



USAID
ASSIST PROJECT
*Applying Science to Strengthen
and Improve Systems*

Improving management of anemia among pregnant women

Tested changes and guidance from East Central Uganda



APRIL 2018

This change package for improving anemia management in pregnancy was prepared by University Research Co., LLC (URC) under the United States Agency for International Development (USAID) Applying Science to Strengthen and Improve Systems (ASSIST) Project. The work was funded by USAID's Bureau for Global Health, Office of Maternal and Child Health and Nutrition. The change package was authored by Anjali Chowfla, Connie Namajji, Tamar Chitashvili, Jorge Hermida, Esther Karamagi, and Silvia Holschneider of URC. It was developed as part of a larger intervention to improve the quality of integrated antenatal care delivery and the quality of integrated care for preeclampsia/eclampsia activities in Uganda implemented by the USAID ASSIST Project, which is made possible by the generous support of the American people through USAID.

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Anjali Chowfla, University Research Co., LLC
Connie Namajji, University Research Co., LLC
Tamar Chitashvili, University Research Co., LLC
Jorge Hermida, University Research Co., LLC
Esther Karamagi, University Research Co., LLC
Silvia Holschneider, University Research Co., LLC

DISCLAIMER

The contents of this change package reflect the work carried out by University Research Co., LLC (URC) and do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government.

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Acronyms

ANC	Antenatal care
ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
BP	Blood pressure
Hb	Hemoglobin
HIV	Human immunodeficiency virus
HC	Health center
HMIS	Health management information system
IPT	Intermittent preventive treatment
IPT-SP	Intermittent preventive treatment of malaria with Sulfadoxine--pyrimethamine
ITN	Insecticide-treated net
MCH	Maternal and child health
MOH	Ministry of Health
PDSA	Plan-do-study-act
PE/E	Preeclampsia/eclampsia
QI	Quality improvement
RRH	Regional Referral Hospital
USAID	United States Agency for International Development
WHO	World Health Organization

Glossary of Terms

Antenatal care: A planned program of medical care offered to pregnant women by a skilled birth attendant from the time of conception to delivery aimed at ensuring a safe and satisfying pregnancy and birth outcomes.

Change concept: A category of change ideas or solutions that are similar and have a common underlying thought pattern.

Change idea: A specific intervention that a health facility quality improvement team has tested.

Change package: An organized summary of strategies and interventions that have been tested and proven to improve care in a given context.

Improvement collaborative: A collection of quality improvement teams that work independently to address a common challenge, but are periodically brought together to share and learn from one another, so that emerging best practices are easily and rapidly spread at scale.

Plan-do-study-act (PDSA) cycle: A structure for an efficient trial-and-learning methodology used to test different change ideas and learn from them. It begins with a plan and ends with action according to the learning gained from the plan, do and study phases of the cycle. In most cases, multiple PDSAs are needed to make successful changes.

I. INTRODUCTION

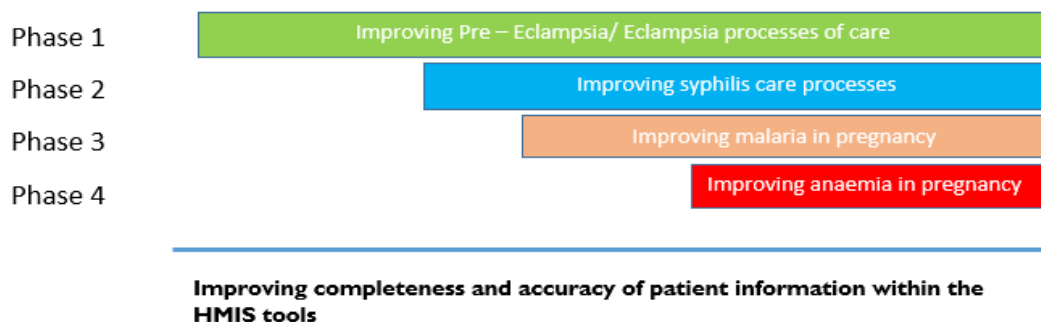
Antenatal care (ANC) is care provided by skilled health care professionals to pregnant women to ensure the best health outcomes for the mother and her baby, both during and immediately after pregnancy. Quality ANC includes risk identification; prevention and management of pregnancy-related or concurrent diseases; and health education and health promotion. ANC reduces maternal and perinatal morbidity and mortality both directly, through detection and treatment of pregnancy-related complications, and indirectly, through the identification of women at increased risk of developing complications during labor and delivery and referral to the appropriate level of care.

Anemia in pregnancy is a global problem. The World Health Organization (WHO) estimated the incidence of anemia in pregnancy in 2011 at 38.2% globally, 46.3% in the African region, and 34% in Uganda (WHO 2015). In Uganda, the prevalence of anemia among pregnant women who attended antenatal care was estimated at 22.1% (Obai et al. 2016). Most cases of anemia in pregnant women are a result of insufficient iron levels to meet the increased requirements of pregnancy. Severe iron-deficiency anemia has been associated with an increased risk of stillbirths, low birthweight babies, intrauterine growth restriction, neonatal sepsis, infant and maternal mortality. Moderate anemia has been found to restrict the ability of mothers to work and care for their children.

