



Maternal Health Task Force



**HARVARD** SCHOOL OF PUBLIC HEALTH

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and Population



# Focused Antenatal Care in Tanzania

**Delivering individualised, targeted, high-quality care**



## OVERVIEW OF TANZANIA

Tanzania, officially the United Republic of Tanzania, is an east African country lying just south of the equator and bordering the Indian Ocean, with Kenya to its north, Mozambique to its south, and the Democratic Republic of the Congo, Burundi, Rwanda, and Uganda to its west.<sup>1</sup> It is formed by two states – mainland Tanzania and the islands of the semi-autonomous state of Zanzibar (see Figure 1). They span a combined area of 947,480 km<sup>2</sup>, of which 883,000 km<sup>2</sup> constitutes land.<sup>2</sup>

Figure 1: Map of Tanzania<sup>A</sup>



Mainland Tanzania and Zanzibar are divided into 21 and five regions, respectively. The 120 different ethnic groups that make up the country's population are unified through the official language of Kiswahili; English is used for administration and higher education.<sup>3</sup>

### Historical and Political Context

Shortly after gaining independence from British colonial rule in 1961, mainland Tanzania (then known as Tanganyika) and Zanzibar joined in 1964 to form the United Republic of Tanzania. The country is now governed under a multiparty democracy, with presidential and national assembly elections held every five years.<sup>3</sup>

President Jakaya Kikwete is in the fourth year of his second and last term in office. Tanzania has been reviewing its

Constitution since 2012, aiming for completion in 2015 before the next general elections in October of that year.<sup>4</sup>

### Demographics

Since its first census in 1967, Tanzania's population has grown from 12.3 million to 47.7 million.<sup>3</sup> With an annual population growth of 3.1%, the population is projected to reach 81.9 million in 2030.<sup>5</sup> The population density varies greatly across the country, with a density of 1,763 people per km<sup>2</sup> in the capital city of Dar es Salaam compared to the national average of 39 people per km<sup>2</sup>.<sup>2</sup>

Table 1: Socioeconomic and demographic indicators

| INDICATOR   | TANZANIA    |
|---|-------------|
| Population (millions) <sup>6</sup>                          | 47.7        |
| Urban population (%) <sup>5</sup>                           | 27.2        |
| Population under 15 (%) <sup>6</sup>                        | 44.9        |
| Population median age (years) <sup>6</sup>                  | 17.5        |
| Household size (mean) <sup>3</sup>                          | 5.0         |
| Human Development Index (HDI) <sup>5</sup>                  | 0.476       |
| Gross national income (GNI) per capita (US\$) <sup>7</sup>  | 570         |
| Gini coefficient <sup>5</sup>                               | 37.6        |
| Population below national poverty line (%) <sup>7</sup>     | 28.2        |
| Primary school enrolment, net (% / % female) <sup>8</sup>   | 97.6 / 49.3 |
| Years of schooling (mean) <sup>5</sup>                      | 5.1         |
| Literacy rate, adults ≥15 (%) <sup>6</sup>                  | 73.2        |
| Access to improved water source (% households) <sup>3</sup> | 54.5        |

With high rates of fertility and mortality, Tanzania has a young population; 44.9% of its inhabitants are under 15 years of age. The population is predominantly rural, although the urban population has grown steadily from 6.4% to 27.2% since 1967.<sup>3</sup>

Tanzania's human development index (HDI) score in 2012 was 152 out of 186 UN member states.<sup>5</sup> More than half (54.5%) of households have access to an improved water source, but only 13.3% have access to improved sanitation facilities.<sup>3</sup> Some key socioeconomic indicators are shown in Table 1.

### Status of Women

Tanzania ranks 119th out of 148 countries in the Gender Inequality Index and 66th out of 136 countries in the Gender Gap Index.<sup>5,9</sup> The literacy rates for women and men are 72.2% and 82.1%, respectively. Among married adults, 88.6% of women are employed versus 99.5% of men. Compared to men, significantly fewer women are paid cash for their work and more than half are not paid at all. Among married couples, the vast majority of household decisions are made jointly or mainly by husbands, and women are infrequently the main decision-makers. Just 15.3% of wives are the main decision-makers regarding their own health care, while only 9.1% are able to decide themselves whether to visit relatives.<sup>3</sup>

