevention and care among pregnant women, but chronic shortages of tests and treatment showed a lack of prioritisation at the national level. The evidence of stigmatisation of, and blame for, curable STIs at the community level is one likely reason for the low levels of advocacy or civil society mobilisation. As a result, even if improvements in data accuracy indicated a high burden of curable STIs as a problem, more action is needed in the policy and politics streams. Moving forwards, a number of factors could help to bring together problem, policy and politics streams of action. To stimulate funding for research for solutions, including diagnostics and vaccines, there is a need for: industry support with potential for profit in high income countries, demonstration of the disease burden to be tackled, and evidence of interventions that reduce the burden of disease. In the political stream, universal health coverage is a global goal and an opportunity to include STI care. Agreement is, however, needed on how to prioritise and frame curable STIs in the face of competition from other diseases with higher burden and effective interventions. Civil society advocacy for STI control is virtually absent, hindered by stigma and discrimination, so there is little rationale for political prioritisation. For the STI community, there is a need to think more politically about STI control, focusing on framing, advocacy coalitions with stakeholder groups beyond specific STIs, such as the maternal, neonatal and child health community, and supporting policy entrepreneurs to strategically bring ideas, frames and evidence together. To increase the level of political prioritisation of curable STIs, the rationale, including agreement on how to prioritise STIs within that political goal and civil society advocacy for STI control need to be strengthened.

Political prioritisation of the prevention and control of sexually transmitted infections: a global challenge

FINAL REPORT

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Project overview

Every day worldwide, the World Health Organization (WHO) estimates that there are about one million new infections with any one of four curable sexually transmitted infections (STIs, gonorrhoea, chlamydia, syphilis, or trichomoniasis) among 15 to 49 year olds.¹ These STIs are important causes of poor reproductive health,² adverse pregnancy outcomes following mother-to-child transmission and infertility.² In countries such as Papua New Guinea (PNG) in the south Pacific, and Zambia and South Africa in sub-Saharan Africa, 30-50% of pregnant women tested at antenatal clinics have gonorrhoea, chlamydia or trichomoniasis.³⁻⁵

STIs are widely regarded as a neglected public health problem, receiving low priority and inadequate resources on health agendas.^{6,7} The estimated costs of global STI control and prevention⁸ and allocations from donors show a substantial funding gap.⁹ There are several reasons that may contribute to the apparent low salience of STIs. First, the curable STIs rarely result in death,¹⁰ but there is insufficient understanding of the sources, selection and quality of data inputs to quantify the reduction in people's quality of life. Second, on-site tests or laboratory capacity for STI diagnosis are lacking in many settings,⁸ making it challenging to monitor progress towards targets. Third, whilst there are effective interventions for several STIs they receive lower global priority than those for HIV.^{7,11} Fourth, STIs are sustained and perpetuated by socio-cultural and political inequalities, stigma and discrimination,¹² meaning that political attention, leading to resource allocation is challenging to achieve. Finally, despite the importance of civil society for prioritisation, there is little visible advocacy and mobilised support for curable STI control.

Research Gap: There has been no systematic analysis of the political prioritisation of STIs as a global health issue. The movement to achieve universal health coverage (UHC) is an emerging opportunity to leverage increased attention for from policymakers and donors, as acknowledged in the WHO global health sector strategies on HIV, viral hepatitis and STIs 2022-2030.⁸ These opportunities will be lost, however, without a better understanding of how and why STIs are positioned on global and national health agendas.

Research question: What drives the position of STIs on the global policy agenda? The question is addressed through three specific objectives:

1. Determine factors that influence the political prioritisation of STIs as a global health issue;
2. Determine conditions that should be included in a comprehensive estimate of the burden of STIs and to examine the contribution of non-fatal consequences to the global burden of disease due to STIs;
3. Examine community views and concerns about STI care and prioritisation in two different resource-limited countries.

Research approach and methods: An interdisciplinary and international research team from universities, research institutes and WHO conducted this research. The project overall was guided by a framework for the analysis of prioritisation of global health issues, developed by Shiffman and Smith, incorporating theories of public policy, agenda-setting and the potential role of advocacy coalitions (Table 1).¹³

Table 1. Framework for the determinants of political priority for global initiatives

Category	Description
Issue characteristics	Features of the problem
Ideas	The ways in which those involved with the issues understand and portray it
Actor power	The strength of the individuals and organisations concerned with the issue
Political contexts	The environments in which actors operate

From Shiffman J and Smith S.¹³

Figure 1 shows how the specific objectives of the project address the prioritisation of STIs as a global public health issue within the Shiffman and Smith framework.

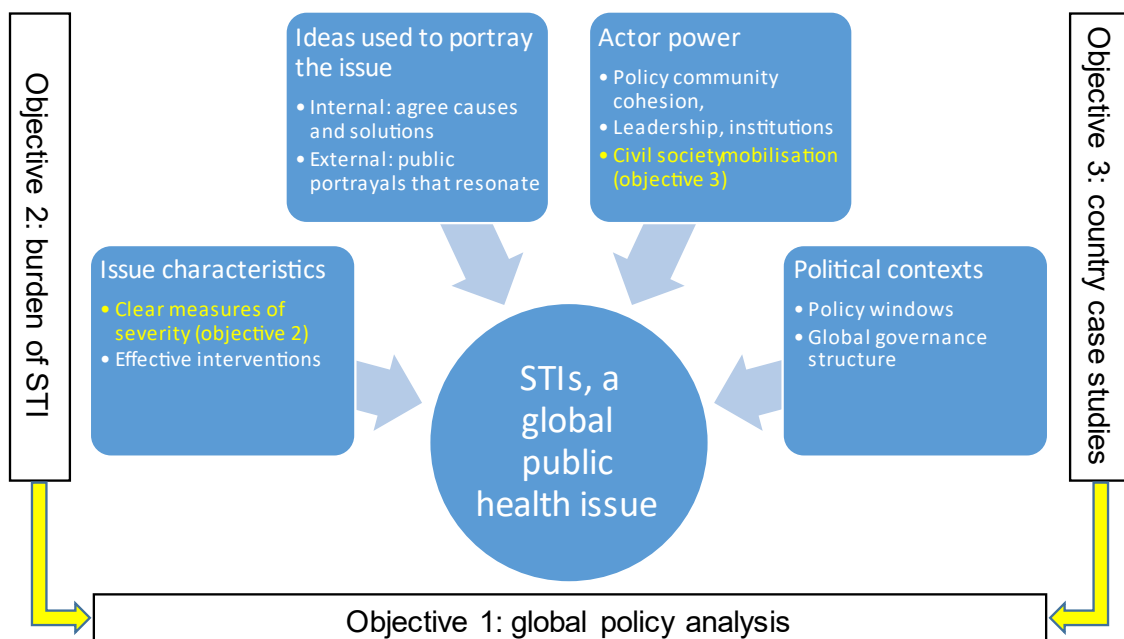


Figure 1. Relationships between the project objectives and the research framework. Objective 1 is central to the overall issue of STIs, analysing factors determining political prioritisation, with the boxes showing the four categories proposed by Shiffman and Smith.¹³ Yellow text highlights components of the framework for which additional studies were conducted to contextualise the overall analysis. Objective 2 addresses quantitative estimates of the severity of STI. Objective 3 involves country-level case studies to understand views from civil society and the public.

Objective 1: Determine factors influencing the political prioritisation of STIs as a global health issue. We triangulated evidence from interviews with key informants with published studies, organisational reports and grey literature from 1980 to 2022. From July 2021 to February 2022, we conducted semi-structured interviews with 20 experts in global health, sexual health and STI control. The respondents came from 10 countries; 8 were women and 2 were originally from low- and middle-income countries. One trained researcher conducted the interviews online, owing to COVID-19 international travel restrictions. We conducted an iterative thematic analysis, organised according to the conceptual framework of Shiffman and Smith.¹³

Objective 2: Describe the burden of disease due to STI and the contribution of nonfatal consequences for the most common curable STIs. The Global Burden of Disease (GBD) study provides the most comprehensive picture worldwide of mortality

and disability across countries, time, age, and sex.¹⁰ The metric describing the overall burden of a condition is the disability-adjusted life year (DALY) and is the sum of the non-fatal consequences (years lived with disability, YLD) and fatal consequences (years of life lost, YLL). The GBD study uses empirical data from studies of prevalence and medical records, estimates of the severity and probability of developing complications, and of causes of death, which are synthesised in a standardised way using a cascade of statistical models. Using the GBD 2019 study, we first compiled a list of conditions, which would comprise a comprehensive total burden of disease due to STIs. We described the distributions of fatal and non-fatal consequences for conditions with available data and examined the non-fatal consequences the three most common curable STI. These results will be revised accordingly when GBD 2021 final results are released.

Objective 3: Concerns about STIs and their prioritisation at the community level. We conducted qualitative research in one district each in PNG and Zambia. Both are lower middle-income countries according to the World Bank classification but they have diverse health systems, burdens of HIV and STIs and socio-cultural situations. From July 2021 to June 2022, we conducted semi-structured interviews with 23 key informants working in primary health care, HIV/STI programmes and representatives of non-governmental organisations and with 43 pregnant women across both settings. Teams trained together via online platforms. Thematic analysis used a deductive and inductive approach. For the interviews with key informants, a third level of coding organised the findings according to an adaptation of the WHO health system building blocks.^{14 15} For the pregnant women, findings were organised into key themes that emerged from the interviews.

Research ethics. In Zambia, the study was approved by the Tropical Disease Research Center Ethics Committee and the Zambia National Health Research Authority. In PNG, the study had ethical approval from the PNG Institute of Medical Research Institutional Review Board, the PNG National Department of Health's Medical Research Advisory Committee and UNSW Sydney, Australia.

Results

We present key results for each project objective. The discussion section integrates the findings across all three objectives.

OBJECTIVE 1. FACTORS INFLUENCING THE POLITICAL PRIORITISATION OF STIS AS A GLOBAL HEALTH ISSUE

We report our findings about factors affecting issue characteristics, ideas, actor power and political contexts and contrast the periods before and since 2000, which emerged from the interview data as the approximate timing of an apparent shift in views of informants.¹⁶

Issue characteristics

Before 2000: The World Bank 1993 World Development Report stated that STIs, excluding HIV, accounted for 9% of the disease burden among adult women and 2% among adult men.¹⁷ This report emphasised the cost-effectiveness of treating bacterial STIs and played an important role among policymakers in raising awareness at a time of rapidly rising HIV incidence globally. Syndromic management, based on the principle of providing treatment for the most common causes of STI symptoms, gained ground at the primary care level in Africa, where there were no simple and accurate diagnostic tests for most STIs. A randomised trial, published in 1995, found that communities provided with

STI syndromic management in Mwanza Region, Tanzania had a lower incidence of HIV infection than communities without STI control.¹⁸

Since 2000: Emerging research led to growing scepticism about prioritising STI management as part of HIV control, especially among major donors. Another randomised controlled trial, published in 1998, found no impact on HIV transmission of mass antimicrobial treatment for STIs at the village level in Rakai, Uganda.¹⁹ At around the same time, combination antiretroviral therapy was becoming accepted as a biomedical solution to reduce HIV transmission.

Estimates of global STI burden were increasingly contested by some informants who expressed uncertainty about the reliability of underlying data^{6 7} and criticised the exclusion of STI-associated diseases, such as cervical cancer, caused by human papillomavirus (HPV) and neonatal morbidity and mortality from global reports. Informants attributed the persisting “unclear magnitude” of STIs worldwide to a chronic lack of funding for epidemiological research:

“[T]o some extent, you have these...self-reinforcing systems or vicious circles where the lack of funding results in a lack of data and a lack of data makes everybody think that there is no problem, and that leads to even less funding.”

Man, bilateral assistance programme, high-income country

Many informants attributed their assessment that STIs are neglected to the dearth of affordable diagnostics and treatments in LMICs, leaving syndromic management as the main intervention for STI control, despite its limitations. Congenital syphilis control was noted as an exception because the effectiveness and cost-effectiveness of screening in pregnancy are solid and scaling up is being facilitated by innovative tools, such as dual rapid tests for HIV and syphilis.

Ideas and framing of STIs as an issue

Before 2000: STIs began to be portrayed as a “tremendous public health problem” deserving policy, donor, and research attention in the early 1990s, and STIs were framed as a plausible, low-cost intervention for stemming the rapidly rising HIV epidemic.

Since 2000: The findings of several randomised controlled trials,¹⁹⁻²¹ changed the balance of scientific opinion about the linkage between STI management and HIV control. The STIs that have received more attention since 2000 have effective interventions and have been framed beyond STI control – addressing congenital syphilis was framed as reducing the burden of and neonatal morbidity and mortality, and HPV vaccination was framed as cancer control.

Actor power

Before 2000: The number of policy actors working in STI control and prevention started to increase in the 1980s and accelerated in the early 1990s, as researchers began to evaluate interventions to examine the effect of STI control on HIV transmission.²²

Cohesive partnerships between policymakers and researchers secured financial support from key funders²³ and allowed promotion of syndromic management through HIV control programmes by national governments in most African countries²³ and maternal and child health or family planning programmes.^{24 25} Successful advocacy was attributed to strong leadership in both the STI research community and the Global Programme on AIDS (from 1996, the UN Programme on HIV/AIDS, UNAIDS).

Since 2000: Many informants indicated that, since 2000, the STI community has been characterised by a looser structure and lack of champions. Although a group of policymakers, researchers, and programme managers worked closely with WHO to develop STI control guidelines and strategies,²⁶ this group was mainly research-based and had limited influence on the global health agenda. The global STI control initiative has also been marked by weak engagement with and mobilisation of civil society, both before and since 2000, with some informants citing insufficient funding as a reason.

Political contexts

Before 2000: HIV had been framed as a health security issue, which threatened economic and demographic stability. The initial evidence that STI control provided a solution for limiting HIV transmission provided an important policy window in the view of several respondents. This window was effectively closed, with a consequent loss of attention and resources, when STI control was shown not to be effective at controlling HIV transmission.

Since 2000: In a multiple streams framework of policy analysis,²⁷ policy windows arise when three streams come together: the problem stream, the policy stream and the politics stream. Interviewees from the STI field did not identify specific windows of opportunity since 2000 for the broad goal of STI control, or clearly identify policy entrepreneurs to promote convergence. Within the politics stream, globally agreed goals have included the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs). These agendas did not mention STIs specifically, but control programmes could have been delivered under some broader goals and targets, such as SDG 3, which emphasises ensuring healthy lives and promoting well-being for all.²⁸ The end result appears to be a decline in financial flows to broad STI control. Interviewees perceived the attention and financing for specific interventions since 2000, such as HPV vaccination and combatting gonococcal antimicrobial resistance, as separate from the traditional focus of control of STIs in general. Meanwhile, although WHO has produced technical global strategies for STI control, implementation was judged to be more likely in countries with robust governance capacity and adequate funding. In line with SDG 3, the United Nations General Assembly adopted a political declaration on UHC, which included commitments to increase investments in comprehensive sexual and reproductive healthcare services.²⁹ Newly established international norms, such as UHC, provide an opportunity to increase the salience of STI control, but action on the problem and policy streams will be required.

OBJECTIVE 2: BURDEN OF STIS AND NONFATAL CONSEQUENCES

STIs and related conditions that are included and not included in the GBD 2019 study

The GBD study reports on HIV/AIDS and STIs as part of the category ‘communicable, maternal, neonatal, and nutritional diseases.’¹⁰ The group of ‘STIs other than HIV’ comprises: syphilis, chlamydia, gonorrhoea, trichomoniasis, genital herpes and a list of less common ‘other STIs’. Cervical cancer is allocated to ‘Cancers’, despite being almost entirely attributable to HPV. Taken together, these conditions caused 65.2 million (uncertainty interval, UI 57.1-76.1) DALYs (Figure 2). HIV and cervical cancer are the main contributors to both the fatal (52.3 million of 59.9 million YLL) and non-fatal (4.2 million of 5.3 million YLD) consequences. Syphilis contributes the next largest number of DALYs as a result of deaths from congenital syphilis contributing 7.3 million YLL.

The GBD 2019 study estimates burden of disease for several other conditions for which STIs contribute, such as ectopic pregnancy, neonatal preterm birth and other malignant

neoplasms, or infections for which sexual intercourse is a mode of transmission, such as hepatitis A, B and C, some diarrhoeal diseases and Zika infection. Due to the complexity of the modelling processes required, the fractions for each of these conditions that can be attributed to STIs has not yet been estimated.

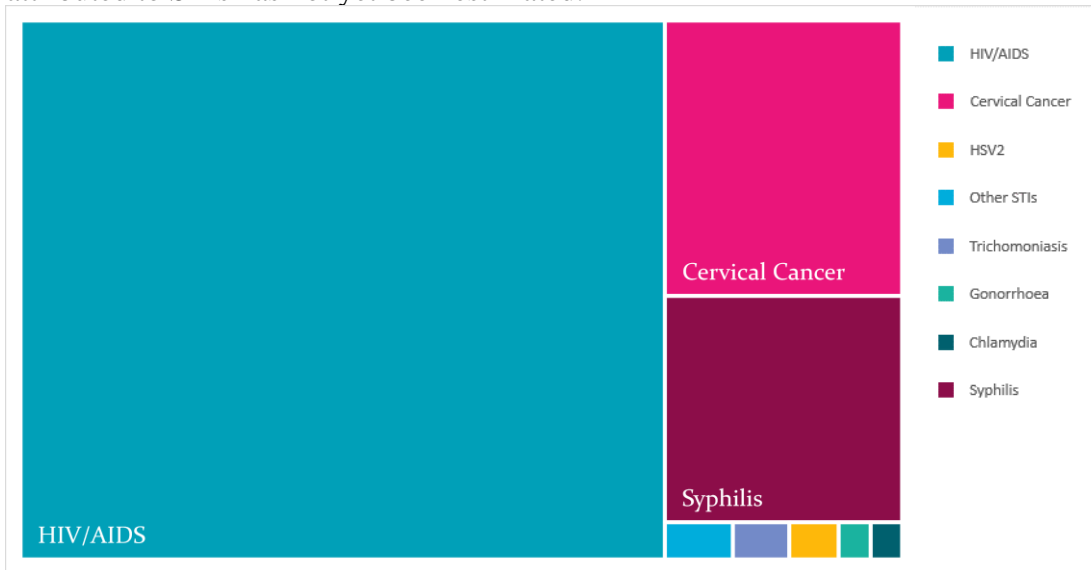


Figure 2. Disability-adjusted life years (DALYs) for HIV/AIDS, cervical cancer and STIs

Non-fatal consequences of the chlamydia, gonorrhoea and trichomonas

Despite the frequency of STIs other than HIV/AIDS and cervical cancer, the absolute number of YLD (1.0 million, UI 0.6-1.8) is low in comparison with the global total of 861 million YLD for all causes. This is because the severity and duration of symptoms and complications of STIs included in the estimation framework are low.³⁰ Figure 3 shows the relative distribution of the YLD resulting from STIs other than HIV/AIDS and cervical cancer. Seventy percent of these estimated YLD are experienced by women, and trichomoniasis is the largest contributor (39% of all YLD in women). For chlamydia and gonorrhoea, 56% of the estimated YLD are experienced by men.