Anemia can be caused by several factors, including poor diet, especially one that is low in iron; frequent infections, such as malaria; hookworm infestations; and genetics. Some of these causes are often treatable with simple interventions such as iron supplementation and the use of long-lasting insecticide-treated bednets and intermittent preventive treatment for malaria.

From June 2015 through March 2017, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project worked with the Ministry of Health (MOH) of Uganda to implement an improvement activity in a “slice” of the health care system in Jinja District, Uganda to improve the quality of primary antenatal care services through implementation of an integrated package of antenatal care best practices. This package included early detection, initial management and referral of the most common obstetric conditions with an emphasis on improving screening, diagnosis, treatment, and referral of preeclampsia/eclampsia (PE/E) as one of the major causes of preventable maternal death; as well as early screening, detection, initial management, and referral of locally frequent maternal infections such as malaria and syphilis and nutritional deficiencies such as anemia. ASSIST implemented the activity in 10 randomly selected facilities across all levels of the health system, within the catchment area of the Jinja Regional Referral Hospital (RRH). These facilities included Jinja RRH, Buwenge General Hospital, Buwenge health center (HC) IV, Budondo HC IV, Mpumudde HC IV, Lukolo HC III, Kakaire HC III, Magamaga HC III, Butagaya HC III, and Budima HC III. The ANC improvement activity was organized in four phases, each lasting approximately three months and focusing on a particular clinical area (preeclampsia/eclampsia, malaria, syphilis, and anemia). During the second, third, and fourth phases, QI teams continued to improve care processes initiated earlier so that, by the end of the fourth wave, teams had developed a comprehensive set of changes to improve antenatal care (**Figure 1**).

Figure 1. Four phases of USAID ASSIST ANC improvement activity in 10 facilities in Jinja, Uganda



This activity generated important learning about effective models for improving delivery of quality antenatal care. The changes implemented by QI teams that are discussed in this document demonstrate effective ways to overcome common gaps in anemia care in a low-resource environment, improve the quality of antenatal care for pregnant women, and reduce maternal and newborn mortality.

A. Improvement approach

ASSIST began improvement activities in September 2015 by conducting a baseline assessment in 19 health facilities in the Jinja District which included the 10 intervention facilities and nine additional facilities randomly

selected to serve as a control group. In the intervention facilities, ASSIST used a collaborative improvement approach to overcome obstacles and improve the quality of antenatal care in Jinja. Following the baseline assessment, performance gaps were identified at each level of the health system, including lack of inputs, inefficient processes of care, and limited technical competence. The most frequent deficiencies in essential inputs for anemia care were iron supplements, hemoglobin (Hb) estimators, and blood transfusion services at HC IVs, while for processes of care, gaps were found in knowledge of the cut-off points of Hb for classification of anemia.

ASSIST's approach to quality improvement (QI) is guided by the Model for Improvement, seen in **Figure 2**, and relies on rapid, iterative plan-do-study-act (PDSA) cycles to test and learn from specific change ideas. With support from ASSIST, facility-level QI teams began using this approach to improve anemia care processes in the 10 intervention facilities in April 2016. ASSIST provided support for the following:

- **Training:** ASSIST conducted a refresher clinical training on diagnosing and managing anemia in pregnancy as well as on use of methods and tools for quality improvement. At the end of the training, QI teams identified improvement aims, selected indicators, and developed specific action plans for implementing initial PDSA cycles, including prioritizing changes for immediate implementation.
- **Monthly on-site coaching visits:** Through monthly on-site coaching by a team of coaches comprised of regional and district level MOH and ASSIST staff, facility teams were guided on using monitoring indicators to review performance on anemia care, identify areas for further improvement, and conduct casual analysis to determine in which areas of care to test changes. A list of indicators, a data collection tool, and documentation journals were shared with the teams for use in recording data collected from the ANC register on key anemia care processes. The data collected by facility teams was validated during on-site coaching and areas of discrepancy were rectified.
- **Peer-to-peer learning session:** Health workers from all 10 intervention facilities were brought together for a three-day peer-to-peer learning session to share their work, experience, results obtained, and challenges faced in improving anemia care processes.

B. Gains achieved in anemia care

By the end of the improvement intervention, all 10 facilities had achieved strong gains in their anemia care processes. The percentage of pregnant women attending their first ANC visit who had their hemoglobin levels assessed increased from 2% (23/1012) in April 2016 to 56% (493/873) in March 2017. The percentage of pregnant women attending ANC who were diagnosed with anemia (Hb < 11g/dl¹) using laboratory investigations increased from 0% (4/2302) in the April 2016 baseline to 6% (135/2484) in February 2017, of whom 87% (117/135) were treated as per the MOH guidelines as opposed to a baseline value of 0% (5/1974) in February 2016.

