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Discussion Paper

Gender and Tuberculosis

Making the investment case for programming that addresses the specific vulnerabilities and needs of both males and females who are affected by or at risk of tuberculosis

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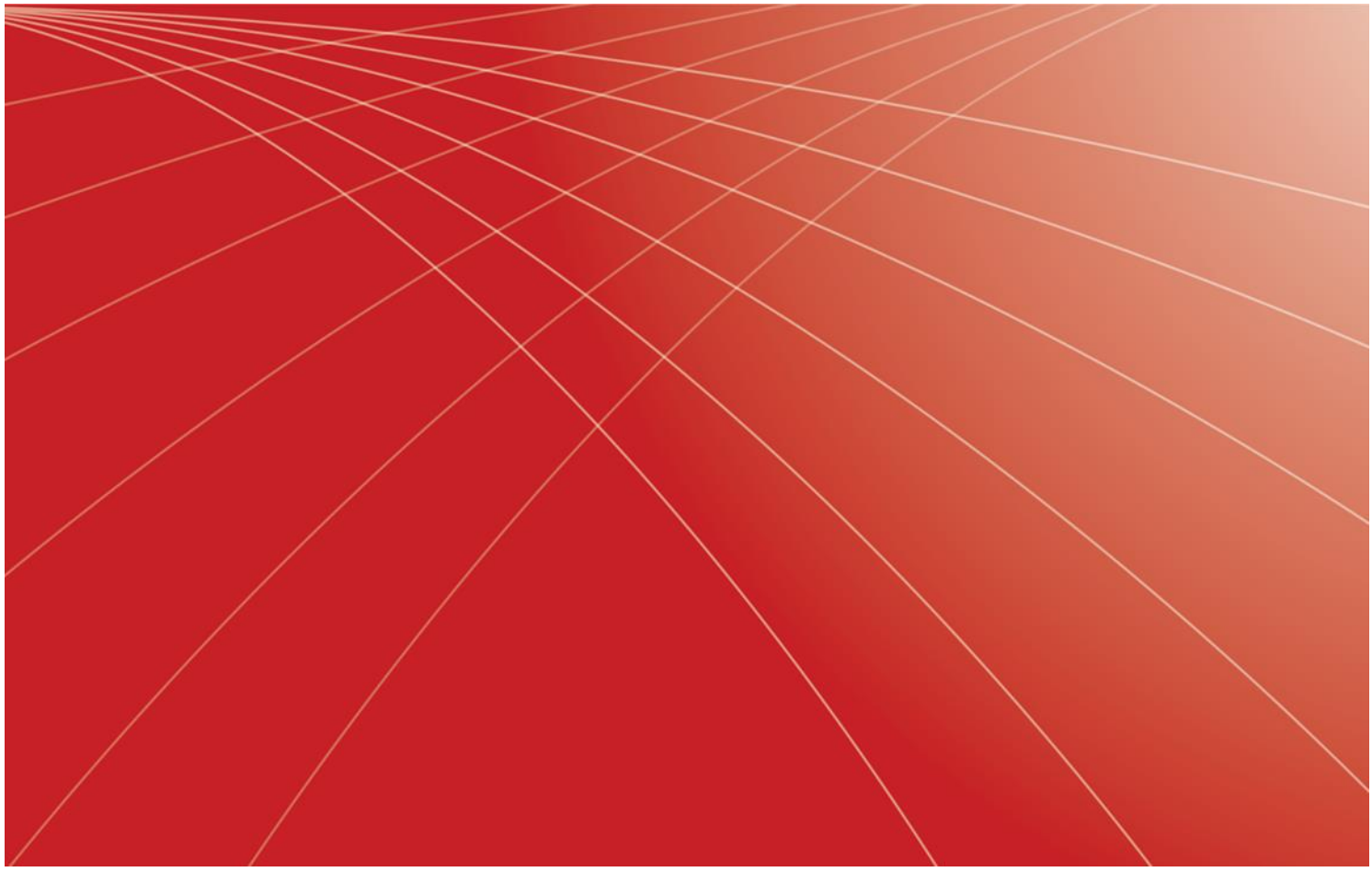
HIV, HEALTH AND DEVELOPMENT