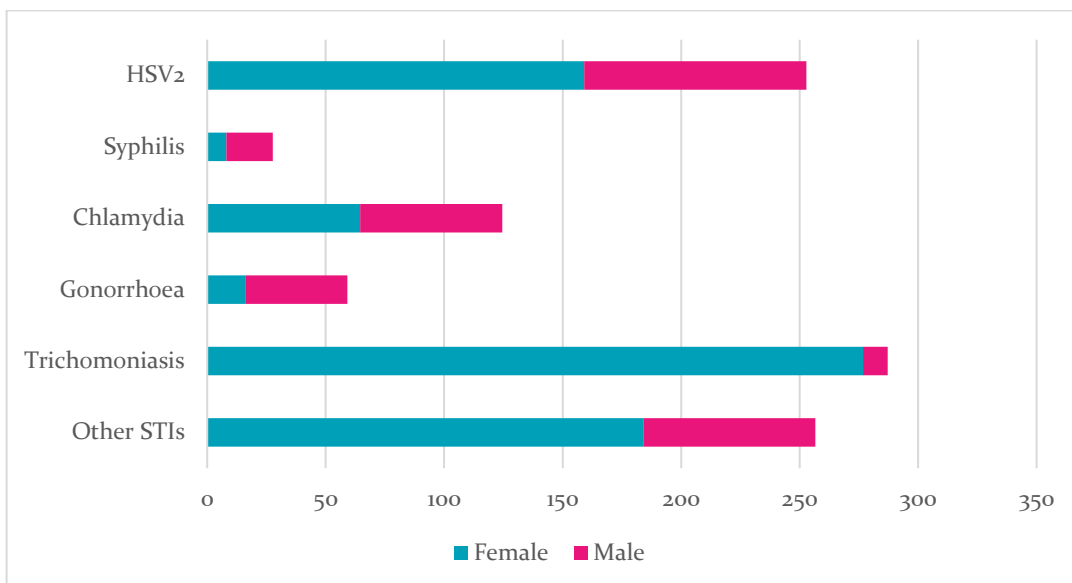


Figure 3. Years lived with disability for STIs excluding HIV/AIDS and cervical cancer, by sex. X-axis: years lived with disability in '000s.

In the GBD study, the modelling process for each STI, proportions of symptomatic infections and progression to its consequences differ by infection and by sex. The GBD study includes two upper genital tract complications of chlamydia and gonorrhoea in women (pelvic inflammatory disease and infertility) and one in men (epididymo-orchitis). For women, pelvic inflammatory disease is estimated as a separate condition. The proportions attributed to chlamydia and gonorrhoea, and then the proportion of these cases that progresses to infertility, are then estimated. For men, a proportion of cases that progresses to epididymo-orchitis is applied directly to the cases of chlamydia and gonorrhoea. Trichomonas in both women and men does not progress to complications, but a proportion of infections is symptomatic.

The YLD estimates in the GBD study by condition and by sex do not concur with clinical and epidemiological evidence. The different modelling processes for complications in women and men can account for the discrepancies. Empirical studies show that pelvic inflammatory disease is a more common than epididymo-orchitis,² so the estimate of YLD for these conditions should be higher in women than in men. Trichomoniasis does not result in either pelvic inflammatory disease or infertility,² but the high prevalence and high proportion of symptomatic infections, in comparison with chlamydia and gonorrhoea, results in a higher estimate of YLD.

OBJECTIVE 3: CONCERN ABOUT STI AND PRIORITISATION AT THE COMMUNITY LEVEL

We focus on findings from interviews with key informants³¹ and pregnant women that are most relevant to prioritisation and civil society advocacy.

Interviews with key informants

Figure 4 shows the WHO health system building blocks,¹⁴ adapted to incorporate a building block for people and community, who are at the centre of the health system.¹⁵

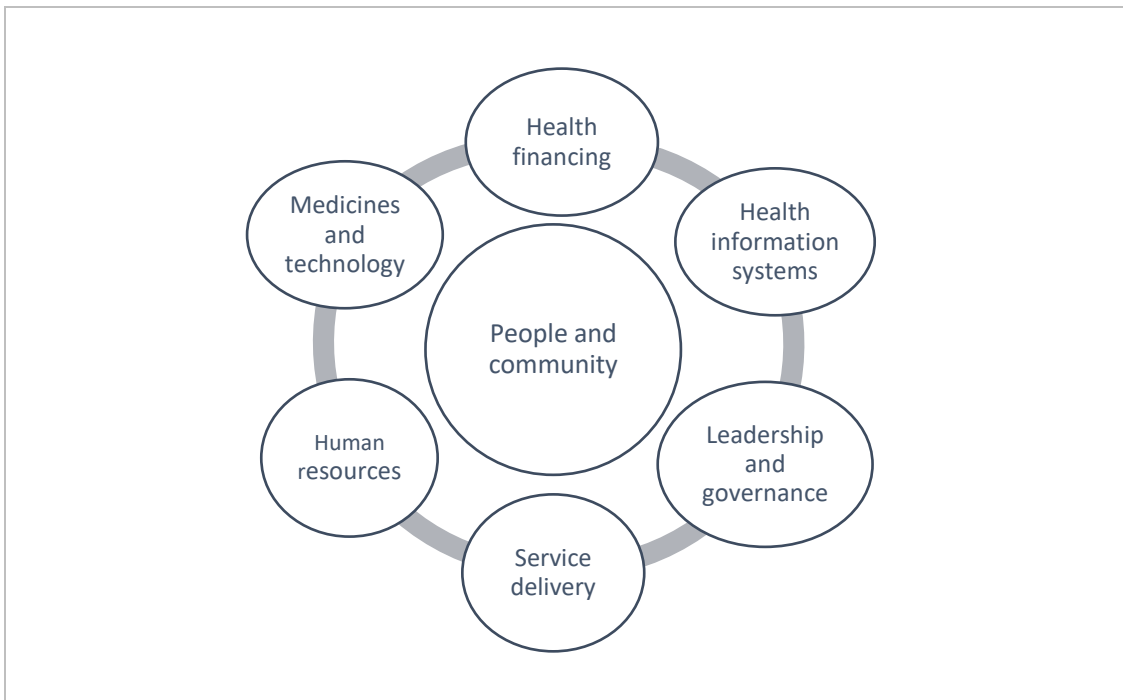


Figure 4. WHO health system building blocks^{14 15}

Service delivery

Respectful care was identified as critical to supporting women to attend antenatal clinics. An absence of respectful care, including being stigmatised, being spoken to in harsh ways, and having confidentiality breached were identified as deterrents for women to engage in STI services during pregnancy. Partner treatment was considered central but challenges of reaching partners were also recognised.

Human resources

In both countries, participants had a broad understanding of morbidity associated with undiagnosed and untreated STIs in pregnant women. Numerous participants shared thoughts about clinical practice and STI treatment that were out of date and highlighted the need for ongoing training to bring knowledge and skills up to speed.

Essential medicines and technology

In both Zambia and PNG, HIV and syphilis testing should be conducted using rapid diagnostic tests at the point-of-care to allow same day treatment. In reality, informants remarked on missed opportunities due to limited availability of commodities.

...previously we used to give a single dose of benzathine. But for now, like we don't have the supply, there is no consistency of that syphilis test kit, we are no longer treating all/everyone on according to whatever symptoms they come in...

Woman, Sister in Charge and Unit Manager, provincial hospital, PNG

Health financing

Whether financed through national programs or donors, the availability of funding speaks to where health priorities are made, and what services are provided.

Everyone is targeting where there is money...[people] don't attend to programs which don't have money.

Man, TB and HIV Liaison Officer, Department of Health, Zambia

The poor health financing of services means that the economic burden of STI management is passed on to pregnant women and their families. Where the clinic staff knew they did not have the treatment they had to instruct women to buy the medicine themselves, shifting the financial cost of syphilis treatment to pregnant women.

Health information systems

In Zambia, there was a call to build the evidence base needed to advocate for the prioritisation of STIs, both in the general population and pregnant women.

Leadership and governance

All participants said that STIs are important to antenatal clinic services, with visible impacts, particularly on neonatal outcomes, but are not prioritised in the way that other diseases affecting pregnant women are, notably HIV.

We are silent on STIs, it's like there are no STIs in Nchelenge.

Man, TB and HIV Liaison Officer, Department of Health, Zambia

Interviews with pregnant and postnatal women

We report our findings according to four major themes.

Knowledge and understanding of STIs

In both PNG and Zambia, the symptoms that women talked about were often not those of the STI they named. Women had an understanding that STIs are contracted through sexual intercourse, of the role of condoms and staying faithful to one partner and the possibility of STI transmission from mother to unborn baby. In PNG, a few women also believed that STIs are spread through “dirt” and in Zambia, women explained that you should not exchange clothes with people with an STI.

Motivation and barriers to seeking treatment

In both countries, women expressed that the health of their unborn baby was a major motivating factor for them attending antenatal clinic.

Stigma and disclosure

In Zambia, women expressed how having an STI impacted their relationships. While some women mentioned that their partners supported them and also got treated, a few described difficulties after disclosing results and being blamed for the STI. Women also remarked on how other pregnant women treat those suspected of having an STI.

...They look down on them, they laugh at them... they embarrass them even... they will start calling you malewa, because you like having sex with different men, that is the reason you contracted these STIs

Pregnant woman, Zambia

Prioritisation of STIs in pregnancy

In both PNG and Zambia, women mentioned that STIs are not prioritised in health facilities. In PNG, women reported that they lacked STI knowledge because health care workers did not provide enough detailed information. Some of these women claimed that STI awareness was centered around HIV, rather than other curable STIs. In Zambia, some women discussed that there were no health programs or health talks about STI in the community. However, others noted that STIs are a governmental priority, describing free STI tests, drugs and condoms at the health facilities and government support, with volunteers in the communities to visit those on treatment.

Discussion

This project analysed the prioritisation of STIs as a global health issue through interviews with an international group of experts in the STI field, policy and research literature, analysis of global data about the disease burden from STIs and qualitative research at the community level in two lower-middle-income countries.

Prioritisation and funding happen when STI control is framed as reaching an aligned political goal, there is consensus on the evidence of disease burden or a problem that needs to be addressed; and an effective and cost-effective (generally biomedical) solution is available. Our findings from interviews with informants from the STI and global health fields and from the broader literature confirmed the importance of framing, values and political context as determinants of STI policies since the 1980s. Political priority at the global level was high during the late 1980s and 1990s, when the world was looking for cheap, effective and feasible solutions to the HIV/AIDS epidemic. A strong global policy community agreed on evidence about the burden of STIs and on the solutions. The level of

importance decreased when further research evidence did not find an impact of STI control interventions on HIV incidence. Since 2000, cohesion within the STI community has decreased and new framing of the STIs as a general issue has not emerged. Analysis of how STI policy decisions have been made is limited because interviewees were more likely to have technical expertise than to have political, resource-based or structural power.

Application of the multiple streams framework to identifying windows of policy opportunity emphasised the importance of the policy stream, i.e., having an intervention not just a problem. Since 2000, specific STIs have received resources and attention, such as HPV, for vaccination programmes and syphilis, for the elimination of congenital syphilis. The framing of these issues in terms of cancer prevention or prevention of neonatal morbidity and mortality is, however, outside the domain of care for curable STIs. This may have resulted in a mismatch in the level of priority perceived by donors and the STI community. For the most common curable STIs, technical solutions such as diagnostics and vaccines³² are in the pipeline and need investment to speed up development and implementation but evidence for new interventions that reduce the burden of disease from STIs is still needed. Our analysis of the GBD 2019 study also showed unexpected findings, such as the higher estimated burden of disease due to trichomoniasis than to chlamydia and gonorrhoea. The accuracy and completeness of STI burden estimates need to be improved, both through empirical research and statistical modelling. Insofar as burden of disease influences prioritisation, however, these STIs remain low on the agenda compared with HIV or cervical cancer.

The absence of civil society advocacy appears to be playing an important role in the lack of attention paid to STI control programmes. Civil society has played a major role, including as part of wider advocacy coalitions, in raising the salience of HIV control and maternal and newborn health programmes. At the community level, we found a desire for STI prevention and commitment to deliver services. But challenges, including stigmatisation of people with STIs, restricts grassroots mobilisation and advocacy. The fact that the STI community of technical and programme experts at global level appears to lack strong engagement with civil society contributes to the lack of demand for STI control programmes.

The political stream is under pressure to provide STI care within UHC. WHO joint global health sector strategies on HIV, viral hepatitis and STIs launched in July 2022,⁸ might be leveraged to increase attention from policymakers and donors to STI prevention and control. To increase the level of political prioritisation of curable STIs, the rationale, including agreement on how to prioritise STIs within that political goal and civil society advocacy for STI control need to be strengthened.

References

1. Rowley J, Vander Hoorn S, Korenromp E, et al. Chlamydia, gonorrhoea, trichomoniasis and syphilis: global prevalence and incidence estimates, 2016. *Bull World Health Organ* 2019;97(8):548-62P. doi: 10.2471/BLT.18.228486
2. Holmes KK, Sparling PF, Stamm WE, et al. Sexually Transmitted Diseases. New York: McGraw-Hill 2008.
3. Valley LM, Toliman P, Ryan C, et al. Prevalence and risk factors of Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis and other sexually transmissible infections among women attending antenatal clinics in three provinces in Papua New Guinea: a cross-sectional survey. *Sex Health* 2016;13(5):420-27. doi: 10.1071/SH15227
4. Chaponda EB, Chico RM, Bruce J, et al. Malarial Infection and Curable Sexually Transmitted and Reproductive Tract Infections Among Pregnant Women in a Rural District of Zambia. *Am J Trop Med Hyg* 2016;95(5):1069-76. doi: 10.4269/ajtmh.16-0370
5. Moodley D, Moodley P, Sebitloane M, et al. High prevalence and incidence of asymptomatic sexually transmitted infections during pregnancy and postdelivery in KwaZulu Natal, South Africa. *Sex Transm Dis* 2015;42(1):43-7. doi: 10.1097/OLQ.0000000000000219
6. Low N, Broutet N, Adu-Sarkodie Y, et al. Global control of sexually transmitted infections. *Lancet* 2006;368(9551):2001-16. doi: 10.1016/S0140-6736(06)69482-8
7. Seale A, Broutet N, Narasimhan M. Assessing process, content, and politics in developing the global health sector strategy on sexually transmitted infections 2016-2021: Implementation opportunities for policymakers. *PLoS Med* 2017;14(6):e1002330. doi: 10.1371/journal.pmed.1002330
8. World Health Organization. Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030. Geneva2022 [Available from: <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/strategies/global-health-sector-strategies> accessed 09.10.2022.
9. Grollman C, Arregoces L, Martinez-Alvarez M, et al. 11 years of tracking aid to reproductive, maternal, newborn, and child health: estimates and analysis for 2003-13 from the Countdown to 2015. *Lancet Glob Health* 2017;5(1):e104-e14. doi: 10.1016/S2214-109X(16)30304-7
10. GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* 2020;396(10258):1204-22. doi: 10.1016/S0140-6736(20)30925-9
11. Wu D, Hawkes S, Buse K. Prevention of mother-to-child transmission of syphilis and HIV in China: What drives political prioritization and what can this tell us about promoting dual elimination? *Int J Gynaecol Obstet* 2015;130 Suppl 1:S32-6. doi: 10.1016/j.ijgo.2015.04.005
12. Brandt AM. No Magic Bullet: A Social History of Venereal Disease in the United States since 1880. New York: Oxford University Press, Inc. 1985.
13. Shiffman J, Smith S. Generation of political priority for global health initiatives: a framework and case study of maternal mortality. *Lancet* 2007;370(9595):1370-9. doi: 10.1016/S0140-6736(07)61579-7

14. World Health Organization. Everybody's business. Strengthening health systems to improve health outcomes. WHO's framework for action. Geneva: World Health Organization, 2007.
15. De Savigny D, Adam T. Systems thinking for health systems strengthening: World Health Organization 2009.
16. Wu D, Low N, Hawkes S. Understanding the factors affecting global political priority for controlling sexually transmitted infections: a qualitative policy analysis (Attachment), 2023.
17. WorldBank. World Development Report 1993 : Investing in Health. New York: Oxford University Press 1993.
18. Grosskurth H, Mosha F, Todd J, et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. *Lancet* 1995;346(8974):530-6. doi: 10.1016/s0140-6736(95)91380-7 [published Online First: 1995/08/26]
19. Wawer MJ, Sewankambo NK, Serwadda D, et al. Control of sexually transmitted diseases for AIDS prevention in Uganda: a randomised community trial. Rakai Project Study Group. *Lancet* 1999;353(9152):525-35. doi: 10.1016/s0140-6736(98)06439-3 [published Online First: 1999/02/24]
20. Kamali A, Quigley M, Nakiyingi J, et al. Syndromic management of sexually-transmitted infections and behaviour change interventions on transmission of HIV-1 in rural Uganda: a community randomised trial.[see comment]. *Lancet* 2003;361(9358):645-52.
21. Celum C, Wald A, Hughes J, et al. Effect of aciclovir on HIV-1 acquisition in herpes simplex virus 2 seropositive women and men who have sex with men: a randomised, double-blind, placebo-controlled trial.[see comment]. *Lancet* 2008;371(9630):2109-19.
22. Hayes R, Wawer M, Gray R, et al. Randomised trials of STD treatment for HIV prevention: Report of an international workshop. *Genitourin Med* 1997;73(6):432-43.
23. Lush L, Walt G, Ogden J. Transferring policies for treating sexually transmitted infections: what's wrong with global guidelines? *Health Policy and Planning* 2003;18(1):18-30. doi: 10.1093/heapol/18.1.18
24. Mayhew S. Integrating MCH/FP and STD/HIV services: current debates and future directions. *Health Policy Plan* 1996;11(4):339-53. doi: 10.1093/heapol/11.4.339 [published Online First: 1996/11/03]
25. Ndugga B, Askew I. Integrating STI/HIV Management Strategies into Existing MCH/FP Programs: Lessons from Case Studies in East and Southern Africa: The Population Council, 1997.
26. Burris H, Parkhurst J, Adu-Sarkodie Y, et al. Getting research into policy - Herpes simplex virus type-2 (HSV-2) treatment and HIV infection: international guidelines formulation and the case of Ghana. *Health Research Policy and Systems* 2011;9 doi: 10.1186/1478-4505-9-s1-s5
27. Kingdon J. Agendas, Alternatives and Public Policies. New York, NY: Harper Collins 1984.
28. United Nations. Sustainable Development Goals: About the sustainable development goals 2023 [Available from: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/> accessed 14.09.2023.
29. UN. Political Declaration of the High-level Meeting on Universal Health Coverage "Universal health coverage: moving together to build a healthier world". New York: Unite Nationals General Assembly, 2019.