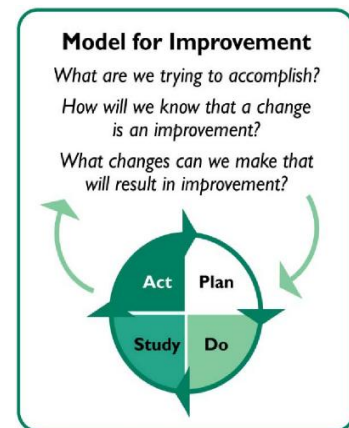
QI teams tested a number of change ideas to improve prevention, screening, diagnosis, and treatment of anemia during antenatal care that contributed to these results. These changes are discussed in greater detail in the following sections of this change package.

C. Developing the change package

In March 2017, after a year of implementation, a harvest meeting was held to identify effective changes to anemia care and make recommendations for spread to other facilities. Participants from each of the 10 intervention facilities attended, including key staff involved in the implementation of PDSA cycles and those critical to anemia care provision in the antenatal clinics, maternity wards, and laboratories.

The harvest meeting was designed such that each facility was given an opportunity to share challenges, effective changes, details of implementation, and results in small group discussions organized by health sub-district level. Contents of the discussions were then compiled and presented before a plenary by a

Figure 2. Model for Improvement



¹ In the first and third trimesters, the Hb threshold for diagnosing anemia is 110 g/L; in the second trimester, the threshold is 105 g/L.

representative of each group. Poster placards were developed describing the change ideas and results obtained for each of the main processes of anemia care in pregnancy that teams worked on. The posters were then grouped by care process, and the change ideas documented.

D. Use of the change package

This change package is intended to provide other quality improvement teams that are seeking to improve antenatal care provision through strengthening prevention, detection, and case management of anemia in pregnancy with successful change ideas to consider. Teams should not necessarily replicate these change ideas but should adapt them to suit their contexts.

We recommend that teams begin by collecting data on prevention, detection, and case management of anemia in pregnancy from the Health Management Information System (HMIS) patient tracking tools to assess current performance and gaps in care. Once teams have collected this data, meetings should be held to analyze factors affecting anemia care and brainstorm possible solutions. Teams should use the data collected to prioritize gaps in care to address, assessing their overall impact on health outcomes, the feasibility of the brainstormed solutions as well as their cost-effectiveness, likelihood of acceptance, and equity. Teams should refer to this change package to understand change ideas that worked to address particular gaps and should use it as a guide for testing and implementing changes.

The following sections cover change ideas for improving anemia care during pregnancy. Each section describes an improvement aim and the gaps that teams aimed to address and then provides an overview of tested changes.

Key change ideas that teams felt were important due to the results they yielded, gaps in services that they addressed, affordability, ease of implementation, and scalability are highlighted in text boxes. A comprehensive list of all change ideas tested with notes on the specific steps to implement each change idea is also included in a table following the description of the key changes in each section. The tables provide details on the specific gap addressed by each change idea to allow new teams to identify change ideas that respond to specific barriers to improving anemia management during antenatal care that they have identified in their facilities. Wherever possible, the change ideas in each table are ordered in the sequence in which they were tested.

In addition to the change ideas included in this document, we recommend that teams ensure an adequate stock of essential supplies and equipment for comprehensive antenatal care and also focus on strengthening the following areas to support improvements in antenatal care:

- Documentation
- Team work
- Analyzing care processes and prioritizing areas for improvement
- Communicating with patients