BACKGROUND

Gender analysis and gender-responsive programming are comparatively new to the field of tuberculosis (TB). Yet, with TB now the leading cause of death for women globally, there is an increasingly urgent need to direct efforts and resources to understanding the ways in which the risks and effects of TB are determined by sex and gender roles. In recognition of this rising challenge, the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) and the Stop TB Partnership have both called for greater attention to gender, HIV, TB and malaria. Moreover, through the new Sustainable Development Goals (SDGs), governments have committed to several goals related to gender equality and health, accompanied by specific targets to eradicate TB, and to produce gender-disaggregated data on TB incidence (target 3.3) and on other non-communicable diseases that contribute to TB-related deaths (target 3.4). The time to act is now.

While the need is acute, the resources are not infinite. UNAIDS and the Global Fund, among other key players, have adopted strategic investment approaches to allocating funds, which place a premium on optimizing impact, cost-effectiveness and sustainability of TB and TB/HIV interventions. This means that programme planners and managers are increasingly being asked to draft 'investment cases' or evidence-based documents that outline how allocating resources to certain interventions will lead to concrete, measurable and sustainable results. As addressing the gender dimensions of TB is essential to combating the disease, TB interventions based on gender equality and human rights are essential to achieving successful outcomes.

This discussion paper on gender and TB is intended to support practitioners, civil society and government partners wishing to make the investment case for increased and improved TB programming that addresses the specific vulnerabilities and needs of both men and women who are living with or at risk of TB. The paper summarizes the existing evidence base, demonstrating the ways in which gender has an impact on the risks and effects of TB (including those that intersect with HIV), and highlighting existing gaps in data and implementation. This information is useful for UNDP in its role in supporting governments to implement and operationalize the development agenda by 2030, by turning commitments into action. The evidence, and particularly the recommendations presented in this paper, will also be useful for practitioners preparing concept notes for the Global Fund resources. As such, this paper has been designed to be used in conjunction with UNDP's 2015 **'Checklist on Integrating Gender into the Processes and Mechanisms of the Global Fund to Fight HIV, TB** and **Malaria'**, to support the integration of gender-sensitive components into the implementation of TB and TB/HIV programmes supported by the Global Fund.

TB incident cases and deaths among women and men 2011–2013

Cases (includes children)	Total	Women	Men	Children*	Women:% of Total***
Incident cases 2011	8.7m	2.9m	5.3m	500,000	35%
Incident cases 2012	8.6m	2.9m	5.17	530,000	36%
Incident cases 2013	9m	3.3m	5.15m	550,000	39%
Total deaths 2011	1.4m	500,000	836,000	64,000	37%
Total deaths 2012	1.3m	410,000	816,000	74,000	33%
Total deaths 2013	1.5m	510,000	910,000	80,000**	36%
TB deaths in PLHIV 2011	430,000	200,000	230,000	No data	47%
TB deaths in PLHIV 2012	320,000	160,000	160,000	No data	50%
TB deaths in PLHIV 2013	400,000	180,000	220,000	No data	45%

*under the age of 15

**does not include TB deaths in HIV-positive children

***excluding children

EXECUTIVE SUMMARY

Tuberculosis (TB) kills more women globally than any other single infectious disease, and more women die annually of TB than of all causes of maternal mortality combined. Women who are co-infected with TB and HIV are significantly more likely to die of TB than co-infected men. Globally, more men have TB than women. Of the estimated 9 million people who developed TB in 2013, over 60 percent were men, and nearly two thirds of the estimated 1.5 million TB deaths in 2013 were among men. In some countries, however, more women than men are detected with TB, and in countries with high HIV prevalence more women are notified with TB than men.

TB kills more women globally than any other single infectious disease, and more women die annually of TB than of all causes of maternal mortality combined.