30. Low N, Chico RM, Berice B, et al. Assessing the global burden of chlamydia, gonorrhoea and trichomoniasis in adults: methods and results from the Global Burden of Disease Study 2019 (in preparation), 2023.
31. Vallely LM, Kapungu K, Mengi A, et al. The prioritisation of sexually transmitted infections among pregnant women in Africa and the Pacific - Qualitative insights from health care workers, policy makers and program advisors in Zambia and Papua New Guinea (Attachment), 2023.
32. World Health Organization. Global progress report on HIV, viral hepatitis and sexually transmitted infections, 2021. Accountability for the global health sector strategies 2016–2021: actions for impact Geneva: World Health Organization, 2021.

Output and impact report

OUTPUT STATEMENT

Effective

Peters RPH, Chico RM, Rowley J, Low N. Estimating the global burden of sexually transmitted infections. Correspondence. *Lancet Infect Dis* 2022;22(8):1112-1113. (correspondence does not include funding acknowledgements, this letter used data inputs for objective 2)

Working papers

Objective 1: Wu D, Low N, Hawkes S. Understanding the factors affecting global political priority for controlling sexually transmitted infections: a qualitative policy analysis, 2023 (to be submitted to *BMJ Global Health*)

Objective 3: Vallely LM, Kapungu K, Mengi A, et al. The prioritisation of sexually transmitted infections among pregnant women in Africa and the Pacific - Qualitative insights from health care workers, policy makers and program advisors in Zambia and Papua New Guinea, 2023 (submitted to *PLOS Global Public Health*).

In preparation

Working paper and manuscript, Objective 2: Low N, Chico RM, Berice B, et al. Assessing the global burden of chlamydia, gonorrhoea and trichomoniasis in adults: methods and results from the Global Burden of Disease Study 2019, 2023 (to be submitted to *BMC Medical Research Methodology*).

Working paper and manuscript, Objective 3: Vallely LM, Kapungu K, Mengi A, et al. The prioritisation of sexually transmitted infections among pregnant women in Zambia and Papua New Guinea: a qualitative study. 2023

Conference presentations

Low N. STIs and the global burden of disease. 21st International Union against STI Asia-Pacific Region Congress. Online, 10-11 December, 2021. Policy plenary #1.

Wu D, Hawkes S, Low N. Factors influencing the political prioritisation of sexually transmitted infections as a global public health issue: a scoping review. 23rd International Union against STI World Congress. Victoria Falls, Zimbabwe, 4-7 September, 2022. Poster #214

Kapungu K, Chaponda M, Chico RM, Hawkes S, Cignacco E, Low N, Kelly-Hanku A. "...they will start calling you 'malewa' [promiscuous]... that is the reason you contracted these STIs...": A qualitative study of STIs in pregnancy in Zambia. 23rd International Union against STI World Congress. Victoria Falls, Zimbabwe 4-7 September, 2022. Poster #222

Kapungu K, Chaponda M, Chico RM, Low N, Kelly-Hanku A. Sexually transmitted infections and pregnancy: a qualitative study of beliefs and health seeking behaviours in Zambia. National Health Research Conference 19-21 October, 2022, Lusaka, Zambia

Rowley J. STIs global estimates. AVAC STI Pipeline symposium. STI & HIV World Congress. Chicago, USA 24-27, July 2023. Invited presentation, AVAC STI Pipeline symposium.

Poga P, Vallely LM, Mengi A, Riddell MA, Chico RM, Pomat W, Vallely A, Low N, Kelly-Hanku A. Pregnant women's knowledge of sexually transmitted infections and their impact on pregnancy outcomes in Papua New Guinea. Australian Sexual and Reproductive Health Conference. Sydney, Australia, 18-19 September 2023. Oral presentation.

IMPACT STATEMENT

The project has had both academic and practical impacts.

The COVID-19 pandemic undoubtedly affected the timeline and dissemination of the project and its findings. Nevertheless, we promoted the project and made sure that it was linked to ongoing initiatives in sexually transmitted infection (STI) research and policy.

The conference presentations and effective and forthcoming publications show the international reach of the project's findings.

In practical terms, the project has had influence, and strengthened collaborations, with policy makers at WHO and with researchers at the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, who are responsible for the Global Burden of Disease study. In particular, there is active joint work between these institutions with the goal of improving estimates of the burden of disease related to STIs. The outputs from this project directly contributed to IHME obtaining funding to improve data inputs and modeling on STIs for the Global Burden of Disease study, to which project members will contribute.

WHO held a technical consultation meeting in June 2020, "Accelerating the Global STI Response", which was framed around the agenda for our project. In October 2023, WHO will host a meeting entitled "Mobilize for Action on STIs!" in conjunction with the World Health Summit 2023 in Berlin, Germany and online. The content of this meeting also takes on board the outcome of our policy analysis about the factors determining the priority of STIs as a global public health issue.

Attachments

approach might be unsuitable due to its poor performance with inflated type 1 error and inaccurate quantification of between-study heterogeneity.³ The disadvantage of this analytical approach is further illustrated by the reported negative lower bounds of the constructed (eg, in figure 3 of Sherwood and colleagues¹). Additionally, for clinical practice, as the authors pointed out, it might not be meaningful to pool all of the invasive GAS data, owing to the substantial difference between the high-income countries and low-income and middle-income countries with vastly different health-care systems. We appreciate the careful thoughts of the authors to conduct subgroup meta-analysis, but this could raise additional statistical concerns in the cases of very few studies.⁴ A preferable alternative approach is the Bayesian method, which can simultaneously take into account the small number of studies and the rarity of events by deriving exact inference given small sample sizes and few studies.

Furthermore, predictive intervals⁵ could be useful in the reporting of meta-analysis. The 95% CIs reported by Sherwood and colleagues¹ only described the estimation uncertainty for the study mean. By contrast, for prediction of the population incidence or case fatality risk in a new study or country, the predictive interval is more appropriate and should be used instead. It conveys complementary information to the standard by incorporating the between-study heterogeneity, which is substantial in studies of invasive GAS disease.

We declare no competing interests.

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- 1 Sherwood E, Vergnano S, Kakuchi I, et al. Invasive group A streptococcal disease in pregnant women and young children: a systematic review and meta-analysis. *Lancet Infect Dis* 2022; **22**: 1076–88.
- 2 DerSimonian R, Laird N. Meta-analysis in clinical trials. *Control Clin Trials* 1986; **7**: 177–88.

- 3 Higgins J, Thomas J, Chandler J, et al. *Cochrane handbook for systematic reviews of interventions*. 2nd edn. Chichester: John Wiley & Sons, 2019.
- 4 Bender R, Friede T, Koch A, et al. Methods for evidence synthesis in the case of very few studies. *Res Synth Methods* 2018; **9**: 382–92.
- 5 Riley R, Higgins J, Deeks J. Interpretation of random effects meta-analyses. *BMJ* 2011; **342**: 549.

Authors' reply

We thank Qi Zhou and colleagues and Shouhao Zhou and Chan Shen for their comments on our systematic review and meta-analyses of the incidence and case fatality risks of invasive group A streptococcal (GAS) disease in pregnant women and young children.¹ In this study, we searched for published and unpublished data that describe the burden of invasive GAS disease in young children worldwide, and any data available on invasive GAS in pregnant women and children in low-income and middle-income countries (LMICs). We then undertook meta-analyses of the invasive GAS disease incidence and case fatality risks in pregnant women and children younger than 5 years. We used the standard approach for meta-analyses with these types of data, the DerSimonian and Laird method with random effects.²

We acknowledge the limitations of the DerSimonian and Laird method² in the context of few events in the LMIC subdivisions of the meta-analyses, and as noted by Zhou and colleagues, transformation could have been applied. However, we contend that the differences between the incidence and case fatality risk of invasive GAS disease in infants (0–1 year) in LMICs as reported in our study¹ and as recalculated by Zhou and colleagues are minimal and do not change the interpretation of the study findings.

We also acknowledge the suggestions from Zhou and Shen on the use of Bayesian approaches and predictive intervals in this context. However, although including these approaches in the analysis might have added to the study, these methods also have their limitations: for example,

they require reliable prior information.³ Another alternative, given such limited data from LMICs, would have been to only include a descriptive presentation of the LMIC data; however, doing this would have prevented the ability to highlight the differences by setting.

While the statistical methodologies proposed by Zhou and colleagues and Zhou and Shen might have enhanced our analyses or provided alternative estimates of incidence and case fatality risk, there are greater challenges to improving our understanding of these outcomes. Estimates using any of these approaches are likely to be underestimates, particularly in LMICs, due to limited case ascertainment. Our conclusions—that the burden of invasive GAS disease in young children is high globally, that data for neonates and children in LMICs are scarce, and that there are no data for pregnant women in LMICs—remain unchanged. Improving the availability of data is essential to inform the development of prevention and management strategies for invasive GAS.

We declare no competing interests.

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- 1 Sherwood E, Vergnano S, Kakuchi I, et al. Invasive group A streptococcal disease in pregnant women and young children: a systematic review and meta-analysis. *Lancet Infect Dis* 2022; **22**: 1076–88.
- 2 DerSimonian R, Laird N. Meta-analysis in clinical trials. *Control Clin Trials* 1986; **7**: 177–88.
- 3 Bender R, Friede T, Koch A, et al. Methods for evidence synthesis in the case of very few studies. *Res Synth Methods* 2018; **9**: 382–92.

Estimating the global burden of sexually transmitted infections

Yang Zheng and colleagues re-analysed estimates from the Global Burden of Diseases, Injuries, and Risk Factors

Study (GBD) 2019 and report age-standardised incidence rates and disability-adjusted life-years (DALYs) caused by five sexually transmitted infections (STIs)—syphilis, gonorrhoea, chlamydia, trichomoniasis, and genital herpes—from 1990 to 2019.¹ We urge caution in the use and interpretation of the results.

First, the overall burden of disease reported, 1.31 million DALYs (95% uncertainty interval [UI] 0.80–2.20), is a large underestimate because the analysis is restricted to people aged 10 years and older. The GBD 2019 database for all ages reports 8.22 million DALYs for the five STIs, of which 7.26 million are years of life lost due to congenital syphilis. In fact, the total burden of disease for these five STIs is even higher than the GBD database reports, because GBD estimates do not account for an estimated 7.7% (95% UI 4.6–12.0) of stillbirths worldwide that are caused by syphilis,² the consequences of congenital herpes simplex virus, pregnancy-specific effects of other STIs, or the impact of STIs on HIV transmission.^{3,4} All of these adverse outcomes disproportionately affect low-income and middle-income countries.

Second, data underlying the GBD 2019 are themselves subject to limitations, which are a source of uncertainty.⁵ STI incidence estimates are based on a small number of prevalence studies, most of which include only women and use heterogeneous sampling and data collection methods. Prevalence data are combined with assumptions about disease remission, a robust database for cause-specific mortality, and Bayesian regression methods to produce estimates for all locations, even where data are absent.

Third, Zheng and colleagues conclude that age-standardised STI incidence rates declined from 1990 to 2019. Although the global estimated annual percent change (EAPC) is negative, its 95% UI includes zero, which is compatible with stable levels. Furthermore, the EAPC summarises

changes over a 29-year period, but country-by-country review of full time-series estimates reveals many countries with increases in age-standardised incidence in the past 5 years. Lastly, although the numbers of incident cases reported do align with the GBD tool, it is unclear why age-group-specific incidence rates are much higher than in GBD, and why the 10–24 years age group has the highest numerical STI rates.

Complete and reliable STI burden estimates are essential for global investment, policy development, and programme implementation. Limitations of existing GBD estimates should be acknowledged. Efforts to provide a more comprehensive estimation of STI health impact and to close gaps in primary data are urgently needed.

NL is on the scientific board of Sefunda, a start-up company that develops point-of-care diagnostics for STIs. RPHP, RMC, and JR declare no competing interests. We thank Maegan Dirac and Hannah Han at the University of Washington (WA, USA) for checking the numerical results presented in Zheng and colleagues' study and this Correspondence.

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- Zheng Y, Yu Q, Lin Y, et al. Global burden and trends of sexually transmitted infections from 1990 to 2019: an observational trend study. *Lancet Infect Dis* 2022; **22**: 541–51.
- Lawn JE, Blencowe H, Waiswa P, et al. Stillbirths: rates, risk factors, and acceleration towards 2030. *Lancet* 2016; **387**: 587–603.
- Vallely LM, Egli-Gany D, Wand H, et al. Adverse pregnancy and neonatal outcomes associated with *Neisseria gonorrhoeae*: systematic review and meta-analysis. *Sex Transm Infect* 2021; **97**: 104–11.
- Cohen MS, Council OD, Chen JS. Sexually transmitted infections and HIV in the era of antiretroviral treatment and prevention: the biologic basis for epidemiologic synergy. *J Int AIDS Soc* 2019; **22** (suppl 6): e25355.

- Fu L, Sun Y, Han M, et al. Incidence trends of five common sexually transmitted infections excluding HIV from 1990 to 2019 at the global, regional and national levels: results from the Global Burden of Disease Study 2019. *Front Med (Lausanne)* 2022; **9**: 851635.

Authors' reply

On behalf of our coauthors, we thank Remco P H Peters and colleagues for their comments on our Article.¹ Sexually transmitted infections (STIs) can spread through both horizontal and vertical modes. The horizontal transmission of STIs can be prevented and controlled by behaviour counselling, condom use, partner education, timely diagnosis, and treatment.² In our study, we focused on horizontal transmission of STIs in a sexually active population and potential strategies for public health intervention. In contrast, congenital STIs bear a different transmission mode, and therefore, the epidemiological pattern and prevention measures are substantially different from horizontally transmitted STIs.³ Admittedly, congenital STIs are also an important issue worthy of full exploration, but they might be beyond the scope of our study.

We acknowledge the limitations of Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) data, which have been discussed in a previous GBD publication⁴ and our study.¹ These limitations should be considered when evaluating our recommendations, especially for low-income and middle-income countries. However, we want to point out that GBD is the most comprehensive effort to date to quantify the effect of hundreds of diseases, injuries, and risk factors in countries around the world. The results from GBD 2019 provide a powerful basis for detailed and broad insights into global health trends and emerging challenges. In addition, transparency in the assumptions made during data cleaning and statistical modelling—via technical publications—increases the ability of other researchers to understand their weaknesses and strengths.

WORKING PAPER, OBJECTIVE 1

Understanding the factors affecting global political priority for controlling sexually transmitted infections: a qualitative policy analysis

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Abstract

Introduction Sexually transmitted infections (STIs) are a significant public health challenge. Despite their substantial burden, there is a perceived lack of political priority in addressing STIs as a global health issue. Our study aimed to understand the determinants of global political priority for STIs since the 1980s and to discern implications for future prioritisation.

Methods Through semi-structured interviews from July 2021 to February 2022, we engaged 20 key stakeholders from academia, United Nations agencies, international non-governmental organisations, philanthropic organisations, and national public health agencies. A published policy framework was employed for thematic analysis, and findings were triangulated with relevant literature and policy documents. We examined issue characteristics, prevailing ideas, actor power dynamics and political contexts.

Results A contrast in perspectives before and after the year 2000 emerged. STI control was high on the global health agenda during the late 1980s and 1990s, as a means to lower the transmission of HIV. A strong global policy community agreed on evidence about the high burden of STIs and that STI management could reduce the incidence of new HIV infections. The level of importance decreased when further research evidence did not find an impact of STI control interventions on HIV incidence. Since 2000, cohesion in the STI community has decreased. New framing for broad STI control has not emerged. Interventions that have been funded, such as human papillomavirus vaccination and congenital syphilis elimination have been framed as cancer control or improving newborn survival, rather than as STI control.

Conclusion Globally, the perceived decline in STI control priority might stem from discrepancies between investment choices and experts' views on STI priorities. Addressing STIs necessitates understanding the intertwined nature of politics and empirical evidence in resource allocation. The ascent of Universal Health Coverage presents an opportunity for integrated STI strategies. Yet, the urgency for sustainable funding, strategic coordination, and high-quality care remains paramount.

Key words: sexually transmitted infections, global health agenda, political priority, informant interview, policy analysis

Introduction

Setting priorities within health services is a political process – driven not just by evidence of the burden of any particular condition, but also by the power of policy actors, prevailing ideas, and the emergence of windows of opportunity.^{1,2} At the global level, political priority refers to “the degree to which international and national political leaders actively give attention to an issue and back up that attention with financial, technical, and human resources that are commensurate with the issue’s severity”.³ The relative position of any health issue on the global health agenda also reflects the importance of social values and issue-framing, which drive the attention paid to the issue.⁴ There is a perception that global attention to the control of sexually transmitted infections (STIs) other than HIV is insufficient⁵ and has declined since the late 1980s and 1990s,⁶ when STI control was promoted as a means to lower the transmission of HIV.⁷⁻⁹ The term STIs comprises a range of infections, many of which are common and, together, cause substantial morbidity and mortality. The World Health Organization (WHO) estimates that there were 374 million new cases of four curable infections (chlamydia, gonorrhoea, syphilis, and trichomoniasis) in 2020.¹⁰ According to the 2019 Global Burden of Disease (GBD) study, non-HIV STIs were associated with 8.57 million disability-adjusted life years (DALYs), of which 62.3% can be attributed to neonatal syphilis.¹¹ The GBD estimates of STI burden would increase if conditions such as human papillomavirus (HPV) infection, which causes most cervical cancer¹² and the contribution of STIs to conditions such as preterm birth, were included.

The question of whether and why STI control really has dropped down the policy agenda has not been examined systematically but is of interest and importance for those seeking to ensure appropriate and fair levels of resource allocation to achieve goals of STI control because resources are limited. Ideally, this task should be a collaborative effort, shared between “the Ministry of Health and the entire health stakeholder community” including citizens and health system providers. One indicator of relative priority is financial resource allocation.¹³ Grollman et al. reported that the four curable STIs accounted for 16% (US\$ 693 million) of total official development assistance (ODA) and grants from the Bill & Melinda Gates Foundation allocated to reproductive, maternal, newborn, and child health in 2003. However, this percentage declined to 1% by 2006 and remained at this level, amounting to US\$ 83 by 2013.¹⁴ WHO estimated a need of US\$ 18,200 million for global STI prevention

and control efforts in over 100 low- and middle-income countries (LMICs) between 2016 and 2021.¹⁵ It is not yet clear what proportion of this amount was allocated, but there are thought to be significant funding gaps, from both ODA allocations and contributions at the national ministry level in many settings.¹⁶ Some specific interventions have gained priority on the global health agenda. For example, the Global Fund to Fight AIDS, Tuberculosis and Malaria invested US\$3.12 billion between 2003 and 2010 in maternal, newborn and child health, which includes prevention of mother-to-child transmission (PMTCT) of syphilis.¹⁷ Gavi, the Vaccine Alliance committed up to US\$ 500 million to support the introduction of HPV vaccination in 40 LMICs from 2016-2020.¹⁸ Also, the Global Antibiotic Research and Development Partnership invested €75 million in 2021 into developing new treatments for antimicrobial-resistant infections, including gonorrhoea.¹⁹

In this paper, we seek to understand the determinants of global political priority for STIs over the past four decades (1980-2022) and to discuss the implications for future priority setting.