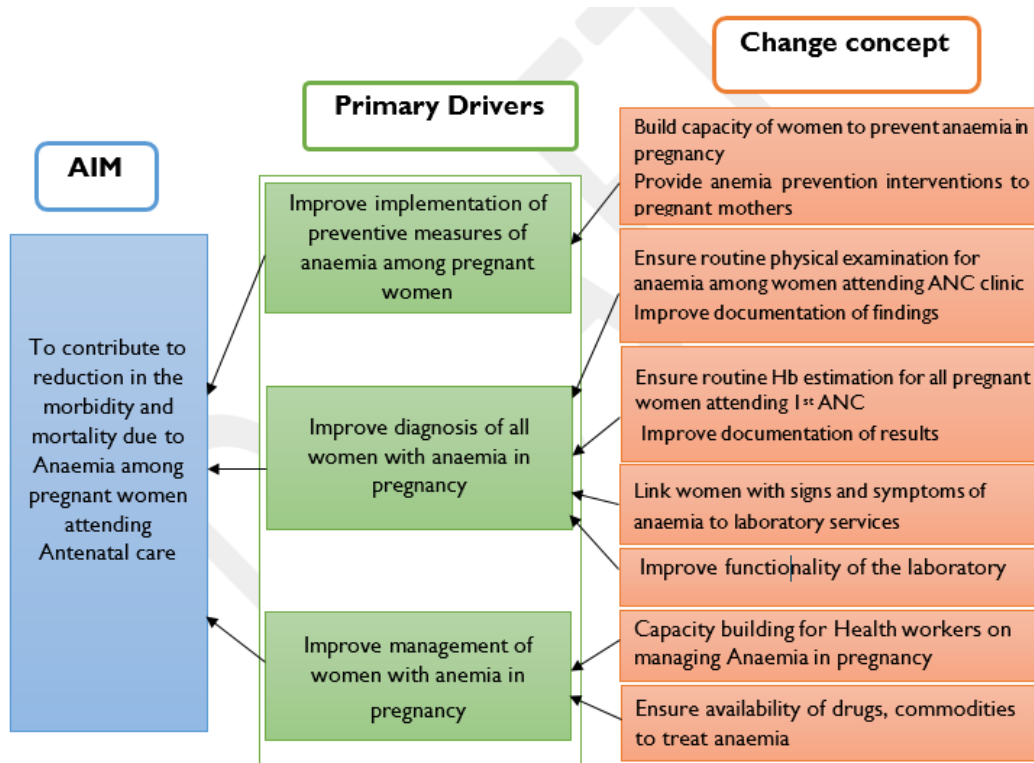
II. IMPROVING ANEMIA CARE IN PREGNANCY

QI teams sought to improve management of anemia in pregnancy by addressing the primary drivers that contribute to the reduction in morbidity and mortality among pregnant women due to anemia. As shown in **Figure 3**, these are:

- Implementation of anemia preventive measures in pregnancy
- Correctly diagnosing all women with anemia in pregnancy
- Prompt management of anemia in pregnancy

These three areas, plus a fourth area of improving documentation of hemoglobin measurements, constituted the improvement aims of the 10 intervention facilities in Jinja.

Figure 3. Driver diagram on managing anemia in pregnancy



A. Aim 1: Improving uptake of anemia prevention measures among pregnant women

In settings where anemia in pregnant women presents a serious public health problem (i.e., those where at least 40% of pregnant women have a blood Hb concentration level of less than 11.0 g/dl), the WHO recommends a daily dose of 60 mg of elemental iron to prevent maternal anemia, puerperal sepsis, low birth weight, and preterm birth (WHO 2016).

At the initial stage, ASSIST helped care provider teams of supported facilities to identify gaps in anemia prevention practices. Gaps at the baseline assessment focused on poor knowledge of care providers on the measures to prevent anemia during pregnancy and limited availability/stock-outs of iron and folic acid products. To address identified gaps, the teams decided to improve correct and consistent prescription of iron and folic acid (400 g), mebendazole, intermittent preventive treatment (IPT) of malaria with Sulfadoxine-pyrimethamine (SP), and distribution of insecticide-treated nets (ITNs) to pregnant women attending antenatal care visits.

To ensure prevention of anemia among pregnant women, the QI teams conducted PSDA cycles to test changes in the following areas, designed to:

- Improve documentation of anemia preventive measures in national HMIS tools
- Include anemia signs and symptoms, the effects of anemia on pregnancy, and preventive measures (including proper nutrition and iron-rich foods) as topics within the routine ANC health education talks
- Administer deworming using mebendazole for all eligible women
- Prevent malaria through distribution of ITNs and IPT-SP
- Prescribe iron and folic acid supplementation

As a result of the change ideas listed in **Table 1**, the proportion of pregnant women who received iron and folic acid tablets increased from 53% (1210/2,281) in March 2016, when improvement teams began working on anemia, to 90% (2,246/2,506) in March 2017 (**Figure 4**).

Figure 4. Iron supplementation among pregnant women at 10 health facilities in Jinja District (Mar 2015 - Mar 2017)