Biological differences and TB vulnerability: Some studies posit that men may be biologically more vulnerable to pulmonary TB than women, while others suggest that TB is more difficult to diagnose in women. These studies argue that women with pulmonary TB have different symptoms from men and may not test positive on microscopic examination of the sputum, or that TB lung lesions might not be as severe in women as in men, resulting in women not being accurately diagnosed. A number of studies have found that TB progresses more quickly in women of reproductive age than in men of the same age group. Women have a higher prevalence of extra-pulmonary TB (TB infections that occur outside the lung) than men. This is particularly so for genital TB, which is difficult to diagnose, and has been identified as an important cause of infertility in settings with high TB incidence.

Impact on pregnant women: TB is reported as the cause of 6–10 percent of all maternal mortality in settings with low HIV prevalence[i] (15 percent of maternal mortality and up to 34 percent of indirect maternal mortality in settings with high HIV prevalence). Pregnant women living with TB are twice as likely to have premature babies, and their babies are six times more likely to die within a few weeks of birth. Women living with HIV are 10 times more likely to develop TB during pregnancy than HIV-negative women, and pregnant women living with HIV and TB are more than twice as likely to die than HIV-negative pregnant women with TB. Undiagnosed active TB can range up to 11 percent among women living with HIV. TB can also be transmitted from mother to child. For example, compared to HIV-positive women who do not have TB, women living with HIV and TB are 2.5 times more likely to transmit HIV to their babies, and their babies are three times more likely to die.

Gender and access to services: Some studies have found that women have less access to TB treatment and prevention services than men and are unlikely to undergo sputum smear examination.[ii] Social factors may account for gender differences in use of TB services. For example, women in some contexts have difficultly accessing TB services because male family members are unwilling to pay for these services, women's health may not be considered as important as that of male family members, or because TB in women is more stigmatized than in men. In some communities, a woman who is found to have TB may be divorced by her husband or, if unmarried, may have difficulty in finding a husband. Gender-insensitive health care infrastructure also has an impact on women's access to services. Although women are less likely to delay seeking care, once they do access TB services, women generally wait longer than men for diagnosis and treatment. Women who attend TB services have also complained about a lack of privacy in health centres when receiving directly observed treatment short-course (DOTS), and women with children may not be able to attend TB services regularly due to a lack of child-care facilities. Moreover, while most countries rely on passive case-finding approaches to TB, several studies have argued that this method may not be appropriate or effective for women. For especially vulnerable populations, such as women prisoners — whose TB infection rates are higher than those of men prisoners — TB services may simply not be provided, even when they are provided to men prisoners.

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[i] A low-prevalence setting is a geographic location or community with an HIV prevalence of less than 1 percent; whereas a high-prevalence setting has an HIV rate of at least 1 percent.

ii A sputum smear in this case is a laboratory test that looks for nycobacterium tuburculosis in a sputum sample. Sputum is the material that comes up from air passages when you cough deeply.

GENDER DIFFERENCES IN TB VULNERABILITY

Gender differences in TB epidemiology

Women: TB kills more women globally than any other single infectious disease, and more women die annually of TB than of all causes of maternal mortality combined.[1] In 2013, there were an estimated 3.3 million TB cases and 510,000 TB deaths among women (330,000 among HIV-negative women and 180,000 among HIV-positive women).[2]

Women co-infected with TB and HIV are significantly more likely to die of TB than are co-infected men. This is particularly the case for women in Africa, where some studies have found that HIV-associated TB deaths among HIV/TB co-infected women exceed those among co-infected men by 20 percent.[3] Other studies have similarly found that the male/female ratio of HIV-associated TB deaths in Africa is 0.83, although in other regions, such as the Western Pacific, that ratio is 3.1.[4] No research to date has sought to explain why co-infected women are more likely to die of TB than men, nor why this gender relationship is reversed in some regions.

20% of TB deaths are related to smoking: which is predicted to have an increasingly gendered impact, since women are taking up smoking at alarming rates in many countries.