Gender-based violence is still common; 33.0% and 20.3% of women have experienced physical and sexual violence, respectively. Furthermore, more than a third of these women did not tell anyone or seek any help.<sup>3</sup>

Female genital cutting (FGC) was outlawed in 1998 by the Tanzanian Special Provision Act, but enforcement has been difficult. Overall prevalence has been declining and recent estimates are at 14.6%, but the practice is twice as common in rural areas, being most common in the Manyara (70.8%) and Dodoma regions (63.8%) compared to the lowest prevalence of 3.5% in Dar es Salaam.<sup>3</sup>

### Economy

Tanzania's economy has been growing steadily for the last decade. In 2013, the economy expanded by 7.1%, and inflation declined to 9.8% from 16.0% in 2012.<sup>4</sup> Despite these improvements, most of Tanzania's population remains poor and rural. 45% of the gross domestic product (GDP) comes from agriculture, and 80% of the population relies on agriculture for their livelihoods.<sup>10</sup>

## HEALTH IN TANZANIA

Tanzania's total expenditure on health was 7.3% of their GDP in 2011. However, 41.2% of total expenditure on health came from external resources.<sup>6</sup> For example, in 2011 Tanzania received \$357.2 million from the President's Emergency Plan for AIDS Relief (PEPFAR) and \$46.9 million from the President's Malaria Initiative (PMI).<sup>11,12</sup>

Communicable diseases account for 78% of the years of life lost in Tanzania.<sup>13</sup> Malaria is the number one overall cause of mortality.<sup>2</sup> The severe shortage of human resources remains a problem; there are only 1–2 physicians per 100,000 people,

Table 2: Health and epidemiologic indicators

| INDICATOR   | TANZANIA |
|---|----------|
| Average life expectancy at birth (years) <sup>5</sup>                               | 58.9     |
| Physicians (per 1,000 population) <sup>13</sup>                                     | 0.1      |
| Nurses and midwives (per 1,000 population) <sup>13</sup>                            | 2.4      |
| HIV prevalence, adults 15–49 (%) <sup>6</sup>                                       | 5.8      |
| Anti-retroviral therapy coverage in people with advanced HIV (%) <sup>6</sup>       | 40       |
| Anti-retroviral therapy coverage in pregnant women living with HIV (%) <sup>6</sup> | 74       |

compared to the World Health Organization's recommended 20 per 100,000.<sup>14</sup> Despite strong health policies, limited resources and capacity for implementation represent significant barriers to improving health.<sup>15</sup> Some important health indicators are summarized in Table 2.

### Health system

The health system is organized into three levels of focus: (1) community-level health facilities, (2) secondary and tertiary hospitals, and (3) centralised policy-making and monitoring.<sup>14</sup> Patients go from the community level upwards as needed; patients will often start at village health services, and may be referred to dispensary services, health centre services, district hospitals, regional hospitals, and referral hospitals.<sup>16</sup>

Seventy percent of public health financing comes from taxes.<sup>2</sup> The National Health Insurance Fund Act, which was introduced in 1999, provides a social health insurance scheme for formal sector employees, covering about three percent of the population. Since 2001, national support for Community Health Funds has brought these community-based insurance schemes to 48 mostly rural districts.<sup>14</sup>

Maternal and child health has been a priority component of national health policy since 2006.<sup>15</sup> The Ministry of Health and Social Welfare is currently implementing its Third Health Sector Strategic Plan (2009–2015), developed in line with the National Strategy for Growth and Poverty Reduction, the National Health Policy written in 2007, and the Millennium Development Goals (MDG).<sup>17</sup> This includes the Reproductive and Child Health Strategic Plan, the main goal of which is to reduce maternal, neonatal, and child morbidity and mortal-



ity by strengthening health systems and increasing access to maternal and child health services.<sup>3</sup>

Nurses and midwives are regulated under the Tanzania Nurses and Midwifery Council (TNMC), where the country's 2,720 midwives are registered.<sup>18</sup> Midwifery training is currently at an advanced diploma level, but discussions are taking place to phase this out in favour of a midwifery bachelor's degree. Midwifery human resources are scarce, so nurse-midwives and clinical officers are also trained in basic emergency obstetric and newborn care to increase availability of these services.<sup>15</sup>