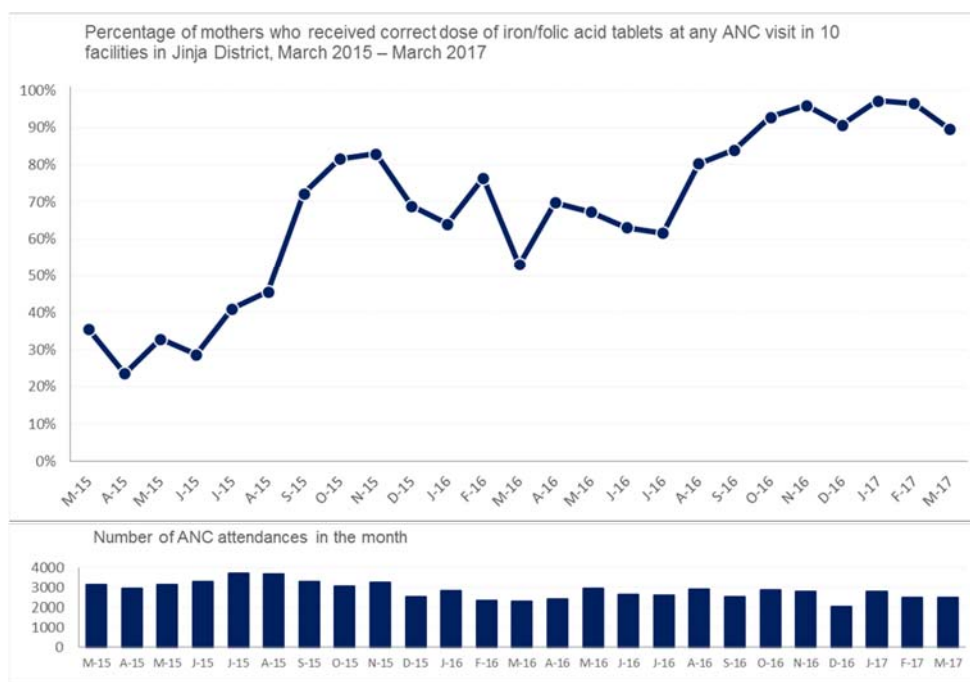


Table 1: Change ideas to ensure routine uptake of anemia prevention methods for women attending ANC

Change ideas to ensure routine uptake of anemia prevention methods for all women attending ANC clinics			
Change idea	Specific challenge addressed	How the change was tested/implemented	Comments
Educate and counsel women on anemia, its effects, and preventive methods such as eating iron-rich foods during health education sessions	Limited knowledge on preventive measures for anemia among pregnant women	<ul style="list-style-type: none"> • Include anemia as a topic on the list of health education talks given during ANC • Assign a staff member daily to be responsible for providing anemia education to women attending ANC • Obtain commonly available samples of different iron-rich foods and educate women on the necessity of a balanced diet. Emphasize the importance of iron-rich foods. • Encourage women to maintain backyard gardens, especially for growing green leafy vegetables. • For women presenting with clinical signs of anemia, conduct a one-on-one education session 	This was implemented at eight of the health facilities
Educate and counsel women on the benefits of swallowing oral iron tablets	Women avoid taking Iron tablets because of fear of side effects especially 'black stool'	<ul style="list-style-type: none"> • Counsel women on the effects of anemia in pregnancy and the importance of swallowing iron supplements • During the ANC appointment, give women ferrous sulfate heptahydrate tablets and request that they swallow that day's dose (300 mg) under observation by the health worker • Encourage the woman to swallow daily doses of ferrous sulfate heptahydrate • Counsel the woman on the potential side effects and dispel any fears about black stool 	Anemia was included as a routine/ daily topic of the health education sessions at the 10 facilities
Introduce facility-based observed swallowing of oral iron supplements			Observed swallowing of oral iron tablets at two facilities (Budima and Butagaya HC III)

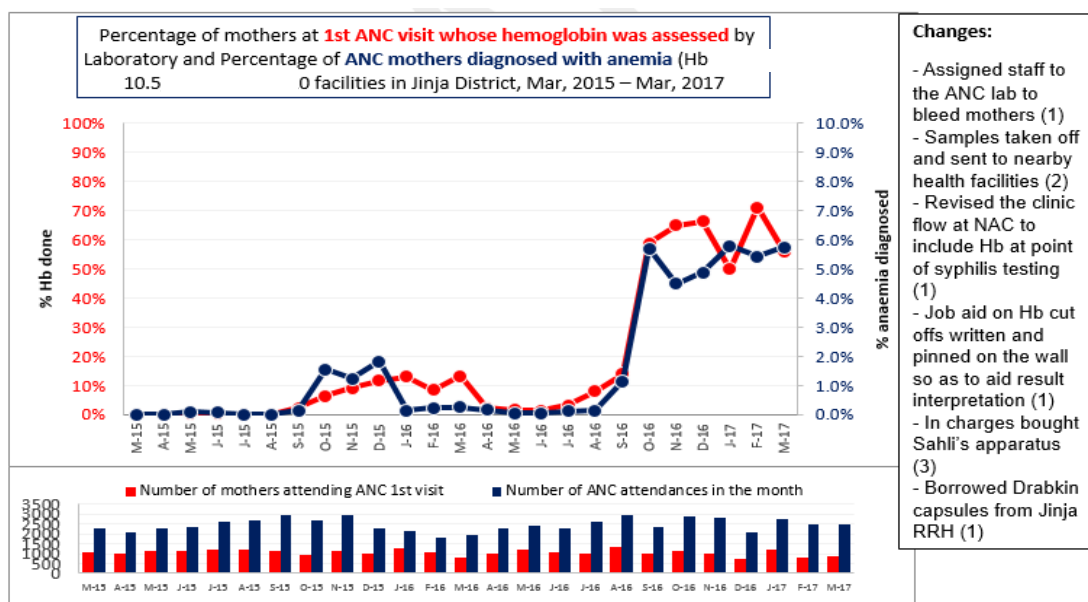
Change ideas to ensure routine uptake of anemia prevention methods for all women attending ANC clinics			
Change idea	Specific challenge addressed	How the change was tested/implemented	Comments
Introduce facility-based observed mebendazole swallowing	Mebendazole had been given to pregnant women to take at home, increasing likelihood of the medication not being taken	<ul style="list-style-type: none"> • Midwife gives the dose of mebendazole to an eligible pregnant woman at the ANC clinic • The woman is then requested to swallow the medication in front of the midwife • The midwife then updates the register indicating that the pregnant woman has received her dose of mebendazole 	This was introduced at four health facilities and incorporated at the IPT corner within the ANC clinic
Ensure timely and adequate ordering of oral Iron tablets	Stock-outs of ferrous sulfate heptahydrate tablets	<ul style="list-style-type: none"> • Update dispensing logs and stock cards daily to monitor the stock of ferrous sulfate heptahydrate • Use data on consumption rate over time from the antenatal attendances to place orders and maintain adequate stocks • In cases of stock out, borrow or have drugs redistributed from well stocked facilities to under stocked health facilities 	This was mainly done at the HC IVs. The three HC IVs would occasionally receive oral iron redistributed from lower centers.
Distribute ITNs to women who experience repeated episodes of malaria during pregnancy so as to mitigate effects of malaria on anemia incidence	ITNs only given to women attending the first ANC visit and not to women in subsequent visits who may not have received an ITN	<ul style="list-style-type: none"> • Identify pregnant women with frequent or repeated episodes of malaria who are positively diagnosed by the laboratory • Ascertain ownership, status, and use of an ITN • If the mother's ITN is in a poor condition or if she does not have one, give her an ITN and demonstrate proper usage • Counsel pregnant woman on the necessity of sleeping under the mosquito net to prevent malaria and thus anemia as a complication of malaria 	This was taken up by all the 10 health facilities. <i>However, the limited supply and repeated stock-out of ITNs at the health facility affected the implementation of the change throughout the months of project implementation.</i>