Men: Globally, more men than women have TB. Of the estimated 9 million people who developed TB in 2013, over 60 percent were men, and nearly two thirds of the estimated 1.5 million TB deaths in 2013 were among men. Among HIV-negative adults,[iii] there were an estimated 2.14 (range, 1.56–2.73) male deaths for every female death.[5] Reports from recent Global Fund-sponsored TB national prevalence surveys in Ethiopia, Indonesia, Nigeria, Rwanda, Tanzania and Viet Nam suggest that this gender gap may be even wider than previously recognized.[6]

Biological differences in TB vulnerability between men and women

A number of studies have attempted to explain the differential TB infection rates between men and women in terms of biology. Some studies have argued that men may be biologically more vulnerable than women to pulmonary TB.[7] Other studies, including in Bangladesh, Malawi and South Africa, argue that TB is more difficult to diagnose in women;[8] some studies have found that women with pulmonary TB have a different immune response to TB than men,[9] resulting in different symptoms, signs and outcomes, and that women with TB may not test positive on microscopic examination of the sputum.[10] One study found that TB lung lesions might not be as severe in women as in men, which can reduce the severity of symptoms in women and make diagnosis more difficult.[11] These findings suggest that a failure to accurately diagnose women who are infected with TB may in part account for the low numbers of women notified with TB.

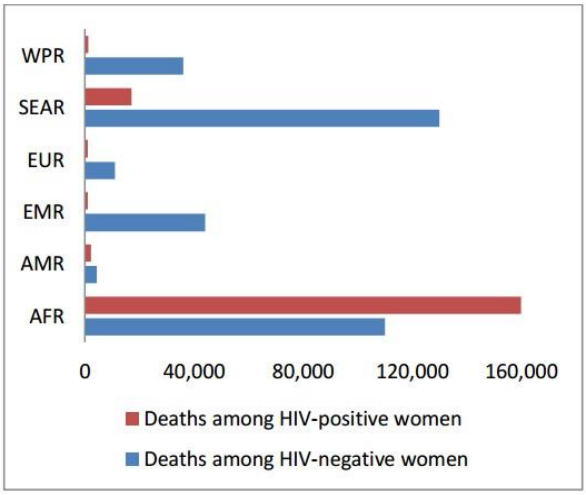
TB infection rates are higher among women than men in some countries and regions

Globally, TB cases among men outnumber those among women, but in some countries — Iran, Afghanistan and regions of Pakistan bordering Afghanistan — more women than men are detected with TB.[12] However, the reasons for higher TB rates among women in these regions are poorly understood. Although the Afghanistan National Strategic Plan for Tuberculosis Control attributes these rates to early marriage and short intervals between pregnancies,[13] the lack of comparative data from countries with similar early marriage and

iii Note that the WHO Global Tuberculosis Report defines adults as people over the age of 15.

high birth rates makes it difficult to determine whether this explanation holds true. In countries with high HIV prevalence, the numbers of women notified with TB are exceeding those of men.[14] In Swaziland and South Africa, for example, the male/female ratio of notified TB cases for smear-positive pulmonary TB dropped from 1.4 in 2000 to 1.0 in 2010.[15] In 2013, almost 90 percent of all HIV-associated TB deaths[iv] among women globally occurred in Africa, where TB is estimated to have claimed more female lives than male lives. [16]

Estimated number of TB deaths among women in 2013, disaggregated by region and HIV status



Source: World Health Organization, 'Tuberculosis in Women: Fact Sheet', WHO, Geneva, 2013, http://www.who.int/tb/publications/tb_women_factsheet_251013.pdf

Gender, TB and tobacco use

Gender, tobacco and TB are interlinked issues, with one out of five TB deaths related to tobacco use.[17] Generally, men are more likely than women to use tobacco, and, as a result, tobacco use is a larger contributor to the TB disease burden for men than for women.[18] However, women are taking up smoking[v] at alarming rates,[19] especially in lower-middle-income countries, driven by the tobacco industry's aggressive marketing to new consumers.[20] Therefore, the gender dimensions of tobacco use will continue to place women at increasing risk of contracting not just non-communicable diseases[vi] but also TB.[21] Increased efforts are needed to help women as well as men avoid tobacco use.