### Maternal and child health

Maternal and neonatal mortality remains high in Tanzania despite improvements in recent years. Maternal mortality has declined from 610 deaths per 100,000 live births in 2006 to 460 in 2010.<sup>6</sup> Yet the lifetime risk of maternal death remains 1 in 23.<sup>18</sup> Over the same period, neonatal mortality has fallen slightly from 30 deaths per 1,000 live births to 26.<sup>3</sup>

Maternal and child health indicators are listed in Table 3. These figures mask substantial discrepancies between urban and rural areas. For example, 82.4% of urban women delivered at a health facility in 2010, compared to only 41.9% of rural women. Similarly, 54.8% of urban women in 2010 had at least four antenatal care (ANC) visits, compared to only 39.1% of rural women.<sup>3</sup>

ANC is generally provided by nurses and midwives (80%), with the rest receiving care from doctors, clinical officers, or maternal-child health aides. According to data from the recent national Demographic and Health Surveys (DHS), almost no women received ANC from a traditional birth attendant (TBA).<sup>3</sup> In 2002, Tanzania's Ministry of Health and Social Welfare implemented an ANC program adapted from the World Health Organization's focused antenatal care (FANC) model. FANC focuses on quality rather than quantity of visits and recommends four visits throughout pregnancy. However, in Tanzania, less than half of women receive the recommended minimum number of visits. Furthermore, only 15.1% of women attend their first antenatal visit before the fourth month of pregnancy. Most women receive blood pressure measurement, blood tests, and antimalarial treatment during ANC. About half took iron supplements, had their urine tested, and were informed of the signs of pregnancy complications.<sup>3</sup>

### ANTENATAL CARE PROGRAMMES IN TANZANIA

Tanzania formally established maternal and child services in 1974 in an effort to improve maternal and child health throughout the country. A number of initiatives such as the Expanded Programme of Immunization (1975), Safe Motherhood Initiative (1989), and Integrated Management of Child Illness (1996)

Table 3: Maternal and child health indicators

| INDICATOR  | TANZANIA    |
|--|-------------|
| Total fertility rate (live births per woman) <sup>6</sup>                          | 5.3         |
| Maternal mortality ratio (per 100,000 live births) <sup>6</sup>                    | 460         |
| Under-five mortality rate (per 1,000 live births) <sup>5</sup>                     | 76          |
| Infant mortality rate (per 1,000 live births) <sup>5</sup>                         | 50          |
| Neonatal mortality rate (per 1,000 live births) <sup>3</sup>                       | 26          |
| Immunisation coverage, all basic, among 1-year-olds (%) <sup>3</sup>               | 66.2        |
| Contraception prevalence rate (% of married women 15–49) <sup>3</sup>              | 34.4        |
| Unmet need for family planning (%) <sup>6</sup>                                    | 25.3        |
| Age at first birth (median, women 25–49) <sup>3</sup>                              | 19.5        |
| Antenatal care coverage, at least 1 visit / 4 visits <sup>a</sup> (%) <sup>6</sup> | 87.8 / 42.8 |
| Births attended by skilled provider <sup>b</sup> (%) <sup>6</sup>                  | 48.9        |
| Births in a health facility (%) <sup>3</sup>                                       | 50.2        |
| Birth weight <2500g (%) <sup>3</sup>   | 6.9         |
| Births by Caesarean section (%) <sup>6</sup>                                       | 4.5         |
| Postnatal care visit within 2 days of birth (%) <sup>6</sup>                       | 30.8        |

a: Due to data limitations, it is not possible to determine the type of provider for each visit. Content of visit is not measured.

b: 'Skilled provider' is defined by the WHO as doctors, nurses or midwives trained in life saving obstetric care, as well as providing care during pregnancy, childbirth, and the postpartum period.<sup>19</sup>

were adopted as a response to a high maternal mortality ratio (MMR) and high fertility and neonatal mortality rates. In 1994, Tanzania developed a National Reproductive and Child Health strategy and established a Reproductive and Child Health Section in the Ministry of Health.<sup>20</sup> Although numerous initiatives aim to improve maternal health in Tanzania, in this case we focus specifically on the adoption and implementation of ANC practices within the larger framework of maternal and child health services.