B. Aim 2: Improving diagnosis of anemia among pregnant women

Complete blood count testing is the recommended method for diagnosing anemia in pregnancy. In settings where complete blood count testing is not available, on-site hemoglobin testing with a hemoglobinometer is recommended over the use of a hemoglobin color scale (WHO 2016). Knowledge on hemoglobin cut-off points for pregnant women enables health workers to accurately classify the disease and thus provide appropriate treatment, including investigations for underlying causes. At baseline, Hb estimation was not routinely done for pregnant women attending ANC, and as such, care providers relied on findings from physical examinations to make a diagnosis of anemia. Underlying causes for anemia were not routinely evaluated except in severe cases.

As a result of some of the change ideas listed in **Table 2**, the proportion of pregnant women whose hemoglobin levels was assessed and the proportion diagnosed with anemia increased (**Figure 5**).

Figure 5. Percent of pregnant women assessed for hemoglobin levels and the proportion diagnosed with anemia at 10 health facilities in Jinja District (Mar 2015 - Mar 2017)



Improving access to laboratory services by enabling the laboratory to carry out hemoglobin tests, Mpumudde HC IV

Gap being addressed: Staff in the maternal and child health (MCH) department at Mpumudde HC IV were not sending pregnant women for Hb testing at the main lab. The laboratory had a colorimeter and the required accessories, however lacked reagents to do Hb estimation tests. Laboratory staff were knowledgeable about using the machine.

Implementation: During a learning session in October 2016, where laboratory personnel were invited, the group discussed the laboratory's role in improving care for anemic pregnant women. MCH staff from Mpumudde HC IV discussed the availability of the Hb estimator (colorimeter) but noted that the facility lacked the Drabkin reagent to conduct the test for all pregnant women attending ANC. The reagent was also out of stock at the National Medical Stores. Jinja RRH, which had sufficient stock of Drabkin reagent, committed to sharing capsules with Mpumudde HC IV from which they would make the Drabkin solution.

Results: From November 2016 to March 2017, after obtaining the Drabkin solution, more women were tested and promptly managed for anemia.

Parameter	June 2016 – October 2016	November 2016 – March 2017
Hb estimation for women attending first ANC visit	40% (301/745)	89% (668/747)
Anemia diagnosed among pregnant women	2% (34/2,003)	10% (233/2,239)
Diagnosed anemia treated per MOH guidelines	94% (32/34)	86% (200/233)