Methods

Study design

To undertake this qualitative policy analysis, we triangulated evidence from interviews with key informants and from a review of published studies, organisational reports and grey literature.

Policy framework

Analysis and synthesis of qualitative data were guided by a conceptual framework developed by Shiffman and Smith to determine global political priority of health issues³. The framework comprises four categories, which cover eleven determinants of political priority (table 1) and has been applied to the analysis of a number of global health initiatives, such as maternal mortality reduction, mental health, global surgery, emergency care, and early childhood development.^{3 20-23}

Table 1. The four categories of determinants of global political priority

Category	Description
Issue characteristics	Features of the problem
Ideas	The ways in which those involved with the issues understand and portray it
Actor power	The strength of the individuals and organisations concerned with the issue
Political contexts	The environments in which actors operate

The category of the issue characteristics category looks at the nature of the issue itself. Problems that can be measured by credible indicators are more likely to attract attention as policymakers and funders will have information to confirm the severity and monitor progress.²⁴ Moreover, policymakers are more inclined to address a problem if there are effective interventions.²⁵ The category of ideas examines how an issue and its solution are understood and portrayed both within the policy community and publicly – the frame.²⁶ Actor power considers the performance of networks comprising individuals from various organisations who share a common policy concern. The membership, structure and organisation of these policy communities determine their impact on the policy processes.²⁵ ²⁷ Global and national policy communities function more effectively in shaping policy agendas where influential entrepreneurs or strong guiding institutions emerged to lead them.²⁵ ²⁸ Additionally, initiatives that connect with grassroots organisations in civil society are more likely to obtain policy attention.³ Finally, the category of political contexts explores the environment in which actors operate, especially “policy windows” which refer to the key moments when conditions align favourably for certain issues, as well as global governance structure in the sector.²⁵

Data collection

Informant interviews

We conducted a stakeholder mapping²⁹ in June 2021 to guide identification of potential informants, based on our experiences in STI-related research and from publications. We also followed informants’ referrals across multiple domains, including funders, policy makers,

advocates and researchers. Potential informants were contacted using a standardised email, which explained the purpose of the study, potential risks, and how privacy and confidentiality would be maintained. All respondents signed a consent form allowing audio recording of interviews and had the opportunity to ask questions before the start of the interview (online supplemental file, 1).

Semi-structured interviews were used, following a general interview guide based on the Shiffman and Smith framework. Owing to COVID-19 international travel restrictions, in-person interviews were not feasible. DW, an early-career female researcher, with experience in health policy analysis and STI control, conducted all discussions in English via online platforms. The researcher had no prior personal relationships with the informants. Each interview involved only the interviewer and participant and lasted 30 to 90 minutes, during which notes were taken. No repeat interviews were conducted. Questions were tailored for each informant based on their position and responsibilities around STI control. If feasible, they were also invited to comment on anonymised answers of other respondents. To assess power dynamics and their evolution over time, informants were asked to identify key actors shaping the global health agenda and influencing resource allocation. At the end of each interview, they were queried on the most influential factor for prioritisation of STIs. Respondent recruitment persisted until theoretical saturation was achieved, i.e. when all factor themes had been identified and additional interviews were unlikely to reveal new information.³⁰

The recorded interviews were transcribed and all materials were stored digitally in password-protected computers and de-identified during data analysis. Transcripts were not sent back to informants, but some were contacted to ensure the accuracy of quotes.

Literature review

We performed a literature review concurrently with the interviews. We collected data about global policies and practices for STI control by searching established databases and websites of organisations involved in advocating for and/or financing STI control. We searched PubMed, Web of Science, and Google Scholar to identify relevant studies published in English between January 1980 and December 2022. The search strings combined MeSH headings 2022 (“sexually transmitted diseases”, “syphilis”, “gonorrhoea”, “chlamydia

infections”, “trichomonas”, “herpes genitalis”, “human papillomavirus”) and free-text terms (“policy”, “priority”, “salience”, “prioritisation”, “agenda setting”, “decision making”, “policy making”). We also searched the WHO Library and websites of three United Nations agencies (Joint United Nations Programme on HIV/AIDS, United Nations Children's Fund, United Nations Population Fund), the Global Fund for AIDS, TB and Malaria, and the Bill and Melinda Gates Foundation. In addition, some informants directed us to particular projects and studies. We selected articles and documents based on their relevance to the political prioritisation of STI control.

Data analysis and synthesis

Using the four categories and eleven factors from the Shiffman and Smith framework as main themes and sub-themes, we conducted an iterative thematic analysis.³¹ The NVivo software (version 11) was employed to organise and analyse the interview transcripts. A single researcher (DW) coded all the transcripts, and the findings were cross verified with one another as well as against published studies and organisational reports. When reporting the interview findings, we assigned each key informant a number and cited relevant literature and documents from our review to give a broader interpretation and contextualisation of the interview findings. During the analysis, the findings were discussed via online meetings with other researchers (NL and SH) and at a face-to-face meeting in June 2022 involving the multidisciplinary project team (online supplemental file, 2). We adhered to the Consolidated Criteria for Reporting Qualitative Research (online supplemental file, 3).³²

Patient and Public Involvement

This study was part of a multidisciplinary project examining the political prioritisation of the prevention and control of STIs (online supplemental file, 2).³³ No patients participated in the design or conduct of this policy analysis. As part of the larger project, we did interview pregnant -18 and healthcare workers in Papua New Guinea and Zambia to explore civil society mobilisation and advocacy and we report on their priorities, experiences, or preferences separately.

Results

From July 2021 to February 2022, we contacted 34 potential informants, of whom 23 responded and 3 declined to be interviewed (59% acceptance rate). Of the 20 respondents, 8 were women, only 2 were originally from LMICs and 15 first became involved in STI control and prevention before 2000 (Table 2). The respondents came from 10 countries (US, Zimbabwe, Belgium, Netherland, UK, Bangladesh, Australia, France, Italy, Switzerland) and have worked in different types of organisations, including United Nations agencies (WHO headquarters or regional offices, Joint United Nations Programme on HIV/AIDS), national public health agencies, development partners (bilateral assistance programmes, private philanthropic funders), international non-governmental organisations (NGOs), and academia.

We report our findings about factors affecting actor power, ideas, political contexts and issue characteristics, particularly contrasting the periods before and since 2000. This timeframe emerged from the interview data as the approximate timing of an apparent shift in donor attention on STI control.

Table 2. Characteristics of key informants

Informant	Gender	First involvement in STI control	Type of primary affiliation	Income category of country of origin
1	Man	Before 2000	Academia	High
2	Man	Before 2000	United Nations agency	Low
3	Woman	Before 2000	Academia	High
4	Man	Before 2000	Bilateral assistance programme	High
5	Woman	Before 2000	Academia	High
6	Man	Before 2000	Academia	High
7	Woman	Before 2000	Philanthropic funder	High
8	Man	Before 2000	United Nations agency	Low
9	Man	Before 2000	International NGO	High

10	Man	After 2000	Philanthropic funder	High
11	Man	Before 2000	United Nations agency	High
12	Man	After 2000	International NGO	High
13	Man	Before 2000	Academia	High
14	Woman	Before 2000	Academia	High
15	Man	Before 2000	Academia	High
16	Woman	Before 2000	Academia	High
17	Man	After 2000	International NGO	High
18	Woman	Before 2000	Academia	High
19	Woman	After 2000	National public health agency	High
20	Woman	After 2000	United Nations agency	High

NGO: non-governmental organisation

Issue characteristics

Before 2000

The World Bank's 1993 World Development Report stated that STIs, excluding HIV, accounted for 9% of the disease burden among adult women and 2% among adult men.⁷ This report emphasised the cost-effectiveness of treating bacterial STIs, playing a crucial role in raising awareness about the burden of STIs and the importance for addressing their control. This contributed to STIs being portrayed as a "tremendous public health problem" deserving policy, donor, and research attention in the early 1990s (I4, I8). Syndromic management to treat the most common causes of STI symptoms gained ground at the primary care level in Africa, where there were no simple and accurate diagnostic tests for most STIs (I5, I6, I7, I8, I13 and I14).³⁴ As a respondent stated:

"...pointed to the necessity of non-specialist approaches so much more decentralised approaches to STI diagnosis and management and, in doing so, help to raise the profile if you wish of this public health problem." (I4)

Since 2000

Estimates of global STI burden have been contested by some informants (I2, I11, I18 and I20) for two reasons: First, the underlying basis of the estimates is uncertain because data such as prevalence, incidence, mortality, and antimicrobial resistance patterns of STIs remain unknown in many settings with poor information collection and surveillance.^{35 36} Second, many burden assessments have not included all STI-associated impacts such as HPV-related cancers and neonatal morbidity and mortality. Informants attributed the persisting “unclear magnitude” of STIs worldwide to a chronic lack of funding for epidemiological research (I2, I4, I7, I8, I16 and I20). As one mentioned:

“[T]o some extent, you have these...self-reinforcing systems or vicious circles where the lack of funding results in a lack of data and a lack of data makes everybody think that there is no problem, and that leads to even less funding.” (I4)

Evidence from the late 1990s raised concerns about the effectiveness and cost-effectiveness of syndromic management as a means to treat STIs, further decreasing the policy options available for STI control.^{37 38} Two respondents highlighted the lack of clear interventions (I11 and I19), noting that WHO set “aspirational” targets, such as reducing syphilis and gonorrhoea incidence by 90% by 2030, without providing countries with specific guidance on how to achieve these goals. Many informants attributed the neglect of STIs to the dearth of affordable diagnostics and treatments in LMICs (I5, I7, I11, I13, I14 and I18), leaving syndromic management as the main intervention for STI control, despite its problems. Congenital syphilis control is an exception because there is robust evidence of the effectiveness and cost-effectiveness of screening in pregnancy and scaling up is being facilitated by innovative tools, such as dual rapid tests for HIV and syphilis.

“There's a renewed interest in STD control, however, we are still stuck with the absence of point-of-care testing...So the problem has not gone away and certainly not been solved.” (I13)

Ideas and issue framing

Before 2000

In the 1980s and early 1990s as evidence of the substantial impact of HIV on people and economies became clear, there was an active hunt for affordable and effective solutions to the HIV crisis. Epidemiological synergy between STIs and HIV was revealed⁸ and randomised controlled trials to examine the effect of interventions to control STIs on HIV transmission were launched.³⁹ The first trial, published in 1995, found that communities provided with STI syndromic management in Mwanza Region, Tanzania had a lower incidence of HIV infection than communities without STI control (the trial is widely referred to as “the Mwanza trial”).⁹

Many respondents agreed that the Mwanza trial findings greatly enhanced the prioritisation of STIs (I2, I3, I4, I5, I6, I7, I8 and I9). Syndromic management was then portrayed as a means of tackling the HIV epidemic, including as part of an integrated reproductive health programme⁴⁰ reaching women in family planning and antenatal clinics.⁴¹

“It was even believed at a certain point that STI control was the magic bullet for HIV prevention.” (I3)

However, another randomised controlled trial, published in 1998, found no impact on HIV transmission of mass antimicrobial treatment for STIs at the village level in Rakai, Uganda (referred to as “the Rakai trial”).^{42 43} Additionally, two informants noted that the advent of highly active antiretroviral therapy at the Vancouver AIDS conference in 1996 further reduced the relevance of other STIs in HIV control among global actors (I3 and I16).⁴⁴ This led to growing scepticism about prioritising STI management as part of HIV control, especially among major donors (I1, I2, I3, I4, I5, I7, I9 and I19). Consequently, consensus among global actors diminished,⁴⁵ prompting major donors to withdraw resources from STI management initiatives (I4, I5 and I9).

“PEPFAR [the United States President’s Emergency Plan for AIDS Relief] did not put money into it anymore. PEPFAR put all its money into HIV prevention, into antiretroviral treatment, male circumcision, and prevention of mother-to-child transmission.” (I5)

Since 2000

The findings of the Rakai trial in 1998, along with other trials of syndromic management and suppression of herpes simplex published since 2000,⁴⁶⁻⁴⁸ changed the balance of scientific opinion about the linkage between STI management and HIV control. This shift was compounded by the STI community's failure to establish alternative framings that were powerful enough to sustain policy attention. As commented:

"The linkage to HIV was our biggest chance to have an integrated approach to control all the STIs and HIV. And I think we placed too much emphasis on that so that when the data didn't support this as a co-intervention for prevention of HIV that there was a loss of interest." (I19)

The informants shared the view that prioritisation of non-HIV STIs since 2000 has been hindered by the popular perception that they are treatable, not fatal, and have a significantly lower burden than other major infectious diseases, like HIV and tuberculosis (I5, I8, I13, I14, I18 and I20), as well as the associated stigma of infections transmitted through sexual activity (I1, I4, I8, I9 and I20). Congenital syphilis was identified as an exception (I17, I19 and I20), with its framing as a major cause of stillbirths and neonatal deaths successfully stimulating international policy and donor attention.

Despite the widespread consensus within the policy community that some STIs are seriously neglected, there were significant differences in opinion on how to make a good investment case. Potential strategies suggested by the informants include: framing STIs as disproportionately affecting women's health in the context of the MeToo movement against sexual abuse and harassment, which has "a different threshold for thinking about gender equity" (I7 and I16); framing STIs towards sexual and reproductive health and rights for all to "destigmatise STIs and take them out of a special realm" (I1, I2, I3, I5); and framing STIs as affecting key populations, especially those eligible for pre-exposure prophylaxis (PrEP) to prevent HIV infection (I1, I5, I7 and I9). No single issue emerged as a dominant framing for prioritising STI control during the interviews.

Actor power

Before 2000

The number of policy actors working in STI control and prevention started to increase in the 1980s owing to rising concerns about studies in Africa that showed the high prevalence of bacterial STIs (I4, I8). WHO established a Venereal Diseases and Treponematoses Unit in 1986 and the Global Programme on AIDS (GPA) in 1987, both of which, according to Lush et al., hosted high profile meetings,⁴¹ culminating in a consensus statement with recommendations for coordinating AIDS and STI programmes.⁴⁹

Two informants (I2 and I6) pointed to the strong leadership of GPA in promoting STI control in the 1990s, which helped secure support from key funders, such as the United States President's Emergency Plan for AIDS Relief (PEPFAR), United States Agency for International Development, Department for International Development, UK, the World Bank, and others.⁴¹ The GPA became the Joint United Nations Programme on HIV/AIDS (UNAIDS) in 1996 and the funds were used to assist national governments in most African countries to introduce syndromic management guidelines through HIV control programmes (I2)⁴¹ and maternal and child health or family planning programmes.^{37 40} This process was facilitated by the active involvement of several international NGOs, such as Family Health International and the Population Council (I7 and I9). As one respondent put it:

"...HIV and STI colleagues at WHO would be amongst the most influential in terms of international policy in this area at that time." (I6)

The successful advocacy during this period was also attributed to the emergence of issue champions both in Africa and Europe. A key researcher and teacher at the Institute for Tropical Medicine Antwerp was identified by several respondents (I3, I4, I5 and I8) as playing a crucial role in the global policy community. Coined the "Antwerp Mafia", the individual and many students and colleagues became influential in the STI and later HIV/AIDS communities, including in international organisations, such as WHO, UNAIDS, and the European Commission. These champions held strong authority and legitimacy due to their field experience and contacts and were able to allocate funds to STIs.⁴¹

Since 2000

In 1999, the STI Unit moved back from UNAIDS to WHO, joining the newly formed Division of Reproductive Health and Research (RHR), which signalled separation between the global STI and AIDS communities.⁴¹ Many respondents (I1, I5, I7, I10, I17 and I20) indicated that,

since 2000, the STI community has been characterised by a loose structure and lack of champions. Although a group of policymakers, researchers, and programme managers worked closely with WHO's RHR, forming a club-like camaraderie to develop STI control guidelines and strategies (I2),⁵⁰ this group was mainly research-based and had limited impact on implementation at country level (I20). Two informants believed that the withdrawal of major donors had caused a so-called "brain drain" (I5 and I9), resulting in fewer young people with an interest in advocacy for STI control (I3 and I19), and personnel instability (I1 and I19) within the policy community. This has made the community less influential on the global health agenda.

"...some of the best people working in STI switched to HIV...these leaders were not just scientists, but also advocates who were very vocal...I think [that] has not helped for the STI world." (I5)

Furthermore, some informants (I15, I16 and I19) perceived that, due to scarce resources, WHO's influence could hardly go beyond the creation of technical guidelines, thus diminishing its power in shaping the priority of STI control. This situation was accentuated by the lack of new effective coordinating mechanisms, especially when contrasted with the cohesive leadership of GPA in the 1990s.

During this period, the global STI control initiative has also been marked by weak mobilisation of civil society, with some informants citing insufficient funding as a reason (I17 and I20). Only two international NGOs, the Clinton Health Access Initiative and Evidence Action, were identified during the interviews as collaborating with WHO to support some African countries in implementing PMTCT of syphilis by providing technical assistance and fixing supply chain disruptions (I12, I17, I19 and I20).

"...what I'd highlight is having NGO partners that...have the capacity to support because...any time you're sort of introducing a new service or refocusing priorities that it just requires a lot of change management and technical support." (I12)

Yet, even with the efforts of these NGOs, their reach and influence remained relatively limited in comparison to larger global health initiatives, like HIV/AIDS control.

Political contexts

Before 2000

Given the importance of HIV and its framing as a health security threat which threatened economic and demographic stability in many parts of the world during the pre-2000 period,⁵¹ the initial evidence that STI control provided a solution for limiting HIV transmission provided an important policy window in the view of several respondents (I2, I3, I4, I5, I6 and I7).⁴¹ This window was effectively closed, with a consequent loss of attention and resources, when STI control was shown not to be effective at controlling HIV transmission.