In 1978, the World Health Organization adopted a “risk approach” for maternal and child health care in an effort to improve quality of care, extend the reach of services, and make the optimal use of existing resources for health. During frequent antenatal visits, the risk approach aims to identify pregnant women who are at risk of complications or disease based on a number of factors including maternal height, previous child loss, first pregnancy, malnutrition, crowding, and poor sanitation. Through early identification of women who are high-risk, this approach intends to serve as a managerial tool for health care organisations so that they can optimise use of their limited resources to help those women most in need.<sup>21</sup> Countries around the world, including Tanzania, implemented these guidelines to improve upon the original ANC principles developed in Europe in the early 1900s.<sup>22</sup>

The implementation of ANC programs which include numerous visits and require accurate identification of high-risk individuals presented a challenge in resource-constrained settings and spurred the exploration of the focused antenatal care model.

In 1994, the WHO’s Maternal Health and Safe Motherhood Program, Division of Family Health, identified “four pillars” of safe motherhood that comprise a package of services intended to prevent maternal, perinatal, and infant death: family planning, ANC, clean/safe delivery, and essential obstetric care. Although the risk approach was the model of ANC recommended at the time that the four-pillar Mother-Baby package was adopted, the WHO’s “Mother-Baby Package: implementing safe motherhood in countries” report points to some of the weaknesses of the high risk approach including the uncertainty in predicting risk and concerns regarding quality of care. The report states that all women are at risk of fatal complications and that improved quality of care is essential to achieving better outcomes in maternal and child health.<sup>23</sup>

Although many countries, including Tanzania, adopted the recommended ANC guidelines, there were a number of barriers identified. In an assessment of services provided in the Arusha region of Tanzania in 1998, researchers observed that certain components of ANC were not always being delivered. Even though 98% of the women in the region had attended ANC, 63% were never informed of danger signs, 41% had never had their blood tested, 37% had never had their blood pressure checked, and 25% had never had their abdomen examined. Women participating in the study mentioned that barriers to utilisation included

a lack of understanding of the purpose of ANC and logistical and financial barriers to access.<sup>24</sup> Other factors highlighted as barriers to the implementation of ANC in developing countries were religious and traditional practices, illiteracy, and poverty.<sup>25</sup> The implementation of ANC programs which include numerous visits and require accurate identification of high-risk individuals presented a challenge in resource-constrained settings and spurred the exploration of the focused antenatal care model.

## FOCUSED ANTENATAL CARE (FANC)

Delivering ANC effectively under the traditional model is often time- and resource-consuming, which compromises quality of care in many settings. In an attempt to counter some of these challenges, a multi-country randomised trial in 2001 assessed the effectiveness of a new care model, called Focused Antenatal Care, compared to the traditional ANC model. Overall, providers tolerated the new WHO model, women in both models of care were generally satisfied with services, and FANC cost the same or less than the traditional care model.<sup>26</sup> These findings were fairly consistent with the findings of a systematic review of randomised controlled trials that was conducted by the WHO in 2001 to compare interventions with a lower number of antenatal visits to the standard ANC model.<sup>27</sup> Together, these studies led to the WHO’s conclusion that care models with reduced antenatal visits could be implemented in both developed and developing countries without negatively affecting health outcomes of pregnant women or their infants.

FANC shifted the focus of care from the quantity to the quality of visits. Rather than identifying women as “high-risk” or “low-risk” and providing care accordingly, this model operates under the principle that all women are potentially at risk for developing complications and should receive individualised care and essential evidence-based interventions throughout their pregnancies. It is important to note that the basic FANC model is grounded in the idea that the majority of pregnancies do not involve complications. Therefore, rather than using routine risk indicators such as maternal height to determine risk early on, the individualised, targeted approach of the FANC model aims to detect complications as they arise.<sup>28</sup> Women who present with pre-existing risk factors or medical conditions as well as women who are identified as having complications throughout their care are enrolled in a specialised care model that includes additional assessments, visits, and evaluations.<sup>29</sup>

### Content of FANC

The basic FANC model involves four antenatal visits that include individual counselling, targeted assessments, and the provision of safe, cost-effective, and evidence-based inter-

ventions.<sup>20</sup> An underlying principle of FANC is the integration of care through health promotion, disease prevention, detection and treatment of existing diseases, and birth preparedness. During their visits, women are counselled on topics such as birth preparedness, danger signs, nutrition, exclusive breastfeeding, and family planning. The FANC model recognises that the antenatal period is a key entry point for many women into the health system, and so the model integrates ANC with care and counselling related to several other conditions. Women are immunised against tetanus and tested and treated for anaemia as well as vitamin A or iodine deficiencies. They also receive testing and treatment for HIV/AIDS, STIs, malaria, and tuberculosis.<sup>28</sup> As a result of the integration of testing and counselling, the recommended time dedicated to each FANC visit is expected to be between 20 and 40 minutes, dependent on the gestational period. In addition to a decrease in the recommended visits from sixteen under the traditional model to four under FANC, the latter actively incorporates families and spouses into the process, and encourages two-way communication through interactive counselling as opposed to the one-way health education of traditional ANC.<sup>29</sup>

An underlying principle of FANC is the integration of care through health promotion, disease prevention, detection and treatment of existing diseases, and birth preparedness.