Table 2: Change ideas to improve diagnosis of pregnant women with anemia

Change ideas to improve diagnosis of anemia in pregnant women attending antenatal care			
Change idea	Specific challenge addressed	How the change was tested/implemented	Comment
Link all pregnant women attending their first ANC visit to the laboratory and those with signs and symptoms of anemia	Hb estimation not a routine investigation for pregnant women especially at first ANC visit	<ul style="list-style-type: none"> Assign a staff at the triage table at the ANC clinic to identify women attending ANC for the first time during the present pregnancy and those with signs/symptoms of anemia Staff person writes out a request for a routine lab test to include syphilis, hemoglobin, and urinalysis for protein Send the women to the testing/bleeding area at the ANC clinic Bleed the woman and send sample to the main laboratory for assessment 	<p>Implemented successfully at five health facilities.</p> <p>Improvements at the five facilities as a result of this change idea were greatly enhanced by the presence of functional Hb meters in the main laboratories</p>
Bleed pregnant woman once and use sample to carry out all investigations		<ul style="list-style-type: none"> Assign a staff from the laboratory to bleed women eligible for Hb estimation Staff collects only one sample from the woman. Sample for HIV and syphilis testing is separated for testing at the mini-lab at the ANC clinic and the rest of the sample is sent to the main laboratory for Hb estimation. After the lab runs the Hb estimation test, results are sent back to the ANC clinic either by sending students or staff to deliver the results On receipt of the result, the midwife then identifies cases of low Hb and a diagnosis is made. To overcome late receipt of results, bleeding was done first thing in the morning and in batches. 	<p>Implemented in Jinja RRH.</p> <p>Percentage of women who had Hb estimation conducted during an ANC visit increased to 8% (343/442) in October 2016 as compared to 0% (0/403) in September 2016. However, results for Hb estimation were often received the following day, hindering prompt treatment of women presenting with anemia.</p>
Send samples to nearby facility for testing			<p>This was implemented by Lukolo and Budima HC III.</p> <p>At Lukolo this change has sustained as one of the staff lived close to the facility where samples were referred. In Budima, the change was unsuccessful due to poor availability of transport to send the samples to Buwenge HC IV.</p>

Change ideas to improve diagnosis of anemia in pregnant women attending antenatal care			
Change idea	Specific challenge addressed	How the change was tested/implemented	Comment
Functionalize laboratory to carry out Hb tests by engaging facilities in charge to procure Sahli's apparatus for Hb estimation and leveraging outside resources, especially those designed to increase access to services	Labs not performing Hb estimation due to lack of Hb meters and supplies	<ul style="list-style-type: none"> Identify existing opportunities for improving maternal health Determine components within these opportunities available to support improvements in availability of equipment. Facilities were able to leverage resources from: The Uganda Reproductive Health Voucher Project implemented by Marie Stopes. 	<p>This change idea was implemented at two health facilities: Kakaire HC III and Budondo HC IV.</p> <p>At Budondo, an increase in women who had an Hb estimation conducted was seen from 0% (0/104) in September 2016 to 100% (124/124) in October 2016.</p> <p>At Kakaire a smaller increase was registered from 0% (0/37) in February 2017 to 11% (6/53) in March 2017 as the Hb estimator broke.</p>

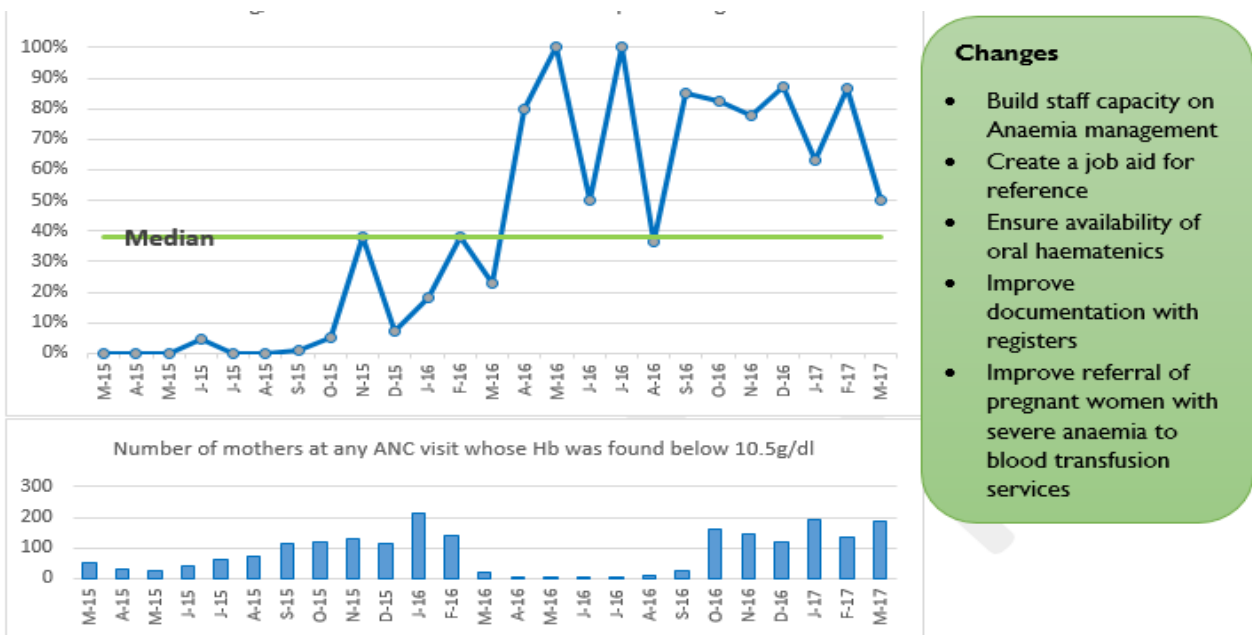
C. Aim 3: Improving management of anemia among pregnant women