Since 2000

Informants did not identify specific policy windows for the broad goal of STI control since 2000. However, published studies indicated that the global goals setting in the Millennium Development Goals (MDGs) in 2000 provided an opportunity to push for a focus on individual issues such as preventing congenital syphilis,^{2 52} with attendant impacts on MDG 4 (reducing child mortality), 5 (improving maternal health), and 6 (combating HIV/AIDS, malaria, and other diseases).⁵³ Although advocates have successfully pushed for elements of STI control, such as PMTCT of syphilis, HPV vaccination, and treatment for drug resistant gonorrhoea, no specific global governance mechanism for STI control was identified during the interviews. Informants did not perceive the attention on specific interventions to be able to stimulate a broader focus or prioritisation of other STIs (I19 and I20). Meanwhile, although WHO has produced a number of technical global strategies for STI control since 2000,^{15 54} implementation was judged to be more likely in countries with robust governance capacity and adequate funding.^{35 50}

The Sustainable Development Goals (SDGs) while not specifically mentioning STIs do provide opportunities to promote STI control in both SDG 5 (“universal access to comprehensive sexual and reproductive health and reproductive rights”) and SDG 3, (“ensuring healthy lives and promoting well-being for all”). The 2019, the United Nations General Assembly’s adoption of a new political declaration on universal health coverage (UHC), including

commitments to increase investments in comprehensive sexual and reproductive healthcare services⁵⁵ may open a policy window for STIs. According to an official from WHO:

“[What] we need to do with STIs is to better integrate it into primary care and UHC...because primary care is getting some funding. And therefore, we want STIs to be seen as an essential part of primary care.” (I20)

Table 3 summarises the main factors that informants mentioned as affecting the global political priority of STIs in the Shiffman and Smith framework.

Working paper

Table 3 Factors affecting global political priority for controlling STIs

Category	Factors	Before 2000	Since 2000
Actor power	Policy	A tightly united global	Fragmented promotion
	community	policy community	efforts
	cohesion	Influential political	Lack of champions
	Leadership	entrepreneurs	Ineffective coordinating
	Guiding	Strong guiding institution	mechanisms
	institution	(GPA)	Insufficient mobilisation
	Civil society	Active involvement of	of civil society, except for
	mobilisation	international non- governmental organisations	PMTCT of syphilis
Ideas	Internal frame	STIs recognised as a	Reduced justification for
	External frame	major public health problem Agreement on STI management as an intervention for HIV control	inclusion of STI management as part of HIV control Few powerful framings to spur policy action, except for PMTCT syphilis
Political contexts	Policy window	STIs sucked along in the	MDGs not taken
	Global	slipstream behind	advantage of except for
	governance structure	HIV/AIDS Steps taken to facilitate adoption of the syndromic management guidelines at national level	PMTCT of syphilis No strong framework to sustain national progress
Issue characteristics	Credible	Evidence on the burden	Reduced confidence in
	indicators	of STIs and their synergy	estimates of the
	Severity	with HIV	magnitude of the problem

Effective interventions	Mwanza trial: STI syndromic management reduced HIV transmission Rakai trial: Mass antimicrobial treatment did not reduce HIV transmission	due to lack of prevalence and incidence data Absence of affordable and accurate point-of-care diagnostics Lack of effective interventions for implementation at STI clinic or primary care level
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GPA, Global Programme on AIDS; MDGs, Millenium Development Goals; PMTCT, prevention of mother to child transmission; STI, sexually transmitted infection

Discussion

Our study analyses the factors that have influenced the priority afforded to STIs by global health actors over time. STI control was high on the global health agenda during the late 1980s and 1990s, when the world was looking for cheap, effective and feasible solutions to the HIV/AIDS epidemic. At that time, a strong global policy community agreed on both the high burden of STIs and the potential of STI management to reduce the incidence of new HIV infections. However, as indicated through informant interviews, the level of priority decreased when research evidence did not find an impact of STI control interventions on HIV incidence. Since 2000, the global STI policy community has largely been characterised a loosely organised structure, absence of champions, undefined coordinating mechanisms, lack of compelling issue framings, and insufficient engagement of civil society. These factors, along with uncertainties surrounding the actual burden of STIs and cost-effectiveness of interventions, have contributed to challenges of achieving policy salience.

Our study suggests reasons for the gap between perceived and actual priority of STIs when examining the limited ODA allocation data. Most respondents believed that STI control had fallen off the global health agenda since the late 1990s and remarked on decreased levels of funding from major donors. This sentiment was often linked to the change in scientific evidence, with the findings of the Rakai trial⁴²⁻⁴³ and others⁴⁶⁻⁴⁸, which broke the consensus that STI control interventions could reduce HIV transmission. Despite substantial estimates

of the funds needed for broad STI control, there has been under-funding, compared with more targeted initiatives, such as PMTCT of syphilis, HPV vaccination and treatments for antimicrobial-resistant gonorrhoea.⁵⁶ The disconnect between perception and evidence could result from a constrained understanding of what constitutes STI control and where it is delivered. Informants talked generally about STI control without specifying infections or interventions. For example, those focused on curable STIs might overlook the priority given to HPV vaccination as it was widely promoted as cancer prevention. Sample bias might also have contributed to this finding, as three-fourths of our respondents first became engaged in STI control in the late 1980s and 1990s, likely reflecting the higher priority assigned to STIs during that period. Another limitation of our study is the underrepresentation of respondents from LMICs and the absence of participants from major donors.

Our study has identified factors to consider for those seeking to boost resources for STI control. Political science suggests that a “policy window” opens when three streams - policy, problem and politics - converge.²⁵ There is first a need for the global STI policy community to recognise the importance of political decision-making as well as empirical evidence in driving policy attention and resource allocation. For instance, the PMTCT of syphilis programme’s alignment with MDGs 4, 5 and 6 strategically placed congenital syphilis control within a broader health and development narrative, capturing international policy attention and funding (the politics stream). This alignment, along with cost-effective interventions and concrete evidence of the disease’s global burden (the policy and problem streams, respectively), was driven by “political entrepreneurs” - Individuals from WHO, academia, and civil society. These stakeholders partnered to raise the salience of congenital syphilis, merging the three streams into a window of opportunity for increased priority.

Second, framing is crucial for policy prioritisation. Control of curable STIs was prioritised when framed as a means of achieving HIV control earlier in the epidemic. The evidence that STI management did not decrease HIV transmission dealt a blow to funding for non-HIV STIs. Subsequent STI control programmes that have achieved more financial and priority “success” have been framed as cancer control (HPV vaccination) and improving neonatal and maternal health (congenital syphilis). To elevate other STIs (e.g., chlamydia and gonorrhoea) on policy agendas, finding alternative framings beyond the “STI control” narrative is likely necessary.

Third, action is needed to address the STI community's apparent lack of cohesion, advocates, champions, and politically strategic framings. The role of advocacy coalitions in global health is well described, particularly in the case of HIV and access to antiretroviral treatments. The field of STI control, however, appears to lack coordinated engagement with stakeholders beyond congenital syphilis and HPV vaccines. Efforts to identify and engage with a range of stakeholders across civil society, reproductive health advocates, adolescent health champions etc., will likely foster a strong and successful advocacy movement for STI control.

Fourth, the emergence of attention to UHC around 2015, along with an ongoing emphasis on health systems strengthening, may offer new opportunities for integrating STI control into broader health policy agenda. While UHC is essential for realising the right to health for all, limited resources necessitate priority setting to ensure fair and efficient resource allocation, especially for marginalised and vulnerable populations.⁵⁷ Syndromic management and partner notification remain the main interventions available for controlling curable STIs in the general population in most countries,⁵⁸ so efforts should be made to make sure that they are part of UHC.

Lastly, recognising that ODA contributes only a limited part of total STI financing, and considering the frequent exclusion of STI services from essential service packages, it is crucial to take measures at national level. These should include identifying reliable funding sources, establishing strategic coordination, and ensuring equitable service provision along with quality assurance.^{15 36}

Conclusion

Our study highlights the importance of recognising the political nuances in policy attention and resource allocation beyond empirical evidence, and understanding the roles that values, framing, coalitions and strategic management of evidence into processes can play. The rise of UHC since 2015 offers a promising avenue to integrate STI initiatives into broader health strategies, which will require a concerted effort to frame STI interventions appropriately (i.e., framing linked to a broader agenda beyond STIs), and forge connections with other communities and stakeholders focused on sexual and reproductive health agendas.

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Patient consent for publication Not applicable.

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Data availability There were no new datasets generated or analysed for this study. Due to the confidential nature of the interviews, transcripts are not accessible to the public. Supplementary material, including the questionnaire template, is in the online supplemental file.

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Reference

1. Parkhurst JO, Vulimiri M. Cervical cancer and the global health agenda: Insights from multiple policy-analysis frameworks. *Global Public Health* 2013;8(10):1093-108. doi: 10.1080/17441692.2013.850524
2. Wu D, Hawkes S, Buse K. Prevention of mother-to-child transmission of syphilis and HIV in China: What drives political prioritization and what can this tell us about promoting dual elimination? *International journal of gynaecology and obstetrics* 2015;130 Suppl 1:S32-6. doi: 10.1016/j.ijgo.2015.04.005
3. Shiffman J, Smith S. Generation of political priority for global health initiatives: a framework and case study of maternal mortality. *Lancet* 2007;370(9595):1370-9. doi: 10.1016/s0140-6736(07)61579-7 [published Online First: 2007/10/16]
4. Shiffman J, Shawar YR. Framing and the formation of global health priorities. *Lancet* 2022;399(10339):1977-90. doi: 10.1016/s0140-6736(22)00584-0 [published Online First: 2022/05/21]
5. WHO. Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030. Geneva: World Health Organization, 2022.
6. Low N, Broutet N, Adu-Sarkodie Y, et al. Global control of sexually transmitted infections. *Lancet* 2006;368(9551):2001-16. doi: 10.1016/s0140-6736(06)69482-8 [published Online First: 2006/12/05]
7. WorldBank. World Development Report 1993 : Investing in Health. New York: Oxford University Press 1993.
8. Wasserheit JN. Epidemiological synergy. Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. *Sex Transm Dis* 1992;19(2):61-77. [published Online First: 1992/03/01]
9. Grosskurth H, Mosha F, Todd J, et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. *Lancet* 1995;346(8974):530-6. doi: 10.1016/s0140-6736(95)91380-7 [published Online First: 1995/08/26]
10. WHO. Global progress report on HIV, viral hepatitis and sexually transmitted infections, 2021. Geneva: World Health Organization 2021.
11. IHME. Global Health Metrics: Sexually transmitted infections excluding HIV—Level 3 cause: The Lancet; 2023 [Available from: <https://www.thelancet.com/pb-assets/Lancet/gbd/summaries/diseases/stis.pdf2023>].
12. Sung H, Ferlay J, Siegel RL, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin* 2021;71(3):209-49. doi: 10.3322/caac.21660 [published Online First: 2021/02/05]
13. WHO. Strategizing national health in the 21st century: a handbook. Geneva: World Health Organization 2016.
14. Grollman C, Arregoces L, Martínez-Álvarez M, et al. 11 years of tracking aid to reproductive, maternal, newborn, and child health: estimates and analysis for 2003-13 from the Countdown to 2015. *Lancet Glob Health* 2017;5(1):e104-e14. doi: 10.1016/s2214-109x(16)30304-7 [published Online First: 2016/12/14]
15. WHO. Global Health Sector Strategy on Sexually Transmitted Infections: 2016–2021. Geneva: World Health Organization, 2016.

16. Taylor MM, Wi T, Gerbase A, et al. Assessment of country implementation of the WHO global health sector strategy on sexually transmitted infections (2016-2021). *PLoS One* 2022;17(5):e0263550. doi: 10.1371/journal.pone.0263550 [published Online First: 2022/05/05]
17. GlobalFund. Maximizing the Impact of Global Fund Investments by Improving the Health of Women and Children. IEERG REPORT. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria, 2015.
18. Gavi. Phase IV (2016-20) Geneva: Gavi, The Vaccine Alliance; 2020 [Available from: <https://www.gavi.org/our-alliance/strategy/phase-4-2016-2020>].
19. GARDP. ACTIVITY REPORT 2021 Geneva: Global Antibiotic Research and Development Partnership; 2021 [Available from: https://assets.website-files.com/62b5c62a6db9262b21bd93eb/63359941f84c7d5923bb0287_GARDP-activityreport-DIGITAL_compressed.pdf].
20. Shawar YR, Shiffman J, Spiegel DA. Generation of political priority for global surgery: a qualitative policy analysis. *Lancet Glob Health* 2015;3(8):e487-e95. doi: 10.1016/s2214-109x(15)00098-4 [published Online First: 2015/07/19]
21. Unemo M, Bradshaw CS, Hocking JS, et al. Sexually transmitted infections: challenges ahead. *Lancet Infect Dis* 2017;17(8):e235-e79. doi: 10.1016/s1473-3099(17)30310-9 [published Online First: 2017/07/14]
22. Shawar YR, Shiffman J. Generation of global political priority for early childhood development: the challenges of framing and governance. *Lancet* 2017;389(10064):119-24. doi: 10.1016/s0140-6736(16)31574-4 [published Online First: 2016/10/09]
23. Lemmi V. Establishing political priority for global mental health: a qualitative policy analysis. *Health Policy Plan* 2022;37(8):1012-24. doi: 10.1093/heapol/czac046 [published Online First: 2022/06/29]
24. Victora CG, Black RE, Boerma JT, et al. Measuring impact in the Millennium Development Goal era and beyond: a new approach to large-scale effectiveness evaluations. *Lancet* 2011;377(9759):85-95. doi: 10.1016/s0140-6736(10)60810-0 [published Online First: 2010/07/14]
25. Kingdon JW. *Agendas, Alternatives, and Public Policies*. Second Edition ed. London: Longman 2003.
26. Snow DA, Worden SK, Rochford EB, et al. FRAME ALIGNMENT PROCESSES, MICROMOBILIZATION, AND MOVEMENT PARTICIPATION. *American Sociological Review* 1986;51(4):464-81. doi: 10.2307/2095581
27. Haas PM. EPISTEMIC COMMUNITIES AND INTERNATIONAL-POLICY COORDINATION - INTRODUCTION. *International Organization* 1992;46(1):1-35. doi: 10.1017/s0020818300001442
28. McAdam D, McCarthy JD, Zald MN. *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings*. Cambridge: Cambridge University Press 1996.
29. Brugha R, Varvasovszky Z. Stakeholder analysis: a review. *Health Policy Plan* 2000;15(3):239-46. doi: 10.1093/heapol/15.3.239 [published Online First: 2000/09/30]
30. Morse JM. Theoretical saturation. In: Lewis-Beck MS, Bryman A, Liao TF, eds. *The SAGE encyclopedia of social science research methods*. 1st ed. New York, NY: Sage Publications 2004:1528.

31. Chapman AL, Hadfield M, Chapman CJ. Qualitative research in healthcare: an introduction to grounded theory using thematic analysis. *J R Coll Physicians Edinb* 2015;45(3):201-5. doi: 10.4997/jrcpe.2015.305 [published Online First: 2015/11/01]
32. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007;19(6):349-57. doi: 10.1093/intqhc/mzm042 [published Online First: 2007/09/18]
33. SNIS. Political Prioritisation of the Prevention and Control of Sexually Transmitted Infections: A Global Challenge Geneva: Swiss Network for International Studies; 2019 [Available from: <https://snis.ch/projects/political-prioritisation-of-the-prevention-and-control-of-sexually-transmitted-infections-a-global-challenge/>].
34. van Dam CJ, Becker KM, Ndowa F, et al. Syndromic approach to STD case management: where do we go from here? *Sex Transm Infect* 1998;74 Suppl 1:S175-8. [published Online First: 1999/02/19]
35. Low N, Broutet N, Adu-Sarkodie Y, et al. Sexual and reproductive health 5 - Global control of sexually transmitted infections. *Lancet* 2006;368(9551):2001-16. doi: 10.1016/s0140-6736(06)69482-8
36. Seale A, Broutet N, Narasimhan M. Assessing process, content, and politics in developing the global health sector strategy on sexually transmitted infections 2016-2021: Implementation opportunities for policymakers. *PLoS Med* 2017;14(6):e1002330. doi: 10.1371/journal.pmed.1002330 [published Online First: 2017/06/28]
37. Ndugga B, Askew I. Integrating STI/HIV Management Strategies into Existing MCH/FP Programs: Lessons from Case Studies in East and Southern Africa: The Population Council, 1997.
38. Hawkes S, Morison L, Foster S, et al. Reproductive-tract infections in women in low-income, low-prevalence situations: assessment of syndromic management in Matlab, Bangladesh. *Lancet* 1999;354(9192):1776-81. doi: 10.1016/s0140-6736(99)02463-0 [published Online First: 1999/11/30]
39. Hayes R, Wawer M, Gray R, et al. Randomised trials of STD treatment for HIV prevention: report of an international workshop. HIV/STD Trials Workshop Group. *Genitourin Med* 1997;73(6):432-43. doi: 10.1136/sti.73.6.432 [published Online First: 1998/05/16]
40. Mayhew S. Integrating MCH/FP and STD/HIV services: current debates and future directions. *Health Policy Plan* 1996;11(4):339-53. doi: 10.1093/heapol/11.4.339 [published Online First: 1996/11/03]
41. Lush L, Walt G, Ogden J. Transferring policies for treating sexually transmitted infections: what's wrong with global guidelines? *Health Policy and Planning* 2003;18(1):18-30. doi: 10.1093/heapol/18.1.18
42. Wawer MJ, Gray RH, Sewankambo NK, et al. A randomized, community trial of intensive sexually transmitted disease control for AIDS prevention, Rakai, Uganda. *Aids* 1998;12(10):1211-25. doi: 10.1097/00002030-199810000-00014 [published Online First: 1998/07/24]
43. Wawer MJ, Sewankambo NK, Serwadda D, et al. Control of sexually transmitted diseases for AIDS prevention in Uganda: a randomised community trial. Rakai Project Study Group. *Lancet* 1999;353(9152):525-35. doi: 10.1016/s0140-6736(98)06439-3 [published Online First: 1999/02/24]
44. Montaner JS, Reiss P, Cooper D, et al. A randomized, double-blind trial comparing combinations of nevirapine, didanosine, and zidovudine for HIV-infected patients: the

- INCAS Trial. Italy, The Netherlands, Canada and Australia Study. *Jama* 1998;279(12):930-7. doi: 10.1001/jama.279.12.930 [published Online First: 1998/04/17]
45. Hitchcock P, Fransen L. Preventing HIV infection: lessons from Mwanza and Rakai. *Lancet* 1999;353(9152):513-5. doi: 10.1016/s0140-6736(99)00031-8 [published Online First: 1999/02/24]
 46. Kamali A, Quigley M, Nakiyingi J, et al. Syndromic management of sexually-transmitted infections and behaviour change interventions on transmission of HIV-1 in rural Uganda: a community randomised trial. *Lancet* 2003;361(9358):645-52. doi: 10.1016/s0140-6736(03)12598-6 [published Online First: 2003/02/28]
 47. Celum CL, Robinson NJ, Cohen MS. Potential effect of HIV type 1 antiretroviral and herpes simplex virus type 2 antiviral therapy on transmission and acquisition of HIV type 1 infection. *J Infect Dis* 2005;191 Suppl 1:S107-14. doi: 10.1086/425272 [published Online First: 2005/01/01]
 48. Celum C, Wald A, Hughes J, et al. Effect of aciclovir on HIV-1 acquisition in herpes simplex virus 2 seropositive women and men who have sex with men: a randomised, double-blind, placebo-controlled trial. *Lancet* 2008;371(9630):2109-19. doi: 10.1016/s0140-6736(08)60920-4 [published Online First: 2008/06/24]
 49. WHO/GPA. Consensus statement from the Consultation on Global Strategies for Coordination of AIDS and STD Control Programmes. Geneva: WHO/GPA, 1990.
 50. Burris H, Parkhurst J, Adu-Sarkodie Y, et al. Getting research into policy - Herpes simplex virus type-2 (HSV-2) treatment and HIV infection: international guidelines formulation and the case of Ghana. *Health Research Policy and Systems* 2011;9 doi: 10.1186/1478-4505-9-s1-s5
 51. Shadyab AH, Hale BR, Shaffer RA. HIV/AIDS Securitization: Outcomes and Current Challenges. *Curr HIV Res* 2017;15(2):78-81. doi: 10.2174/1570162x15666170516163834 [published Online First: 2017/05/20]
 52. Schmid GP, Stoner BP, Hawkes S, et al. The need and plan for global elimination of congenital syphilis. *Sex Transm Dis* 2007;34(7 Suppl):S5-10. doi: 10.1097/01.olq.0000261456.09797.1b [published Online First: 2007/07/10]
 53. UN. The Millennium Development Goals Report 2015. New York: United Nations 2015.
 54. WHO. Global strategy for the prevention and control of sexually transmitted infections: 2006 - 2015 - Breaking the chain of transmission. Geneva: World Health Organization 2007.
 55. UN. Political Declaration of the High-level Meeting on Universal Health Coverage "Universal health coverage: moving together to build a healthier world". New York: United Nations General Assembly, 2019.
 56. Furuoka F, Hoque MZ, Jacob RI, et al. An analysis of the development assistance for health (DAH) allocations for STD control in Africa. *Health Econ Policy Law* 2020;15(4):458-76. doi: 10.1017/s1744133119000197 [published Online First: 2019/04/11]
 57. Rumbold B, Baker R, Ferraz O, et al. Universal health coverage, priority setting, and the human right to health. *Lancet* 2017;390(10095):712-14. doi: 10.1016/s0140-6736(17)30931-5 [published Online First: 2017/05/01]
 58. WHO. Guidelines for the management of symptomatic sexually transmitted infections. Geneva: World Health Organization, 2021.