Under the FANC model, there is a strict checklist of assessments and interventions that should be included in each of the four visits to ensure comprehensive care and the timely identification of complications. The FANC model suggests that visits should take place before 12 weeks, at 26 weeks, at 32 weeks, and between 36-38 weeks, although many countries have slightly changed the recommended timing of the visits in their own guidelines to better match their population's needs. To account for the late enrolment in ANC observed in many developing countries, women who enrol late are expected to receive the care required for their specific gestational period as well as any preceding appointments. The WHO also recommends that formal systems are established to identify patients who have missed appointments, and that mechanisms are in place to arrange follow-up visits.<sup>29</sup>

#### **Implementation of FANC in Tanzania**

Tanzania's Ministry of Health and Social Welfare developed and implemented a programme in 2002 based on the WHO FANC model.<sup>30</sup> This implementation involved health worker trainings at the district, regional, and national levels on the new FANC guidelines and integrated approach to care.<sup>31</sup> In

Tanzania, the recommended package includes an initial visit before 16 weeks, a second visit between 20 and 24 weeks, a third visit between 28 and 32 weeks, and a fourth visit at 36 weeks.<sup>32</sup> The reduced number of visits, focus on quality of care, and integration of services intend to address some of the barriers to utilisation of services and improve the continuity of care in low resource settings. The checklist used by Tanzanian providers to ensure the appropriate delivery of counselling, testing, treatments, and examinations can be found in Table 4.

Although the model is intended to reduce barriers and minimize unnecessary costs or services, there have been some challenges to the implementation of FANC. According to the World Health Organization 87.8% of pregnant women in Tanzania attended at least one antenatal visit. However, despite this high rate of initial attendance, only 42.8% of women attended four or more visits,<sup>6</sup> and only 20% attended their first ANC visit during the first trimester of pregnancy.<sup>3</sup> The decrease in attendance after the first antenatal visit may be due to a number of reasons, including perceptions of poor care, poor quality of care, lack of partner support, or financial or logistical constraints.<sup>33</sup> This is problematic because women who do not attend all of the visits under the FANC model do not receive important interventions, which may risk the health of both women and newborns.

Broad challenges in the implementation of maternal and child health programs in Tanzania can be broken down into health system factors and non-health system factors. Health system factors include shortage of skilled providers, weak referral systems, low utilisation of services, lack of equipment/supplies, and weak health infrastructure and management. Non-health system factors include inadequate community involvement, gender inequality, cultural beliefs and practices, and a weak educational sector.<sup>20</sup> This wide range of factors points to some of the challenges faced in the implementation of ANC programmes in Tanzania and other resource-limited countries.

## **MONITORING, EVALUATION, AND RESULTS**

FANC has the potential to minimise barriers to access and improve the quality of antenatal services. However, limited human resources and supplies have prevented the national implementation of FANC in Tanzania.

In the Tanzania Service Provision Assessment Survey, the Tanzania National Bureau of Statistics found that although 82% of all facilities offer ANC, less than 42% of these have written FANC guidelines or protocols, only 13% have visual aids, guidelines, and client cards for counselling, and just 8% meet the basic criteria of having at least one broad-spectrum antibiotic, albendazole or mebendazole (antihelminthic), methyl-dopa (bp), a first-line antimalarial, and at least one medicine for