Gender-specific occupational vulnerabilities to TB infection

Findings on the impact of occupational gender differences on TB infection rates are conflicting. Some studies have found that men's greater engagement in certain activities and outside the home, such as smoking, drinking alcohol and criminalized activities, account for higher male TB infection rates. These associations are particularly strong with occupations such as deep pit mining.[22] Similarly, others have found that women's contacts outside close family and household — nursing non-close family or household contacts with TB — constituted a risk factor.[23] Although a number of studies have shown that women who cook with biomass fuel are more likely to develop active TB due to exposure to smoke,[24] others have found no increased TB risk in people with exposure to cooking fires (before illness), smoking fish, or burning items to keep insects away.[25]

iv 'HIV-associated TB deaths' refers to deaths from TB among people who are TB/HIV co-infected.
v The proportion of female smokers is expected to rise from 12 percent in 2010 to 20 percent by 2025; in all WHO regions except Europe, girls aged 13–15 years old are using tobacco at higher rates than women aged 15 and older.
vi Mainly cardiovascular disease, cancer, diabetes and chronic respiratory disease.

MATERNAL AND REPRODUCTIVE HEALTH: GENDER-SPECIFIC VULNERABILITIES

Impact on pregnant women

A narrow focus in the TB field on 'TB control' has led to a neglect of the disease's impact on pregnant women and on their children.[26] TB is reported to cause 6–10 percent of all maternal mortality from both direct and indirect obstetric causes in settings with low HIV prevalence; while in settings with high HIV prevalence, TB has been shown to directly cause 15 percent of maternal mortality and up to 34 percent of indirect obstetric maternal mortality.[27] For women living with HIV, TB co-infection more than doubles the risk of maternal mortality compared to HIV-negative women.[28] Extra-pulmonary TB has also been found to have adverse outcomes for pregnancy, including increased antenatal hospitalization and neonatal complications.[29] Although a number of studies have found that TB progresses more quickly in women of reproductive age than in men of the same age group,[30] research investigating whether or not pregnant women are particularly vulnerable to TB is scant, and findings are contradictory. A study in South Africa, for example, found that women living with HIV had a ten-fold greater risk of developing TB during pregnancy compared with HIV-negative women,[31] while a study in the Dominican Republic failed to detect an increased risk of active TB related to recent pregnancy, regardless of HIV status.[32]

For women living with HIV, TB co-infection more than doubles the risk of maternal mortality, more than triples the risk of infant mortality and increases the risk of mother-to-child transmission of HIV by a factor of 2.5.

TB during pregnancy may often go undiagnosed and can be challenging to recognize, because some of the symptoms of TB, such as fatigue and loss of appetite, are also common in pregnancy itself.[33] Undiagnosed active TB is reported to be common among pregnant women, and prevalence can be up to 11 percent among women living with HIV.[34]

Mother-to-child transmission

TB can be transmitted from mother to child. A mother who has active untreated TB can pass the bacteria to her baby before, during or after giving birth. There have been few reported cases of congenital TB — in which a baby becomes infected either in the womb or during the birthing process.[35] Mother-to-child TB transmission rates are reported at around 15 percent. One study in Durban, South Africa, of 107 mothers and their infants in which the mother had TB, found that 15 percent of infants tested in the first three weeks of their lives had the TB bacteria.[36] For women living with HIV, TB co-infection increases the risk of mother-to-child transmission of HIV by a factor of 2.5.[37]

Infants

Beyond the risk of contracting TB, babies born to women with TB may suffer a number of other adverse effects. Pulmonary TB in pregnant women is associated with an approximate two-fold increase in premature birth, low birth weight and size, and a six-fold increase in perinatal deaths.[38] For women living with HIV, TB co-infection has been found to more than triple the risk of infant mortality compared to rates among babies born to HIV-negative women.[39] Mortality is particularly high among babies who are co-infected with TB and HIV. In one study, 32 percent of infants under a year old with culture-confirmed TB and HIV co-infection died within the first year of life, either of TB or as a result of a secondary complicating condition.[40] In a study in Guinea-Bissau, the relative risk of mortality from any cause among 52 HIV-infected infants was eight times higher for those whose mothers had active TB than for those whose mothers did not.[41]