Online supplemental file

Understanding the factors affecting global political priority for controlling sexually transmitted infections: a qualitative policy analysis

Dadong Wu, Nicola Low, Sarah J Hawkes

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1. Supplemental file: Information sheet and consent form



PARTICIPANT INFORMATION SHEET

Interview with key stakeholder

Please read this information sheet before you decide to take part. Please ask if there is anything that is not clear.

Title of Study:

Political prioritisation of the prevention and control of sexually transmitted infections: a global challenge

Institute:

Institute of Social and Preventive Medicine, University of Bern, Mittelstrasse 43, 3012 Bern, Switzerland

Name and Contact Details of the Researcher:

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Name and Contact Details of the Project Coordinator:

Professor Nicola Low, E-mail: nicola.low@ispm.unibe.ch or Tel.: +41 316313092

1. Invitation

You have been invited to take part in a research project about the political prioritisation of sexually transmitted infections (STIs) as a global health issue. Prior to deciding on whether to participate or not, it is important for you to understand why this research is being conducted and what participation will entail. Please take time to read the following information carefully and discuss it with others if you wish. Please ask the researcher if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

2. Who is organising and funding the research?

This research project is carried out by the Institute of Social and Preventive Medicine at the University of Bern and funded by the Swiss Network for International Studies.

3. What is the project's purpose?

This research project focuses on agenda setting and policy formulation for the prevention and control of STIs as a global public health problem. The project aims to understand how, why and why not, STIs have been placed on the global policy agenda during different time periods. Through identifying the key features driving or hampering prioritisation of the issue, we seek to achieve a better understanding of the health policy process and provide recommendations for promoting STI control at both global and national levels. The study involves analyses of policy documents and media coverage, as well as in-depth interviews with key stakeholders.

4. Why have I been chosen?

We have invited you to participate in the study based on your expertise and experience in health policy. We are interviewing around 25-35 people, identified from policy documents and other experts in the field; but none of the other experts are aware that we have invited you to participate.

-
- 5. Do I have to take part?**
Your participation is completely voluntary. It is up to you to decide whether or not to take part in the study. If you do agree to take part, you will be asked to sign an **Informed Consent Form** to confirm that you understand the purpose of the study and what is expected from you. Meanwhile, you can withdraw at any time without giving a reason (as long as it is before the results have been published). If you decide to withdraw, you will be asked what you wish to happen to the data you have provided until that point.
- 6. What will happen to me if I take part?**
If you choose to participate in the study, we will ask you to take part in a semi-structured interview during which questions about STI policy at both global and national levels will be asked. The interview will include questions such as "How is your organisation involved in the promotion of STI control?" or "Who played a major role in shaping agenda setting for STIs?" If there are questions you do not wish to answer, you can opt out of answering them. The interview will take about 30 to 60 minutes via phone or internet call at your convenience. Your confidentiality and privacy will be ensured.
- 7. Will I be recorded and how will the recorded media be used?**
If permission is received from you, the interview will be audio-recorded. If you prefer to not record the interview, notes will be taken by the researcher. Audio-recordings will be transcribed by the research team, and the audio-records will be deleted 3 years after the project is completed. The data will be stored locally on password-protected computers and will only be accessible by the research team.
- 8. Will my taking part in this project be kept confidential?**
All the information that we collect about you during the course of this project will be used for the study purpose only and kept strictly confidential. You will not be personally identifiable in any ensuing reports or publications. If we use any direct quotes from your interview, we will only identify your organisation (e.g. "WHO official" or "academic") stating no other personal features in order to avoid any possibility of you being identifiable in person. If we plan to use a (anonymised) quote from you, we will seek your permission before the findings are presented to an external audience. If you do not wish the quote to be used or information disclosed, we will not present or publish this information.
- 9. What will happen to the results of the research project?**
The results of the study will be published as part of a project report and in peer-reviewed journals. The findings will also be presented and discussed in meetings and workshops with relevant stakeholders.
- 10. What are the possible disadvantages and risks of participating?**
There are no direct benefits for you if you choose to participate in the study. There is a possibility of reputational risk if politically sensitive information is divulged. However, your participation will be kept unidentified to your institution and, as described earlier, you will be given an opportunity to see and approve any direct quotes used from your interview prior to presentation or dissemination of the study results. If you experience any discomfort or risk associated with your participation in the research project, please let the research team know.
- 11. What are the possible benefits of taking part?**
There are no intended direct benefits for you from taking part in the study. However, it is hoped that the findings of the study will be relevant for promoters, policymakers, and other stakeholders working on the prevention and control of STIs.
- 12. What if something goes wrong?**
If you have any questions arising from this Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. Dr. Dadong Wu, Email: dadong.wu@qq.com or Tel: +86 (0)13823184820. You will be given a copy of this Information Sheet to keep and refer to at any time.

If you have questions, concerns, or complaints, or think this research has hurt you, please contact the responsible project coordinator: Professor Nicola Low, E-mail: nicola.low@ispm.unibe.ch or Tel.: +41 (0)316313092.

13. Ethical approval

This study is not subject to ethical committee approval in Switzerland due to the reason that it does not fall under the Swiss Human Research Act, Art. 2, Paragraph 1. The clarification of jurisdiction is presented with this Information Sheet.

Your time and cooperation is highly appreciated!



INFORMED CONSENT FORM

Key stakeholder interview

Please complete this form after you have read the Information Sheet.

Title of Study:

Political prioritisation of the prevention and control of sexually transmitted infections: a global challenge

Institute:

Institute of Social and Preventive Medicine, University of Bern, Mittelstrasse 43, 3012 Bern, Switzerland

Name and Contact Details of the Researcher:

Dr. Flora Dadong Wu, Email: dadong.wu@qq.com or Tel.: +86 (0)13823184820

Name and Contact Details of the Project Coordinator:

Professor Nicola Low, Email: nicola.low@ispm.unibe.ch or Tel.: +41 (0)316313092

This study is not subject to ethical committee approval in Switzerland due to the reason that it does not fall under the Human Research Act, Art. 2, Paragraph 1. The clarification of jurisdiction is presented with the information sheet.

Thank you for considering taking part in this research. The person conducting the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

If you have questions, concerns, or complaints, or think this research has hurt you, please contact the responsible project coordinator: Professor Nicola Low, Email: nicola.low@ispm.unibe.ch or Tel.: +41 (0)316313092.



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ESSEN

I confirm that I understand that by ticking or initialling each box below, I am consenting to this element of the study. I understand that it will be assumed that unticked or initialled boxes mean that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for participation in the study.

Study element	Tick Box
I confirm that I have read and understood the Participant Information Sheet for the above study. I have had the opportunity to consider my participation and ask questions, which have been answered to my satisfaction.	
I consent to participate in the study as described and understand that I am free to withdraw at any time without giving a reason. I understand that if I decide to withdraw, any personal data I have provided up to that point will be deleted unless I agree otherwise.	
The study procedures have been explained to me and I understand them. I understand that all my personal information collected will be used for the study purpose only.	
I understand that all the data gathered in this study will be kept strictly confidential and that all efforts will be made to ensure that I cannot be identified.	
I understand the potential risks of participating.	
I understand the societal benefits of participating in research.	
I understand that the information I have submitted will be published as part of a project report and in peer-reviewed journals, but I will not be identified in person, only pseudo-anonymously through my organisation.	
a. I consent that written notes will be taken during my interview. (Please choose between 8a or 8b)	
b. I consent to that my interview will be audio-recorded and I understand that the recordings will be destroyed following transcription 3 years after study completion. (Please choose between 8a or 8b)	
I am aware of who I should contact if I wish to lodge a complaint.	
I understand that the study is not subject to ethical committee approval in Switzerland, and I have read the clarification of jurisdiction.	

Name of participant Date Signature

Researcher Date Signature

2. Supplemental file: “Political prioritisation of the prevention and control of sexually transmitted infections: a global challenge” project group members

Name	Affiliation
Nicola Low	Institute of Social and Preventive Medicine (ISPM), University of Bern
Hira Imeri	Institute of Social and Preventive Medicine (ISPM), University of Bern
Eva Cignacco	Bern University of Applied Sciences, School of Health Professions, Midwifery Division Bern Switzerland
Sarah Hawkes	Institute for Global Health, University College London
Dadong Wu	Affiliated Shenzhen Maternity & Child Healthcare Hospital, Southern Medical University, Shenzhen, China Center for World Health Organization Studies, School of Health Management of Southern Medical University
R Matthew Chico	Department of Disease Control, Faculty of Infectious & Tropical Diseases, London School of Hygiene and Tropical Medicine, London, United Kingdom
Kelvin Kapungu	Tropical Disease Research Centre, Ndola, Zambia
Mike Chaponda	Tropical Disease Research Centre, Ndola, Zambia
Mae Dirac	Institute of Health Metrics and Evaluation, University of Washington, WA, USA
Angela Kelly-Hanku	Papua New Guinea Institute of Medical Research, Papua New Guinea The Kirby Institute, University of New South Wales, Sydney, Australia
Lisa Valley	Papua New Guinea Institute of Medical Research, Papua New Guinea The Kirby Institute, University of New South Wales, Sydney, Australia
Andrew Valley	Papua New Guinea Institute of Medical Research, Papua New Guinea The Kirby Institute, University of New South Wales, Sydney, Australia
William Pomat	Papua New Guinea Institute of Medical Research, Papua New Guinea
Melanie Taylor	US Centers for Disease Control and Prevention, Atlanta, Georgia, USA
Jane Rowley	Department of HIV, hepatitis and STIs, World Health Organization, Geneva, Switzerland
Nathalie Broutet	Department of Reproductive Health Research, World Health Organization, Geneva, Switzerland
Dianne Egli-Gany	Institute of Social and Preventive Medicine (ISPM), University of Bern

3. COREQ checklist

COREQ (Consolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	6
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	6
Occupation	3	What was their occupation at the time of the study?	6
Gender	4	Was the researcher male or female?	6
Experience and training	5	What experience or training did the researcher have?	6
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	6
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	6
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	6
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	5
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	6
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	6
Sample size	12	How many participants were in the study?	7
Non-participation	13	How many people refused to participate or dropped out? Reasons?	7
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	6
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	6
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	7,8
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	6
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	6
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	6
Field notes	20	Were field notes made during and/or after the interview or focus group?	6
Duration	21	What was the duration of the interviews or focus group?	6
Data saturation	22	Was data saturation discussed?	6
Transcripts returned	23	Were transcripts returned to participants for comment and/or	6

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	7
Description of the coding tree	25	Did authors provide a description of the coding tree?	7
Derivation of themes	26	Were themes identified in advance or derived from the data?	7
Software	27	What software, if applicable, was used to manage the data?	7
Participant checking	28	Did participants provide feedback on the findings?	6
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	9-14
Data and findings consistent	30	Was there consistency between the data presented and the findings?	9-14
Clarity of major themes	31	Were major themes clearly presented in the findings?	9-14
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	9-14

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.

4. Supplemental file: Ethics waiver



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Prof. Nicola Low
University of Bern, ISPM
Mittelstrasse 43
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Clarification of jurisdiction

BASEC-Nr: Req-2020-00269

Date of receipt: 10/03/2020

Title: Political prioritisation of the prevention and control of sexually transmitted infections: a global challenge

Please refer to the uploaded document for a description of the project.

Result of clarification of jurisdiction

- Not responsible:** The project is not subject to ethical committee approval in Switzerland. Reason: The project does not fall under the Human Research Act, Art. 2, Paragraph 1.
- Responsible:** Approval according to Human Research Act, Art. 2, Paragraph 1 is necessary in Switzerland. Please submit an application to the KEK according to www.swissethics.ch.

Fee: CHF 200.-- (Tariff code 6.0)

Date/Place: 23.03.2020/Bern

Prof. Dr. med. Christian Seiler
President

Dr. sc. nat. Dorothy Pfiffner
Head of the scientific secretariat

WORKING PAPER, OBJECTIVE 3

The prioritisation of curable sexually transmitted infections among pregnant women in Africa and the Pacific: Qualitative insights from health care workers, policy makers and programme advisors in Zambia and Papua New Guinea

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⁶ Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland.

ABSTRACT

Background: Curable sexually transmitted infections (STIs), compared to HIV/AIDS, are neglected in public health policy and services and society at large. Effective STI interventions are available but are not prioritised globally, regionally or locally for public health investment and action. Zambia and Papua New Guinea (PNG) have a high burden of STIs among pregnant women. Little is known about the prioritisation of STIs at the local level of health care provision related to treatment and care of pregnant women with STIs, as well as socio-cultural issues and other factors affecting the detection and treatment, and the impact of the prioritisation of STIs in pregnancy. We undertook a qualitative study of STI care and treatment in pregnancy in antenatal clinics in Zambia and PNG.

Methods: Nineteen semi-structured interviews were conducted with health care workers providing antenatal care as well as policy and programme advisers across the two countries. Audio recordings were transcribed and where necessary translated into English and then stored, managed, and coded in NVivo v12. Analysis used deductive and inductive thematic analysis. We also coded our findings against the World Health Organization health system building blocks

Findings: Participants demonstrated a broad understanding of morbidity associated with undiagnosed and untreated STIs in pregnant women. While the importance of testing and treating STIs in pregnancy was well recognized, many spoke of constraints in providing these services due to stock outs of point-of-care test kits for HIV and syphilis and antibiotics. In both settings syndromic management remains the mainstay for treating gonorrhoea, chlamydia and trichomonas. Clinical practice and treatment of STIs in pregnant women were not up to date in either Zambia or PNG, with participants recognizing the need for mentorship and updated training, as well as the availability of commodities to support their clinical practice.

Conclusion: Local disruptions to screening and management of syphilis, HIV and other curable STIs were widely reported in both countries. There is need to galvanise priority at national and regional levels to ensure ongoing access to supplies needed to undertake STI testing and treatment.

Key words

Antenatal care; sexually transmitted infections; pregnant women; health system; prioritisation; qualitative research.

INTRODUCTION

Worldwide, every day there are more than one million new cases of four curable sexually transmitted infections (STIs) – gonorrhoea, chlamydia, trichomoniasis and syphilis – of which 90% occur in low-income and middle-income countries (LMIC)[1], settings that are least able to respond. Untreated STIs are important causes of reproductive morbidity, and are associated with a number of adverse pregnancy and birth outcomes [2], including stillbirth, premature rupture of membranes, premature birth, low birthweight, neonatal sepsis, pneumonia, neonatal conjunctivitis, and congenital disease [2-6]. Unlike HIV, these infections have not galvanised the political attention and responses that other infections such as HIV has received, as evident, for example with the formation of the Joint United Nations Program on AIDS (UNAIDS), the establishment of significant donor programmes including the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the the Global Fund to Fight AIDS, TB and Malaria. Agenda setting is critical to prioritisation [7].

Highlighting their lack of political priority at the global level, as with the Millenium Development Goals, the Sustainable Development Goals fail to highlight STIs, and they remain invisible [8]. Despite not being explicitly mentioned, Galati [9] argues that sexual and reproductive health gained greater prominence in the SDGs than it had previously. The challenge, suggested some scholars, lay in the global community identifying important points of convergence between these development goals and STIs, particularly as they relate to health and ending inequalities [10].

The Sustainable Development Goals served as a catalyst for political attention around syphilis and viral hepatitis. And although elimination of congenital syphilis was the first elimination goal in vertical transmission, the prevention and later elimination of vertical transmission of HIV has received greater attention and focus. As recently as 2016 the World Health Organization (WHO) set ambitious targets for what is now commonly referred to as 'triple elimination' – the elimination of mother-to-child transmission of HIV, syphilis and hepatitis B [1]. Apart from HIV and syphilis, the response to other curable STIs has not attracted global attention, focus and priority including human and fiscal resources; consequently, curable STIs have not been prioritised for prevention, etiological diagnosis and treatment.

In 2021 WHO declared the global response to STIs was in crisis [11], reporting the uneven progress in global responses to HIV, viral hepatitis and STIs [12]. Now more than ever, STIs are being discussed in global forums, guidelines and strategies, including with combined global health sector strategies on HIV, viral hepatitis and STIs [1, 12]. At a country level there is some level of prioritisation of STIs, with many countries adopting updated STI treatment guidelines and monitoring gonococcal

antimicrobial resistance [13]. Unknown is how these bacterial STIs are prioritised locally for pregnant women in antenatal care.

Against this backdrop of prioritisation of STIs in maternal and child health, and as part of a larger multidisciplinary study on the political prioritisation of STIs [14], we undertook research in Africa and the Pacific that aimed to understand ways in which STIs in pregnancy are perceived and addressed locally. We used the platforms of two clinical trials that examined STIs in pregnancy, one in Zambia and the other in Papua New Guinea (PNG). These two countries were chosen as exemplars of the issues we sought to examine. Each country also has different socio-cultural and epidemiological settings. The prevalence of curable STI among pregnant women attending antenatal clinics is high in both study sites around 35% in Zambia [15] and 43% in PNG [16]. In contrast, Zambia is considered a high HIV burden country with HIV prevalence among adults 15-49 years estimated at almost 11% whereas in PNG, HIV prevalence is low, at 1% for the same population [17], but as high as 20% among female sex workers (11-20%) [18].