Table 4: Focused antenatal care model, Tanzania (checklist)<sup>30</sup>

| PARAMETER  | 1ST VISIT<br>(<16 WEEKS) | 2ND VISIT<br>(20–24 WEEKS) | 3RD VISIT<br>(28–32 WEEKS) | 4TH VISIT<br>(36 WEEKS) |
|--|--------------------------|----------------------------|----------------------------|-------------------------|
| <b>1. Registration</b>                           | ✓                        |                            |                            |                         |
| <b>2. History taking</b>                         | ✓                        |                            |                            |                         |
| Personal history                                 | ✓                        |                            |                            |                         |
| Family history                                   | ✓                        |                            |                            |                         |
| Social history                                   | ✓                        |                            |                            |                         |
| Past medical/surgical history                    | ✓                        |                            |                            |                         |
| History of complaints in current pregnancy       | ✓                        | ✓                          | ✓                          | ✓                       |
| <b>3. Examination</b>                            |                          |                            |                            |                         |
| Head to toe (whole body)                         | ✓                        | ✓                          | ✓                          | ✓                       |
| Pallor   | ✓                        | ✓                          | ✓                          | ✓                       |
| Oedema (other than ankle-specify)                | ✓                        | ✓                          | ✓                          | ✓                       |
| Breast   | ✓                        |                            |                            | ✓                       |
| Lungs and heart                                  | ✓                        |                            |                            | ✓                       |
| <b>4. Observation and clinical investigation</b> |                          |                            |                            |                         |
| Temperature                                      | ✓                        |                            |                            |                         |
| Pulse  | ✓                        |                            |                            |                         |
| Blood pressure                                   | ✓                        | ✓                          | ✓                          | ✓                       |
| Weight   | ✓                        | ✓                          | ✓                          | ✓                       |
| <b>5. Obstetric complications</b>                |                          |                            |                            |                         |
| Fundal height                                    | ✓                        | ✓                          | ✓                          | ✓                       |
| Foetal presentation and engagement               |                          |                            | ✓                          | ✓                       |
| Foetal heart sound                               |                          | ✓                          | ✓                          | ✓                       |
| <b>6. Pelvic (vaginal) examination</b>           |                          |                            |                            |                         |
| Soft tissue assessment                           | ✓                        |                            |                            | ✓                       |
| Bony pelvic assessment                           |                          |                            |                            | ✓                       |
| <b>7. Laboratory investigations</b>              |                          |                            |                            |                         |
| <b>BLOOD</b>                                     |                          |                            |                            |                         |
| Haemoglobin                                      | ✓                        | ✓                          | ✓                          | ✓                       |
| Grouping and rhesus factor                       | ✓                        |                            |                            |                         |
| RPR  | ✓                        |                            |                            |                         |
| HIV testing                                      | ✓                        |                            |                            |                         |
| <b>URINE</b>                                     |                          |                            |                            |                         |
| Protein, sugar, acetone                          | ✓                        | ✓                          | ✓                          | ✓                       |



Table 4: Focused antenatal care model, Tanzania (checklist) - CONTINUED

| PARAMETER   | 1ST VISIT<br>(<16 WEEKS) | 2ND VISIT<br>(20–24 WEEKS) | 3RD VISIT<br>(28–32 WEEKS) | 4TH VISIT<br>(36 WEEKS) |
|---|--------------------------|----------------------------|----------------------------|-------------------------|
| <b>8. Drug administration and immunisation</b>  |                          |                            |                            |                         |
| Iron  | ✓                        | ✓                          | ✓                          | ✓                       |
| Folic acid  | ✓                        | ✓                          | ✓                          | ✓                       |
| Antimalarials (Fansidar 3 tablets)  |                          | ✓                          | ✓                          |                         |
| Tetanus toxoid  | ✓                        | ✓                          | ✓                          |                         |
| <b>9. Client education and counselling (for the couple)</b>   |                          |                            |                            |                         |
| Process of pregnancy and its complications  | ✓                        | ✓                          | ✓                          | ✓                       |
| Diet and nutrition  | ✓                        | ✓                          | ✓                          | ✓                       |
| Rest and exercise in pregnancy  | ✓                        | ✓                          | ✓                          | ✓                       |
| Personal hygiene  | ✓                        |                            |                            |                         |
| Danger signs in pregnancy   | ✓                        | ✓                          | ✓                          | ✓                       |
| Use of drugs in pregnancy   | ✓                        | ✓                          | ✓                          | ✓                       |
| Effects of STI/HIV/AIDS   | ✓                        | ✓                          | ✓                          | ✓                       |
| Voluntary counselling and testing for HIV   | ✓                        |                            |                            |                         |
| Care of breasts and breast feeding  | ✓                        |                            |                            | ✓                       |
| Symptoms/signs of labour  |                          |                            | ✓                          | ✓                       |
| Plans of delivery (emergency preparedness, place of delivery, transportation, financial arrangements) | ✓                        | ✓                          | ✓                          | ✓                       |
| Plans for postpartum care   |                          |                            | ✓                          | ✓                       |
| Family planning   |                          |                            | ✓                          | ✓                       |
| Harmful habits (e.g. smoking, drug abuse, alcoholism)   | ✓                        | ✓                          | ✓                          | ✓                       |
| Schedule of return visit  | ✓                        | ✓                          | ✓                          | ✓                       |