MATERNAL AND REPRODUCTIVE HEALTH: GENDER-SPECIFIC VULNERABILITIES

Young children

Responsibility for TB diagnosis and treatment for young children falls primarily to mothers, who may themselves be infected. Historically, TB among children has been neglected. Children with TB are not usually viewed as highly infectious, so are not a priority for case-finding or treatment.[42] In addition, confirming a diagnosis of TB in children is difficult because they are rarely sputum-positive, and TB programmes have traditionally focused on smear-positive cases.[43] Lack of programmatic attention to TB in children, together with the diagnostic challenges, increases health care burdens and TB vulnerability for mothers and their young children.[44]

Infertility

Women have a higher prevalence of extra-pulmonary TB than men, particularly genital TB,[45] which is difficult to diagnose[46] and has been identified as an important cause of infertility in settings with high TB incidence.[47] Genital TB is associated with overall infertility rates ranging between 1 percent and 16 percent, and causes about 40 percent of the infertility due to problems with the fallopian tubes. Even after successful diagnosis and treatment, it results in a low (10–20 percent) chance of conception.[48] Genital TB also causes menstrual cycle problems, including secondary amenorrhea and oligomenorrhea, in up to 40 percent of these patients.[49]

Women have a higher prevalence of extra-pulmonary TB than men, particularly genital TB, which is difficult to diagnose and has been identified as an important cause of infertility in settings with high TB incidence.

DIFFERENCES BETWEEN WOMEN'S AND MEN'S ACCESS TO TB SERVICES

Gender differences in accessing TB services have been reported in a number of countries.[50] Findings are often contradictory. Some studies have found that women have less access to services than men. A study in Bangladesh, for example, found that women with respiratory symptoms had less access to public out-patient clinics than men, and were unlikely to undergo sputum smear examination.[51] Other studies have found that women have better access to services than men. A study in Pakistan, for example, found that among suspected TB cases, twice as many women as men underwent sputum smear examination.[52]

Several studies have found that men with TB symptoms tend to delay seeking care longer than women, that male TB patients are more likely to abandon TB treatment and to be lost to follow-up, and that men are more likely to die while undergoing TB treatment.[53]

Explanations for women's and men's differential access to TB services

Research seeking to identify and explain gender differences in access and adherence to TB services is underdeveloped. Some studies forgo data collection on gender issues and postulate hypotheses based on traditional notions of female traits. One study in Tanzania, for example, argued that women are more likely to adhere to TB treatment because they are "more responsible with their families" than men.[54] Others argue that better adherence to TB treatment among women is due to the courage of those specific women who managed to overcome gender-specific barriers to access.[55] Some data-driven research on gender barriers has been conducted, but to date there is little consensus on the gender issues influencing access and adherence to services.

Longer wait times: A number of studies have found that, once women do access TB services, lack of attention to women patients from health care providers means that women must wait longer than men to receive diagnosis and treatment. Studies from Viet Nam, for example, found that women with pulmonary TB were diagnosed on average two weeks later than men, due to delays caused by health care providers.[56] Similarly, a study in Bangladesh[57] found that women (especially elderly women), experienced significantly longer diagnostic, patient and treatment delays than men.[vii] A study in Nepal similarly found that women had a longer total delay before diagnosis of TB (median 3.3 months) than men (2.3 months).[58]

A study in Viet Nam similarly found that rejection, abandonment and ostracism were consequences of TB diagnosis for some women, and that most women experienced subtle isolation from community and family following a diagnosis of TB.

Other studies, however, have found no gender differences in access to TB services. A study in Malawi, for example, found no evidence of gender differences in health service access, in terms of delay between onset of symptoms and starting treatment, or in recognizing the diagnosis or in the type of health practitioner seen first.[59] Similarly, a study in Tanzania found that gender variations did not affect utilization of TB services.[60]