In this paper we explore how STIs are prioritised in the care and treatment of pregnant women in local health systems. The antenatal clinic offers a unique opportunity to examine critically how STI services are prioritised and provided to reduce the adverse outcomes of curable STIs for pregnant women and their babies. We present and analyse our data using the expanded WHO building blocks for health systems [19].

MATERIALS AND METHODS

This qualitative study was nested within two clinical trials which were in whole or in part investigating the role of STIs in poor maternal and newborn health outcomes and trialling interventions to improve them [20, 21]. We carried out data collection during the height of the COVID-19 pandemic in 2021 and 2022 when many primary and public health services were severely affected [22-24]. In Zambia, this was in the Aiming for Safe Pregnancies by Reducing Malaria and Infections of the Reproductive Tract (ASPIRE) trial [20] and in Papua New Guinea, the Women and Newborn Trial of Antenatal Interventions and Management (WANTAIM) trial [21].

Semi-structured interviews were conducted with health care workers and key informants to explore the treatment and care of pregnant women with STIs, socio-cultural issues and others factors affecting the detection and treatment of STIs in pregnant women, and the impacts of prioritisation of STIs in pregnancy. Interview guides were co-designed by the lead researchers in Zambia and PNG. Teams of highly skilled qualitative researchers were trained together via online platforms as well as face-to-face training sessions in preparation for data collection. Following written informed consent, all interviews were digitally audio-recorded. Interviews were conducted by trained researchers; each

interview was between 50-75 minutes long. All recordings were transcribed and, as necessary, translated into English for analysis. Translation was conducted by experienced qualitative researchers. All translations were cross-checked for quality and accuracy.

Sample, recruitment and data collection

Participants were purposively selected to provide detailed emic accounts of STIs in pregnancy. Across the two study sites we conducted interviews health care workers, key informants and pregnant women. In this paper, we focus on data derived from semi-structured interviews with health care workers and key informants.

Data analysis

All interviews were coded and analysed by two experienced researchers. Thematic analysis used a deductive and inductive approach, whereby each transcript was reviewed for data pertaining to the themes prioritised in the interview schedule. Inductive analysis allowed for an exploration of meanings and experiences. A third and final level of coding was developed against the WHO health system building blocks [25, 26]. The original WHO framework had only six blocks, but like De Savigny and Adam [19], we argue for the need of a seventh – people and community. We place them at the centre of the health system (Figure 1) and report our findings through the voices of the health care workers and key informants who took part in the study. Without this seventh block, the building blocks focus disproportionately on the supply side of a health system and not the demand side; people and community play an important role in assessing the effectiveness of a health system [27, 28]. We present our findings for each building block, although they are understood to blur and overlap in the everyday operations of a health system.

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Figure 1: The seven building blocks to support the health system [19] and key components of each building block [25, 26].

Ethics

In Zambia the study was approved by the Tropical Disease Research Centre Ethics Committee (TRC/C4/10/2020) and Zambia's National Health Research Authority (NRHA0000012/11/2020). In PNG the study was a sub-study of the WANTAIM trial, which had ethical approval from the PNG Institute of Medical Research Institutional Review Board (IRB number 1608), the PNG National Department of Health's Medical Research Advisory Committee (MRAC 16.24) and the Human Research Ethics Review Committee at UNSW Sydney, Australia (HREC 16708).

RESULTS

In total, 19 health care workers and key informants were interviewed, eight in Zambia and 11 in PNG (Table 1). Of interviewees, 12 were health care workers delivering antenatal and STI care and seven were key informants providing policy and programmatic technical support. More than half of the key informants were women, and most of the men interviewed were from the study in Zambia.

Table 1: Basic demographics

	Zambia (n=8)	Papua New Guinea (n=11)	Total (n=19)
Gender			
Woman	4	9	13
Man	4	2	6
Informant Type			
Health care worker	2	4	6
Health care worker / Specialist with administrator role	1	5	6
Policy and programme advisor	5	2	7

People and Community

In the expanded WHO building blocks framework, people and community are identified as central to the health system, with international guidelines now calling for person-centred health services, and people and community were central to the narratives of the participants in this study. All participants shared biomedical knowledge of STIs, but many reflected that the knowledge in the community drew on different socio-cultural sources of information for interpreting STIs and these differences caused challenges.

Health care workers discussed a number of issues relating to providing information and education at the community level, including the importance of providing STI awareness and information at the antenatal clinics. Navigating stigma and traditional beliefs about the cause of symptoms associated with STIs was also identified. In some communities STIs are mentioned as being caused by external forces such as witchcraft. They spoke therefore of needing to challenge traditional beliefs held in the community, especially the reliance on traditional and customary healing practices, causing delays in pregnant women (and others) seeking biomedical treatment.

For pregnant mothers with STI, most of them are often found to have problems with vaginal discharge, itchiness, and sore[s]. Most of them believe in sorcery and so do not come quickly... they will take herbs, or people work on them back in the village until they could no longer able to [cure], so they come out and we check them. If I check them and find out that they have problem, I talk to

them, provide good advice and tell them about the cause, how she got it and that her partner must also be treated for them to be cured from the disease.

Woman, Sister in Charge STI/HIV, District Hospital, PNG

Study participants also spoke of the need to be open to talk about STIs, in particular because of the effect that untreated STIs could have on the unborn baby. It was recognised that there was a dearth of community awareness on STIs generally and in pregnancy specifically; the opposite was true for HIV. Some of the study participants questioned why information on STIs and STI prevention could not be incorporated into community HIV awareness as the same interventions such as using condoms, would protect people against both.

Fear of being blamed and accused by a male partner for her infection as a result of having an extramarital relationship was a barrier for some women to attend antenatal clinic and be screened for an STI. To avoid stigma and discrimination from their own partners and communities more broadly some participants described how women, knowing that they have an STI may attend for their antenatal care outside of their catchment area, allowing them to be cared for and managed anonymously. In PNG one participant spoke of the importance of integrating services to avoid such stigma.

...it's just among all the services because if you want to prioritise it, like we may cause stigma, so now it's kind of integrated, you know all the services

Woman, Health Extension Officer and Family Health Services Coordinator, PNG

Apart from the infections themselves, other implications of an STI diagnosis in pregnancy relate to community and individual assumptions about sexual morality and includes gender-based violence. In Zambia the intersectionality of STIs and the risk of gender-based violence were identified as an adverse impact of STIs in pregnancy. This risk of violence following a diagnosis of an STI, particularly in pregnancy, reinforces the importance of counselling as part of partner notification. In Zambia, a couple of key informants even spoke of re-testing a woman already known to have syphilis with her husband to avoid the potential blame and violence she may experience should she herself disclose her diagnosis.

I think it is a fear of GBV [gender-based violence] issues...yeah, because if I tell him, he will think I am immoral...Like promiscuous or he will think I am accusing him of being promiscuous I think like that...the thing of disclosure of my STI status because of fear of the husband.

Man, Public Health Specialist Provincial Health Office, Zambia

Service Delivery

The participants identified a number of barriers experienced by women accessing health care facilities for testing and treatment. They included attitude of health workers, cost, travel, and personal costs for purchasing treatment.

Respectful maternal care is essential to quality maternal and newborn care, as outlined by WHO standards of care [29]. The absence of this respectful care, including being stigmatised, being spoken to in harsh ways, and breaches in confidentiality were identified in this study as deterrents for women to engage in STI services during pregnancy. Respectful care was identified as critical to supporting pregnant women to attend clinic and to complete their treatment to prevent adverse outcomes for their babies. A nurse in PNG described the importance of respectful care when she manages pregnant women with an STI.

When I come and discover that a pregnant mother has this sickness (STI), I would sit her down and explain about her sickness, then give her medicine and explain to her, "You must go and drink all the medicine...I am giving you and if you don't it drink on time, sorry for the unfortunate baby. It's your blessing for God who is inside. So if you don't drink medicine then the bacteria will multiply in the child and the medicine won't fight the bacteria. Whatever medicine you take would not work and you will destroy the new temple, the baby inside who came about as the result of you and your husband's love. Therefore, you must drink/take medicine faithfully on time. So I would like you to return back after a week. Or [if] you discuss with your husband, it's good if he drinks the medicine. If he does not drink it, come and let me know and tell him to come and I will discuss with him.

Woman, Sister in Charge STI/HIV District Hospital, PNG

Women diagnosed with an STI during pregnancy require counselling, education and treatment support to understand the possible impacts of an untreated infection on their unborn baby, the importance of treatment completion, and prevention of re-infection during pregnancy. In the same way that partners have long been considered key in HIV counselling and testing [30], so too are partners in the management of curable STIs in pregnancy. The importance of couple counselling for STI management was identified as paramount in both settings to avoid blame and ensure men were reached with treatment alongside their partners. Partner treatment was considered central in both settings to reduce women's risk of becoming re-infected in her pregnancy with an STI following her treatment. Men are considered central to pregnant women's health, and that of their baby.

We do not only treat the women, but we also treat their partner... It does not make sense where only the woman is treated and treated alone, and then go back and have sexual intercourse with a partner that is infected. And if we find couples that are untreated we advise them to refrain from having unprotected sex, or we provide them with condoms so that they can prevent themselves from the re-infection...we provide support and care ...counselling... and we also talk about the aspect of transferring the infection to the unborn baby, they need to understand the impact of having an STI while pregnant and the effects of the infection to the unborn baby.

Woman, Chief Safe Motherhood Advisor, Zambia

Human Resources

The health care workforce and others who resource the health system are critical to effective, responsive and resilient health systems providing maternal and newborn health services. In terms of their level of knowledge and skills in managing and treating pregnant women with STIs, participants spoke in depth about the need and importance of STI management in pregnancy. Syphilis was by far the most common STI discussed and the risk it poses in pregnancy - if untreated - for neonatal as well as maternal health outcomes was discussed. In Zambia other STIs identified included gonorrhoea and chlamydia; in PNG syphilis and gonorrhoea, with chlamydia and trichomonas also noted.

Numerous participants interviewed shared knowledge about clinical practice and STI treatment that highlighted a gap in professional development with much of their information out of date. In PNG for example, a number of participants in PNG spoke of wanting to revert back to doing cervical examinations of pregnant women as part of their STI screening. Current PNG national guidelines do not include speculum examination of antenatal women for STIs, as it is now recognised that STIs cannot be identified clinically [31]. Moreover, speculum examination by inexperienced staff may cause problems with the pregnancy. This change in practice, however, still concerned some health care workers who felt that they were failing to identify STIs in pregnant women and treat accordingly, and was therefore the reason for poor pregnancy outcomes.

I saw that it was very good when they [pregnant mothers] came for speculum examination during pregnancy where many mothers when giving birth gave birth well but if you access the statistics there, you will realise that there are many FDIU cases nowadays, maybe due to STI.

Woman, Sister in Charge STI/HIV District Hospital, PNG

The absence of ongoing professional training to ensure clinical practice is current shows a lack of prioritisation of bacterial STIs. Others recognised that training was out of date. Staff needed to be updated as training was frequently only during their formal training. One informant in PNG stated that STI training was conducted by the National Department of Health in 2018 and that there were changes in management of STIs since then, but there had been no dissemination of new guidance that they were aware of. In Zambia one participant recommended training to improve staff knowledge about the management of STIs during pregnancy, including mentorship by staff who are experienced in the treatment of STIs in pregnancy and having treatment algorithms available in the clinic that relate specifically to pregnancy.

... For example we cannot give tetracycline to treat chlamydia in a pregnant woman...One facility we found that they were not conversant on how to manage STIs in pregnant woman, so we need to have that flow chart to follow which has information on syndromic management of STIs and that is when we realised that it was generalised to everyone they have dealt with, they do not specifically look at pregnant woman.

Woman, Chief Safe Motherhood Advisor, Ministry of Health, Zambia

Some services spoke of a designated staff at their facility to provide STI and HIV testing and treatment with the same individual being responsible for providing care to antenatal women. However, other facilities described the difficulties with providing specialised services when there was only one nursing officer responsible for a number of different areas of care, such as malaria, antenatal care and TB care and treatment.

She's talking multi-tasking...talking TB and talking antenatal, and malaria you see. That's the problem in this province with health services.

Woman, Health Extension Officer and Family Health Services coordinator, PNG

Essential Medicines and Technology

Without access to essential medicines and technology there can be no action on a priority health issue. In PNG, testing for HIV and syphilis is included within standard guidelines for all women at their first antenatal visit. However, in reality these opportune times to test are missed due to ongoing supply issues with commodities.

We used to screen all the antenatal mothers and we treat them and their partners, previously we used to give a single dose of benzathine. But now, we don't have the supply, there is no consistency

of syphilis test kit, we are no longer treating all/everyone on according to whatever symptoms they come in but it's just the oral gono-pack [standard treatment pack for gonorrhoea] that we give for all STI patients...

Woman, VCT Sister in Charge and Unit Manager, provincial hospital, PNG

In Zambia, repeat testing for both HIV and syphilis is expected during the pregnancy. Despite this, screening for STIs did not always happen, with testing for syphilis routinely suspended due to a shortage of rapid diagnostic test kits. Recognizing that shortages in supplies was disrupting the testing and management of syphilis, one senior health officer in Zambia identified that screening for syphilis and HIV was previously a “must” for all newly enrolled women and to not test was referred to as a “cardinal” sin.

Testing for STIs in pregnancy was a must. You could not get away without testing a woman when they came to register for their antenatal care... and the supplies were always there.

Man, Sexual and Reproductive Health Program Specialist, Zambia

Even when access to the test kits is possible, stockouts of syphilis treatment means women are diagnosed but go without treatment; the latter of which was described as frequent in Zambia. In these situations the failure to treat women for the infection that they are diagnosed with acts as a barrier to their, and other women's, engagement in antenatal care.

The testing itself and the availability of drugs, they get discouraged... because you find that we have the test kits and I test them, “you have STIs”, and then I tell them, “I don't have drugs...” so they are discouraged.

Woman, District Nursing Officer, Zambia

Although prioritised by their inclusion in antenatal care guidelines, ongoing disruption to screening and management of syphilis was widely reported, severely limiting the extent to which pregnant women can access testing (and even treatment).

While STI screening and management may be considered core priorities in antenatal care, the ability to test and treat is reliant on the ongoing supply of diagnostic test kits and essential medicines. Chronic disruptions to the supply of essential STIs medicine and diagnostic test kits were identified in both countries. In some cases the supply of test kits was erratic and meant while some women may have been tested earlier on her pregnancy, she could not be re-tested, as per the

national protocol in Zambia. These disruptions were not confined to the facility or indeed a district. In PNG, the disruption in the supply of syphilis test kits was felt due in part to how supplies and logistics are managed, with the transition to Provincial Health Authorities resulting in changes in management and finance structures.

...when the syphilis kit ran out they said that, 'it's nationwide [and] it's beyond our control.

Woman, STI and HIV counsellor, rural health centre, PNG

It was ubiquitous across all participants in each setting that HIV was prioritised over STIs and as such there is a better supply of HIV tests kits and HIV medication. This led to several of the study participants in both settings making a call for the dual HIV and syphilis test kits to be made available and to circumvent the ongoing supply chain issues with syphilis tests kits. The availability of the dual HIV/Syphilis tests kits was recognised as important to be made available and overcome the ongoing supply issues associated with syphilis test kits.

In Zambia there appeared to be widespread and ongoing stockout of benzathine benzylpenicillin for at least a year, with treatment for gonorrhoea also disrupted. This became a deterrent for women, and an additional expense, coming back to the clinic to see if the prescribed treatment was available. In cases where the clinic knew they would not have the treatment they instructed women to purchase the medicine themselves, shifting the financial cost of syphilis treatment to pregnant women. Sustainability and availability of drugs to treat STIs is an ongoing concern to encourage access. The adverse outcome of these stockouts was widely discussed by participants, particularly in relation to stillbirth associated with syphilis. A similar issue was discussed in PNG where participants described how only syphilis and HIV are prioritised, and that the ongoing stockouts of syphilis test kits is likely associated with observed increases in perinatal mortality.

I would advocate for rapid scale up of the dual test kits, the use for dual test kits - testing for HIV as well as STIs, because HIV does not kill the child but syphilis would definitely kill the child.

Woman, Chief Safe Motherhood Advisor, Ministry of Health, Zambia

Health Financing

Whether financed through national programmes or donors, the availability of funding speaks to where health priorities are made, what services are provided and what pregnant women can be tested for. The lack of health financing for STIs was raised as a serious issue affecting the ability to provide STIs services to pregnant women (and their partners) and prevent stillbirths and other poor neonatal health outcomes. Numerous participants in both Zambia and PNG noted the ongoing

availability of essential medicines for HIV, TB and malaria, but not STIs; notably the three infections covered by the Global Fund to Fight AIDS, TB and Malaria. The drug shortages raised in *Essential Medicines and Technologies* are the adverse outcomes of inadequate domestic health financing and investment from international donors to meet or co-finance these costs.

The inadequate health financing of services is evident through stockout of syphilis tests kits and treatment for STIs means that the economic burden of STIs screening and treatment is passed on to pregnant women and their families, often unable to absorb such costs. Examples of how these costs became the burden of pregnant women included being referred to another clinic to undergo screening in case of a shortage of rapid diagnostic tests, being sent to a private pharmacy to purchase STI treatment in cases where there were no essential STI medications or being asked to return to the clinic to see if essential STIs medicine were available in the future. These costs, and even fear of these costs, becomes a deterrent for pregnant women.

...they may be transferred or referred to some other facilities, so they may incur other transport costs and sometimes the provider may opt to actually give the prescription to the client or the woman to go and drugs from a chemist. So they may incur some cost in-terms of procuring that drug which is not available, but otherwise ministry of health ...their targets...their target is treatment of STIs for pregnant women and when you look at our health centre kit ...our health centre kits has the test kits for STIs and it also contains the drugs that are supposed to be provided for those women that test positive STIs.

Woman, Chief Safe Motherhood Advisor, Zambia

Health Information Systems

There was very limited discussion on health information systems. In the data from PNG, study participants did not refer to the need or the absence of epidemiological data on the burden of STIs in pregnancy. In Zambia, however, there was a call to build the evidence base needed to advocate for the prioritisation of STIs, both in the general population and pregnancy. Two participants described the need for syphilis test kits in order to test and treat women to reduce the risk of adverse outcomes, in particular stillbirths which were recognised as increasing in the country and felt to be due to lack of testing for syphilis in pregnancy.

...when a woman delivers a stillbirth we test the them for syphilis... it is mandatory they need to be tested for syphilis unless the test kits are not available... For those who we test the majority have come out positive for syphilis, so it is contributing to the high

perinatal mortality that we are seeing....