treating each of the four most common STIs.<sup>34</sup>

Small-scale evaluations have also found that there are numerous constraints on services resulting from supply shortages and insufficient training opportunities for health workers.<sup>35,36</sup> For example, counselling is a central component of FANC and the guidelines suggest that health workers should spend approximately 15 minutes talking with each patient. One component of the counselling is birth planning and preparedness. In the Iguna district of Tanzania, women who scored higher on the “Focused ANC index”<sup>\*</sup> as well as mothers who participated in birth preparedness planning were more likely to deliver in a health facility relative to their counterparts in the comparison district of Urambo.<sup>37</sup> These findings are particularly important in Tanzania, where 87.8% of women attend at least one ANC visit but only 50.2% have a facility-based delivery.<sup>6</sup> The integration of birth planning and counseling in the FANC model may serve as a mechanism for increasing utilisation of facility-based deliveries; however, due to the shortage of health

workers and the high demand for services, many women are not counselled for the recommended amount of time<sup>30</sup> and have a low awareness of danger signs.<sup>38</sup> In fact, some women receive minimal, if any, counselling on danger signs and birth planning during their ANC visits: 39.5% of women were not informed of any signs during their ANC visits, only 22.5% were counselled on all seven, and none of the women who had received counselling were able to recall all seven danger signs upon their exit interview (see Table 5).<sup>39</sup>

Supply shortages also inhibit the ability for health workers to provide additional services such as PMTCT prevention and malaria treatment during FANC visits.<sup>40,41</sup> The integration of services is a cornerstone of the FANC model, and the improvement of supply chain management is necessary to carry out evidence-based interventions during ANC

<sup>\*</sup> Focused ANC index as measured by ANC attendance prior to 5 months gestation, 4+ ANC visits, or the receipt of at least 5 of 8 key ANC functions.

Table 5: Seven danger signs<sup>39</sup>

1. **Vaginal bleeding**
2. **Convulsions**
3. **Severe headache with blurred vision**
4. **Fever and too weak to get out of bed**
5. **Severe abdominal pain**
6. **Fast and difficult breathing**
7. **Swelling of fingers, face, and legs**

visits. Supply chain issues need to be addressed in order to successfully scale interventions such as rapid syphilis screenings<sup>42,43</sup> and malaria screening and treatment.

There have been limited evaluations of the FANC model in Tanzania due to the incomplete implementation of the model's guidelines. Recommendations to prioritise health worker training and supply chain management aim to strengthen the underlying health system and increase capacity to provide interventions and counselling consistent with the guidelines.

## SCALABILITY, SUSTAINABILITY, AND FUTURE DIRECTIONS

The Tanzanian government has expressed a firm commitment to improving maternal health through the Reproductive and Child Health Strategy in 2005 and Primary Health Service Development Programme in 2007.<sup>44</sup> The political commitment to the national implementation of FANC offers vast potential to improve maternal health. However, the next step is to focus on improving the quality of care through the complete implementation of the FANC model and strengthening of underlying health systems.

Convening additional health worker trainings and increasing the number of graduates of health professional programmes are essential to the delivery of FANC interventions.<sup>44,45</sup> An exploratory study in the Kilombero Valley found wide variation in the care being provided to patients. There are 38 recommended services included in the FANC guidelines including the recording of medical history, laboratory examinations, drug and immunisation services, physical exams, and health education. This evaluation found that of these, 12 of the services were not provided to any of the women and only eight were provided to more than 80% of women. Only one health worker in the four selected health facilities had been trained on the FANC guidelines, and many of the new FANC guidelines were not included on the ANC cards utilised by providers.<sup>35</sup> Recommendations to improve quality of ANC services include training providers and clinical staff on FANC guidelines and revising ANC cards to include updated FANC guidelines. In 2008, the United States Agency for International

Development (USAID) ACCESS program (“access to clinical and community maternal, neonatal, and women’s health services”), now the Maternal and Child Health Integrated Program (MCHIP), supported the standardisation of FANC training and the revision of the ANC curriculum for the training of tutors, nurses and midwives in Tanzania. This programme led to an increase in the number of facilities with trained FANC staff from 24 to 1,192 in the first year of implementation.<sup>46</sup> Similar supply side interventions that target staff and provider training on the FANC guidelines can increase capacity for service delivery.