Poverty and gender-specific stigma: A number of studies have found that women's lack of financial independence, the low prioritization of women's health by family members, and gender-specific stigma about TB are barriers to women accessing TB care.[61] The burden of TB stigma falls more heavily on women than men. In some communities, a woman who is found to have TB may be divorced by her husband or, if unmarried, may have difficulty in finding a husband.[62] A study in Viet Nam similarly found that rejection, abandonment and ostracism were consequences of TB diagnosis for some women, and that most women experienced subtle isolation from community and family following a diagnosis of TB.[63] In Viet Nam, gender differences in accessing TB services were associated with fear of social isolation, economic constraints and poor quality of health services.[64] A study in Nepal found that women with TB delayed seeking TB care at health facilities because they preferred to visit traditional healers,[65] who also provided flexible payment options and charged less

vii The study found that women had significantly longer mean and median delays in total delay (63.2 and 61.0 days vs. 60.3 and 53 days, respectively), total diagnostic delays (61.2, 60.0 vs. 58.5, 52.0 days), patient's delays (51.9, 50.0 vs. 48.7, 42.0 days) and treatment delays (2.0, 1.0 vs. 1.9, 1.0 day).

for their services than medical facilities.

Gendered impact of active case finding: Most countries rely on passive case finding approaches to TB, although active case finding is now recommended by the World Health Organization (WHO) as a possible complement to passive case finding.[66] Several studies have argued that passive case finding is not effective for reaching women,[67] and some studies have found that active case finding significantly increases the number of TB cases found among women. Results from a study in Nepal, for example, found that women made up 28 percent of a cohort of 159 cases using passive case finding, while with active case finding the percentage of women detected with TB rose to 46 percent of 111 cases identified.[68] Other studies, however, have found that gender differences persist in surveys that use active case finding.[69]

Gender-insensitive service delivery: Inadequate or gender-insensitive health care infrastructure has also been found to reduce women's access to TB services. For example, women have complained about a lack of privacy within health centres when receiving DOTS, but men have not lodged such complaints.[70] A study in Pakistan reported that women felt uncomfortable producing the mucus needed for sputum-smear microscopy, the standard diagnostic test for TB in resource-limited settings; some women did not understand it was necessary to produce a mucus sample for proper diagnosis, and some used saliva instead, resulting in false negatives. This misunderstanding led doctors to provide women with instructions on how to produce a mucus sample, resulting in a significant improvement in TB case detection.[71]

Inadequate TB education and support for pregnant women with TB has also been shown to produce adverse health outcomes for mother and child. In one study, women stopped taking their TB medication due to the misperception that it would affect their breast milk and/or unborn baby.[72] Discontinuing TB medication prematurely is hazardous to pregnant women and their babies, and can lead to the development of drug-resistant TB.[73]

Child-care responsibilities and the lack of child-care facilities at TB clinics also make it challenging for women to attend TB services. Mothers report difficulty in arranging childcare when they visit health centres for treatment, and women who have brought their children to health centres reportedly found it hard to see a doctor because they had to leave their children outside the clinic during treatment.[74]

Absence of TB services for women prisoners: Globally, TB infection among prisoners is disproportionately high, and TB infection rates among women prisoners are higher than among male prisoners.[75] Sex-disaggregated data and research on women prisoners' access to TB services are extremely limited. However, one UN country report on women prisoners in Pakistan indicates that TB services are not always available to women prisoners, even where these services are provided to male prisoners.[76]

DATA, RESEARCH AND PROGRAMMATIC GAPS

Lack of sex-disaggregated data or gender analysis

Sex-disaggregated data on TB are not routinely collected or reported, making it difficult or impossible to determine sex differences or gender dynamics in TB. For example, because data on TB/HIV co-infection are often not disaggregated by sex, it is difficult to determine the extent to which women with TB are tested and treated for HIV, or the extent to which women living with HIV are tested and treated for TB. Similarly, data on treatment adherence and success rates for co-infected people are generally not disaggregated by sex. Data from 2012, for example, show that 1.1 million (13 percent) of the 8.6 million people who developed TB were likely to be HIV-positive, but only 46 percent of notified cases were tested for HIV, and of those found positive, only 57 percent were treated with antiretroviral medicines. Similarly, in 2012, 4.1 million of the people enrolled in HIV care were reported to have been screened for TB; and, of 1.6 million newly enrolled in HIV care in 2012, 500,000 were provided with TB prevention therapy. The same study showed the treatment success rate for new HIV-positive TB patients was 73 percent, compared with 87 percent overall among new TB patients. However, in all cases, sex-disaggregated data were not available.[77]

Data gaps

Gender-specific programmes: Although some published studies investigating the gender dynamics of access to TB service are available, few countries have undertaken gender analyses of TB programmes, including programmes supported by the Global Fund. However, TB Concept Notes submitted to the Global Fund in 2014 under the New Funding Model indicated an encouraging tendency to include gender-sensitive programming.[78] UNAIDS and the Stop TB Partnership have developed a new Gender Assessment Tool for National HIV and TB Responses which will be piloted in 2015. Roll-out of this tool in 2016 in the context of the New Funding Model should allow for greater programmatic gender analyses at country level.