Woman, Chief Safe Motherhood Advisor, Zambia

What was clear from both PNG and Zambia was a broad understanding of morbidity associated with undiagnosed and untreated STIs in pregnant women and associated STIs with a poor outcome for newborns. By far the most commonly discussed adverse outcome of an untreated STI in pregnancy was stillbirth. In Zambia study participants went further, discussing macerated stillbirths or other consequences of syphilis. In both Zambia and PNG participants mentioned other adverse outcomes including infertility, miscarriage and intrauterine growth restriction and preterm birth.

So, stillbirth seems to be a very big problem but also neonatal mortality, those that are born with STIs and they end up dying. So, babies dying early in their life and babies dying during labour, during pregnancy seems to be very big problems.

Woman, Chief Safe Motherhood Advisor, Zambia

In trying to avoid these outcomes, in line with WHO antenatal care recommendations [32] most participants spoke of testing and treatment for HIV and syphilis. In both Zambia and PNG, HIV and syphilis testing is designed to be conducted using rapid diagnostic test kits at point-of-care to initiate same day treatment and facilitate partner notification, testing and treatment.

In Zambia, testing for viral hepatitis happens at the main hospitals. In PNG there is no routine testing for viral hepatitis however, the draft national guidelines for “Triple Elimination” include rapid diagnostic test for hepatitis B as part of antenatal care, but at the time of the study had not been finalised, as mentioned by one of the senior specialists interviewed.

...for pregnancy we routinely test for syphilis and HIV, those the only two tests that we do. Recently hepatitis B has been introduced for testing but we just we are sort of at the survey stage at the moment, so HIV and syphilis are the ones we test for.

Woman, Senior Medical Specialist, tertiary hospital, PNG

Leadership and Governance

It was not surprising considering when this data was collected (2021-2022) to hear that COVID-19 was being prioritised as the number one health priority in both Zambia and PNG, with some sharing

their frustration that other essential health services were neglected. The pandemic aside, there was a lot of discussion about the extent to which STIs are – or are not – prioritised. It was widely shared that as a viral STI HIV is prioritised over bacterial STIs, and that when referring to STIs, it was syphilis that was a priority service.

In PNG, where the Global Fund to Fight AIDS, TB and Malaria national HIV grant is a joint HIV and TB one, we can see that in this setting at least HIV and TB were now being jointly prioritised, as have HIV and syphilis. Participants in PNG also expressed a lack of commitment and input from the National Department of Health (NDoH), due to re-structuring of the department, and partly due to being short of staff.

HIV is prioritised. It has its own basket. And now TB, TB/HIV is put together.

Family Health Services is a priority for immunisation especially nutrition

Woman, Health Extension Officer and Family Health Services coordinator, PNG

From the policy and health systems perspectives, in terms of reliable consumables and health workforce training, key informants believed that STIs should be given greater priority. A few participants in Zambia at least recognised that at a practical level, in the clinic, STIs were not always the most pressing concern – priority – when compared to other conditions that women may present with, and which left untreated may cause maternal death sooner. An example given was that of diarrhoea. This raised the difference between what may be described as political priority and a clinical priority. But as the participants also explain, the reverse is equally concerning. When STIs in pregnancy are a clinical priority – and testing for STIs is recommended in both countries – it cannot be prioritised because the consumables needed to undertake the testing are not available, nor are the drugs needed to provide treatment and cure the infection, as is the case with gonorrhoea and syphilis.

In Zambia the inclusion of STIs in the guidelines on pregnancy was viewed as evidence of prioritisation, with several participants noting that hepatitis is now included in the 2020 national guidelines for its adverse effects on women during pregnancy including severe liver disease and death.

It was ubiquitous across all interviews that STIs, while an important feature of antenatal clinics with visible and profound impacts, particularly on neonatal outcomes, is not prioritised in the way that other diseases affecting pregnant women are. The most common comparator to the prioritisation of STIs was HIV, a virus that is readily identified also as a STI. To this end, some

suggested that HIV should be part of the STI care and treatment provided in antenatal clinics, not as separate services.

It should be the other way around, HIV is a sub-program within the STI program

Man, Public Health Specialist Provincial Health Office, Zambia

DISCUSSION

Despite widespread agreement that there is an association between bacterial STIs and adverse maternal and newborn health outcomes [2-6] it has been widely purported that these infections have not been prioritised for prevention, etiological diagnosis and treatment. Declared neglected, and in crisis [11], the global response to STIs has been brought to the fore. It is in this context that we sought to understand and examine the prioritisation of STIs in pregnant women in antenatal clinics in Africa and the Pacific by use of case studies in Zambia and PNG, two high burden settings for STIs. Using the expanded WHO building blocks conceptual framework as described by De Savigny and Adam [19] we have detailed the various areas of the health system that address and respond to STIs and the efforts of health care workers and others to address STIs in their services within two vastly different socio-cultural settings. Our findings reinforce that overall there is a neglect of bacterial STIs, but while COVID-19 has gravely impacted primary health services, COVID-19 was not identified as the cause of such neglect described in these two countries.

Participants in both countries spoke in detail across most aspects of the health system, detailing the interconnectedness of these elements and how these impact on the prioritisation of STIs in clinical care. All participants were knowledgeable about the morbidity associated with undiagnosed and untreated STIs in pregnant women preterm birth, growth restriction, neonatal conjunctivitis and stillbirths, all of which were all identified by those interviewed for the study. In order to prevent these adverse outcomes all participants spoke of the clinical imperative to testing for bacterial STIs in pregnancy, provide treatment, provide partners testing and treatment and avoid reinfection during pregnancy. Clinical guidelines provide up to date testing, treatment and care information and while some health care workers raised issues about the disjuncture between policy level changes (i.e., new guidelines) and the failure to socialise the guidelines through training, others felt that the guidelines for STI management were not specific enough for pregnant women. Further still others objected to current best practice and wanted guidelines to be reversed to return to pelvic examination.

Even where the policies and frameworks clearly prioritise syphilis, the only bacterial STI to be prioritised in this way, pregnant women and their babies were not able to benefit from this level of prioritisation. Without the funding to procure the rapid diagnostic test kits, and at least in Zambia ensure the ongoing availability of antibiotics, health care workers were not able to action these guidelines, transforming political prioritisation into quality clinical care in the antenatal clinic. Test and treat for HIV and syphilis is included in WHO guidelines and recommendations for antenatal care[32]. Although prioritised by their inclusion in antenatal care guidelines, ongoing disruption to screening and management of syphilis was widely reported, limiting the extent to which pregnant women can access testing (and even treatment). Ongoing stockout of rapid diagnostic test kits for syphilis have been noted as a failure of health systems in a variety of settings [33] and is not unique to Zambia or PNG. But it does raise important questions about how health systems operate and the disjuncture between priorities in guidelines and policy and action. In countries reliant on donor funding for HIV, including HIV rapid antigen test kits, syphilis test kits are usually provided by national governments resulting in multiple procurement and funding mechanisms for test kits designed to be used on the same women in the same service. The shift to the dual HIV/syphilis test kit for use in antenatal clinics, especially for countries where donor agencies oversee procurement and financing will ensure greater and more reliable access to syphilis testing, at least on par with HIV testing. WHO acknowledges a variety of benefits of the dual test in antenatal clinics, including the added benefit is that health care workers will not be required to be trained on multiple testing algorithms [34]. For all other bacterial STIs (gonorrhoea, trichomonas and chlamydia) syndromic management remains the main stay for identifying them in both settings.

In neither setting was there any discussion about interest or investment in innovations to introduce STI testing for gonorrhoea, trichomonas and chlamydia and provide targeted treatment for pregnant women. Yet across the board there was a keen interest by the participants in both countries and from health care providers to policy and programme advisors that STIs in pregnancy should be prioritised. Some suggested that rather than discussing HIV and STIs, the focus should be on STIs more broadly, of which HIV is one.

Much of the discussion from participants focused unsurprisingly on the original six WHO building blocks, yet the issues of people and community remained central to the issues at the core of being able to take action on STIs when and where its prioritised. Issues of shame and embarrassment for attending for STI services continues to impede pregnant women from accessing clinical care, as does the cultural aetiology that many have about the cause of symptoms associated with untreated STIs. Community responsive education to the various knowledge sets that people draw on to make sense of STIs.

In our study a lack of commitment at the national level, together with staff shortages at the facility levels was a concern for those providing services on the ground. Poor financing of services evident through stockouts and lack of essential antibiotics to treat curable STIs. In Zambia the inclusion of STIs in the guidelines on pregnancy was viewed as evidence of prioritisation, with several informants noting that hepatitis B is now included in the 2020 national guidelines for its adverse effects on women during pregnancy including severe liver disease and death. The disjuncture in both PNG and Zambia between policies that stipulate STIs screening (in PNG this is for HIV and syphilis) should be done in all women and the ongoing impediment to enabling the effective implementation of that policy through the recurrent stockouts of drugs and tests strips, inadequate work force, shows that neither country is currently in a position to address the burden of STIs in pregnant women. It became evident that the financial and logistical priority to ensure ongoing access to supplies need to undertake testing and treatment was not galvanized. Finally, it has been shown, that addressing the neglect in the treatment of STIs requires a comprehensive and multi-faceted approach. This includes promoting sexual health education and awareness, reducing stigma through public campaigns, increasing access to affordable and confidential testing and treatment, integrating STIs services into primary health care, and advocating for adequate funding for STI prevention and control programmes.

The overall number of those who participated in this qualitative study was modest, yet we quickly reached data saturation [35] both within each country and across the two and we were no longer generating new information or ideas from the participants through coding. This speaks to the quality of our data and the representativeness of our participants and that a larger sample would not have yielded more data. During the analysis process it was possible to discuss and review the generated codes and categories within and across the countries, increasing the credibility of the results, important indicators of the quality of research findings [35].

CONCLUSION

Curable sexually transmitted infections continue to pose a significant burden among pregnant women which, if left untreated, are associated with a number of adverse maternal and newborn health outcomes. For this reason alone these infections are an important public health concern in Zambia and in PNG, as articulated by the participants in this study. But how do these concerns translate to being prioritised in already overstretched and under resourced health systems? While there is increasing recognition globally, and in each of the countries included in this study, of the priority of testing and treating pregnant women for the intent of improving her own health and

eliminating the transmission of HIV, syphilis and hepatitis B to newborn children, the same prioritisation has not as yet been afforded to other curable STIs including chlamydia, trichomonas and gonorrhoea. Yet for those in this study for whom maternal and newborn health is their focus, these infections are also their professional priorities, but are, as yet, not those of global commitments such as the SDGs, country leaders and donors. While prioritised in these commitments and antenatal care guidelines, ongoing disruption to screening and management of syphilis due to stockouts, and the absence of point-of-care hepatitis B screening in these study settings, illustrates the disjuncture between policy priorities and these priorities being programme actionable. As long as those infections that remain undiagnosed (and therefore largely untreated) remain associated with adverse maternal and newborn health greater efforts are needed to support and galvanise the political priority needed to not only prioritise some infections over others, but ensure that the health system as a whole (including people and communities) remains resourced, resilient and capable to move from policy to action, without which such priorities are mute.

REFERENCES

1. World Health Organization, *Global health sector strategy on sexually transmitted infections 2016–2021: towards ending STIs* 2016: Geneva.
2. Mullick, S., et al., *Sexually transmitted infections in pregnancy: prevalence, impact on pregnancy outcomes, and approach to treatment in developing countries*. *Sex Transm Infect*, 2005. **81**(4): p. 294-302.
3. Watson-Jones, D., et al., *Syphilis in pregnancy in Tanzania. I. Impact of maternal syphilis on outcome of pregnancy*. *J Infect Dis*, 2002. **186**(7): p. 940-7.
4. Blas, M.M., et al., *Pregnancy outcomes in women infected with Chlamydia trachomatis: a population-based cohort study in Washington State*. *Sex Transm Infect*, 2007. **83**(4): p. 314-8.
5. Donders, G.G., et al., *The association of gonorrhoea and syphilis with premature birth and low birthweight*. *Genitourinary Medicine*, 1993. **69**(2): p. 98-101.
6. McDermott, J., et al., *Syphilis-associated perinatal and infant mortality in rural Malawi*. *Bull World Health Organ*, 1993. **71**(6): p. 773-80.
7. Wu, D., S. Hawkes, and K. Buse, *Prevention of mother-to-child transmission of syphilis and HIV in China: What drives political prioritization and what can this tell us about promoting dual elimination?* *Int J Gynaecol Obstet*, 2015. **130 Suppl 1**: p. S32-6.
8. United Nations. *Department of Economic and Social Affairs Sustainable Development* <https://sdgs.un.org/goals> 2022 [cited 2022 2 Dec].
9. Galati A.J, *Onward to 2030 : sexual and reproductive health and rights in the context of the sustainable development goals*, in *Policy Review*. 2015, Guttmacher. p. 77-84.
10. Chersich, M.F., et al., *Advancing STI priorities in the SDG era: priorities for action*. *Global Health*, 2018. **14**(6).
11. World Health Organization, *Global progress report on HIV, viral hepatitis and sexually transmitted infections, 2021: accountability for the global health sector strategies 2016–2021: actions for impact*. 2021, World Health Organization: Geneva.
12. World Health Organization, *Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030*. 2022: Geneva.

13. Unemo, M., et al., *WHO global antimicrobial resistance surveillance for Neisseria gonorrhoeae 2017-18: a retrospective observational study*. *Lancet Microbe*, 2021. **2**(11): p. e627-e636.
14. Swiss Network of International Studies. *Political Prioritisation of the Prevention and Control of Sexually Transmitted Infections: a Global Challenge*. 21 January 2020; Available from: <https://snis.ch/project/political-prioritisation-of-the-prevention-and-control-of-sexually-transmitted-infections-a-global-challenge/>.
15. Chaponda, E.B., et al., *Malarial Infection and Curable Sexually Transmitted and Reproductive Tract Infections Among Pregnant Women in a Rural District of Zambia*. *Am J Trop Med Hyg*, 2016. **95**(5): p. 1069-1076.
16. Vallely, L.M., et al., *Prevalence and risk factors of Chlamydia trachomatis, Neisseria gonorrhoeae, Trichomonas vaginalis and other sexually transmissible infections among women attending antenatal clinics in three provinces in Papua New Guinea: a cross-sectional survey*. *Sex Health*, 2016. **13**(5): p. 420-427.
17. UNAIDS, *UNAIDS Data 2022* https://www.unaids.org/sites/default/files/media_asset/data-book-2022_en.pdf. 2023.
18. Kelly-Hanku, A., et al., *Factors associated with HIV and syphilis infection among female sex workers in three cities in Papua New Guinea: findings from Kauntim mi tu, a biobehavioral survey*. *Sex Health*, 2020. **17**(4): p. 311-320.
19. De Savigny, D. and T. Adam, *Systems thinking for health systems strengthening*. 2009: World Health Organization.
20. Chico R.M and Chandramohan D. *The ASPIRE Trial - Aiming for Safe Pregnancies by Reducing Malaria and Infections of the Reproductive Tract* <https://clinicaltrials.gov/ct2/show/NCT04189744>. 2019.
21. Vallely, A.J., et al., *Point-of-care testing and treatment of sexually transmitted infections to improve birth outcomes in high-burden, low-income settings: Study protocol for a cluster randomized crossover trial (the WANTAIM Trial, Papua New Guinea)*. *Wellcome Open Res*, 2019. **4**: p. 53.
22. Newland, J., et al., *COVID-19 and its impacts on primary health services and public health infectious disease programs in Papua New Guinea*. 2022, PNG Institute of Medical Research, UNSW: Goroka, Papua New Guinea.
23. Brolan, C.E., et al., *Lessons from the frontline: The COVID-19 pandemic emergency care experience from a human resource perspective in the Pacific region*. *Lancet Reg Health West Pac*, 2022. **25**: p. 100514.
24. Dalton, M., et al., *Impact of COVID-19 on routine childhood immunisations in low- and middle-income countries: A scoping review*. *PLOS Glob Public Health*, 2023. **3**(8): p. e0002268.
25. World Health Organization, *Everybody's business. Strengthening health systems to improve health outcomes. WHO's framework for action*. 2007, World Health Organization: Geneva.
26. World Health Organization, *Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies*. 2010: World Health Organization.
27. Sacks, E., et al., *Beyond the building blocks: integrating community roles into health systems frameworks to achieve health for all*. 2019. **3**(Suppl 3): p. e001384.
28. Sacks, E., et al., *Community Involvement in Health Systems Strengthening to Improve Global Health Outcomes: A Review of Guidelines and Potential Roles*. *Int Q Community Health Educ*, 2017. **37**(3-4): p. 139-149.
29. World Health Organization, *Standards for improving quality care for maternal and newborn care in health facilities*. 2016, WHO: Geneva.
30. World Health Organization, *Consolidated guidelines on HIV testing for a changing epidemic*. 2019, World Health Organization: Geneva.

31. National Department of Health Papua New Guinea, *Manual of Standard Managements in Obstetrics and Gynaecology for Doctors, HEOs and Nurses in Papua New Guinea* <https://pngpaediatricsociety.org/wp-content/uploads/2022/04/PNG-Standard-Treatment-Manual-for-Obstetrics-and-Gynaecology-7th-Edition-2018.pdf>. 7th ed, ed. G. Mola. 2021.
32. World Health Organization, *WHO recommendations on antenatal care for a positive pregnancy experience*. 2016, Geneva: World Health Organization.
33. Baker, C., et al., *Antenatal testing for anaemia, HIV and syphilis in Indonesia - a health systems analysis of low coverage*. BMC Pregnancy Childbirth, 2020. **20**(1): p. 326.
34. World Health Organization, *Policy Brief: Dual HIV / Syphilis Rapid Diagnostic tests can be used as the first test in antenatal care*. 2019, World Health Organization Geneva.
35. Hennink, M.M., B.N. Kaiser, and V.C. Marconi, *Code saturation versus meaning saturation: how many interviews are enough?*. Qual. Health Res., 2017. **27**(4): p. 591-608.

Working paper



Service Delivery
Effective and well-functioning health service delivery, comprising: service comprehensiveness, accessibility, coverage, continuity of care, responsive and person-centred care, effective coordination, and management and accountability
Human Resources
Knowledge skills, motivation, and deployment of the workforce responsible for managing and delivery of health service, including qualified health professionals with the appropriate skill set for the context; and the retention, professional development, and clinical support of staff
Medicines and Technology
Equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost effectiveness, and their scientifically sound and cost-effective use
Health Financing
Mobilization, accumulation and allocation of funding to cover the health needs of the people, individually and collectively, in the health system
Health Information Systems
Overall data quality, relevance and timeliness; conversion of data into information for health-related decision making
Leadership and Governance
Incorporates policies, accountability, stewardship and partnerships that intersect with all other components of the health system
People and Community
The critical involvement of people and community in health services and programs improves effectiveness of health interventions. People influence all and each of the building blocks

Figure 1: The seven building blocks to support the health system [18] and key components of each building block [24,35].