Two other key areas for improvement are male partner involvement and referral system strengthening. Roughly 90% of Tanzania’s population lives within ten kilometres of a health facility;<sup>47</sup> however, in 2010 only 15% of women initiated ANC during the first trimester of pregnancy.<sup>48</sup> Financial constraints and lack of partner involvement were noted by women as factors that influenced their decision to seek care.<sup>49</sup>

Involving partners in ANC, counselling, and other integrated services such as HIV testing and PMTCT interventions may further increase uptake of such interventions. FANC encourages partner participation; recommended approaches to increase male involvement include formal invitations to attend care, “male-friendly” waiting areas, extended hours, and increased outreach to communities about the importance of male participation in antenatal care.<sup>45,50, 51,52</sup>

While these approaches are well-known, they can be difficult to implement. In northern Tanzania, a study found that although HIV testing in ANC was not opposed by male partners, men viewed ANC as a “female domain.” Of the 95.5% of women in this study who were encouraged to bring their partners to ANC for HIV testing and counselling, only three percent of them returned with their male partners.<sup>53</sup> But when male partners did get involved in care, mothers in northern Tanzania were more likely to accept perinatal interventions. The HIV positive women who brought their partners to ANC were three times more likely to use Nevirapine prophylaxis, four times more likely to avoid breastfeeding, and six times more likely to adhere to their selected feeding method.<sup>50</sup>

One of the goals of ANC is to increase the utilisation of facility-based deliveries, especially for women with high-risk pregnancies. FANC offers providers the opportunity to counsel mothers and identify women with complications who may need to be referred to a health facility. In a study on eclampsia in Dar es Salaam, over 60% of the women who developed eclampsia had at least one risk factor during ANC visits, yet fewer than 10% were referred to a hospital.<sup>54</sup> Further, in the Rufiji district, less than 37% of women who were referred complied with the referral.<sup>55</sup>

Strengthening referral systems for high-risk women goes hand in hand with the overarching need to focus resources on improving the overall quality of care.<sup>37,56,57</sup> Women's perception of care affects whether or not women comply with referrals, choose to have a facility based delivery, or seek ANC.<sup>47,58</sup> There needs to be a continued focus on education surrounding pregnancy danger signs, when care should be sought, and barriers to male involvement.

Health worker training, systems strengthening, and improving supply chains also have the potential to increase the quality of care. In order to fully implement FANC components such as counselling and integrated testing and treatment, a sufficient number of adequately trained health care workers is necessary. By addressing these supply side factors, the perception of quality of care and the rate of successful referrals for high-risk women may improve. Though FANC is a national program, scaling efforts to improve quality of care are essential to implement the FANC guidelines.

## INSIGHTS FROM FANC IN TANZANIA

- Human resources and supply chains drive successful programmes.** Increasing training opportunities for health workers and updating ANC cards with the FANC guidelines are preliminary steps that may improve adherence to the FANC models.<sup>45</sup> Increasing the number of health workers and providers may also help reduce the current strain on health workers, which has diverted time away from essential components of FANC such as counselling and integrated services. In addition to training health workers on the FANC guidelines, it is imperative to ensure that the necessary supplies are available to provide the recommended interventions for each visit.<sup>44,45</sup>
- Include men.** Integration of male partners in ANC and counselling will increase their involvement and improve acceptability of such care for pregnant women. Recommendations include issuing formal invitations, creating 'male-friendly' waiting areas, extending hours, and engaging communities.<sup>45,50,51,52</sup>
- Perception counts.** Discerned quality of care was found to be an important predictor of whether mothers choose to seek care. Focusing on ways to improve quality and change these perceptions may increase demand for ANC early in pregnancy and address the large gap between utilization of ANC and facility-based delivery.<sup>47,58</sup>
- Quantity cannot substitute for quality.** In strengthening the health system to better deliver FANC, we must be sure that we are measuring *what* is being delivered, rather than focusing on *how often* care is delivered.

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