Guidance/monitoring and evaluation tools: Existing good practice guidance in the area of TB does not include gender considerations, and international guidance on indicators in the area of TB does not include gender-specific indicators. This is particularly important in light of the SDGs, which contain a target (3.3) that aims to disaggregate TB incidence data by gender. Moreover, although international guidance on gender in health is well suited to analysing gender-specific vulnerabilities, and barriers to general health service access for women and girls, there is little guidance specially geared to analysing gender-specific vulnerabilities among men. Given the preponderance of TB cases among men and the fact that their specific susceptibilities and needs in relation to TB are poorly understood, there is an acute need for guidance materials and tools that address the gender-specific aspects of TB for both men and women.

Research gaps

Medical research: Critical aspects of biological differences between male and female TB infection, and of women's vulnerability to TB during pregnancy remain under-researched.

Programmatic assessment: Considerable debate remains on the gender aspects of access to health in the context of TB, for both women and men.

RECCOMENDATIONS

To address the gender-specific dimensions of TB, it is necessary to drive resources towards interventions, research and programming that plug many of the gaps in our understanding. For this reason it is suggested that concept notes developed for the Global Fund resources, and other funding sources, should specifically propose interventions that respond to the gender-specific needs and vulnerabilities of people affected by or at risk of TB. This funding could address the following:

1. *Expand medical and operational research on sex/gender differences*	Operational research is needed on gender-specific barriers to access and adherence to TB treatment to effectively empower women and men to access services and complete treatment. TB should be included as an area of interest within research related to HIV and women.
2. *Develop gender guidance for TB*	Global and country-level TB guidelines, treatment protocols and national plans should include gender, addressing the needs and vulnerabilities of both men and women, girls and boys. Global and country-level gender guidelines should consider the context of TB.
3. *Improve the gender-sensitivity of programmes*	Interventions to promote gender equity in attendance and adherence should be developed, with gender-specific targets. To maximize the entry points to TB care for women at all levels, strategic partnerships and synergies should be fostered among TB, HIV, maternal, neonatal and child health programmes, and primary care services. Case detection of TB among women should be improved by routinely integrating TB screening, preventive therapy and TB treatment into reproductive health services.
4. *Build human resource capacity*	Programmes should work to strengthen the gender capacity of health care providers, HIV testing counsellors and community health workers through avenues such as occupational training materials. This would provide workers with TB prevention, screening and treatment literacy as a routine part of their work with women, particularly in areas with high HIV prevalence.
5. *Strengthen Data collection and analysis*	Collection of data disaggregated by sex and age for TB, including for TB treatment initiation, adherence and outcomes, needs to be improved. These data should be reported systematically, including in the annual WHO reports. Gender assessments of TB programmes should be conducted at country level, in the context of the Global Fund's New Funding Model, using gender-sensitive monitoring and evaluation tools designed specifically for this purpose. A compilation of best practices in addressing gender in the context of TB programming should be developed, published and disseminated, to assist programmes to make their services gender-sensitive.
6. *Strengthen gender-sensitive monitoring and evaluation*	Countries should improve TB patient monitoring for women by supporting the development and implementation of integrated patient monitoring systems, including sex-disaggregated data, for HIV, prevention of mother-to-child transmission (PMTCT) and TB care to capture data and ensure successful follow-up. Programmes should promote better monitoring and evaluation of TB and HIV programmes to ensure that gender-related barriers are identified and addressed, that sex- and age-disaggregated data on TB are collected and fully utilized to improve prevention and care, and that indicators are harmonized. Additionally, interventions are needed to map and analyse the gender-specific links between TB and other co-morbidities such as tobacco or alcohol use.

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