Proper management of anemia in pregnancy at the antenatal care points is critical given the effects of anemia on mothers and fetuses during pregnancy. Quality management of anemia requires:

- Capacity building of health care workers within the ANC clinics on treatment options for anemia in pregnancy
- Regular availability of a range of oral hematinics (as per national guidelines) and blood transfusions services for the severely anemic within the ANC clinic

As a result of some of the change ideas listed in **Table 3**, the proportion of pregnant women diagnosed with anemia who get treated per MOH guidelines increased dramatically (**Figure 6**).

Figure 6: Pregnant women diagnosed with anemia who get treated as per MOH guidelines at 10 health facilities in Jinja District, Uganda (Mar 2015 - Mar 2017)



Train and mentor staff on treatment for anemia in pregnancy

Gap addressed: Health workers not following the national treatment guidelines on management of anemia in pregnancy.

Implementation:

- MCH department in charge obtained copies of the national guidelines on management of anemia in pregnancy
- Facility identified a staff person to take the lead in training others on anemia in pregnancy
- Staff in the antenatal clinic were trained on signs and symptoms of anemia, methods of diagnosis, and its effects during pregnancy and on the fetus
- Treatment options according to the severity of the disease were clarified
- A job aid on treatment of anemia in pregnancy including a summary of the treatment algorithm was written out and pinned on the walls within the dispensing area to be used as a reference guide by health care workers.

Results: Through this change idea, the percentage of pregnant women diagnosed with anemia who were correctly treated increased from a baseline value of 0% (0/5) in March 2015 to 87% (117/135) in February 2017 at end line across the 10 intervention health facilities where Hb estimation was done.

Women diagnosed and treated for malaria were also counseled on adherence to anemia preventive measures that included:

- Good sanitation and hygiene (proper waste disposal and hand washing)
- Swallowing of ferrous sulfate heptahydrate, mebendazole, IPT-SP
- Sleeping under ITN to prevent frequent malaria episodes

Table 3: Change ideas to improve correct management of anemia among pregnant women attending antenatal care

Change ideas to improve correct management of anemia among pregnant women attending antenatal care			
Change ideas tested /implemented	Specific challenge addressed	How the change was tested/implemented	Comment
Create job aids for reference by health care providers	Health workers are not following the national treatment guidelines on management of anemia in pregnancy	<ul style="list-style-type: none"> • Develop a job aid on treatment of anemia in pregnancy summarizing treatment algorithms and clarifying treatment options according to the severity and gestational age of the pregnancy • Pin job aid on the walls in the dispensing area to be used as a reference guide by health care workers 	Implemented at all the 10 health facilities. However, given that Hb estimation was done by 7 health facilities, correct treatment of anemia increased to 60% in those 7 facilities only by January 2017.
Redistribute drugs from heavily stocked facilities to under stocked facilities		<ul style="list-style-type: none"> • Work with the district and the drug distributors to identify facilities with large stocks of iron supplements • Redistribute some of this supply to other facilities with limited stock of oral iron. 	Drugs were mainly redistributed from lower health facilities to HC IVs, thus reducing the stock out periods at the HC IVs.

Change ideas to improve correct management of anemia among pregnant women attending antenatal care			
Change ideas tested /implemented	Specific challenge addressed	How the change was tested/implemented	Comment
Leveraging resources especially those designed to increase access to services	Stock out of ferrous sulfate heptahydrate	<ul style="list-style-type: none"> Identify existing opportunities for improving maternal health Determine components within those opportunities that can support improvements in availability of essential medicines Facilities were able to leverage resources, such as ferrous sulfate heptahydrate from The Uganda Reproductive Health Voucher Project implemented by Marie Stopes 	Implemented at three facilities (Budondo, Lukolo and Kakaire). Number of days of oral iron stock out reduced from an average of 15 from Oct – Dec 2016 to 5 from Jan – March 2017

D. Aim 4: Improving documentation of hemoglobin results in the registers

Given the importance of hemoglobin estimation for pregnant women, results should be documented within the recommended registers for reference and comparison at the next ANC appointment to ascertain any abnormalities or deviations in value for women on oral hematinics. **Table 4** lists change ideas that were tested to improve the completeness and accuracy of Hb documentation at some of the health facilities.

Table 4: Change ideas to improve completeness and accuracy of Hb recording in the ANC register

Change ideas to improve completeness and accuracy of Hb recording in the ANC register			
Change idea	Specific challenge addressed	How the change was tested/implemented	Comment
Mentoring staff on completion of the Hb parameters within the ANC register	Staff not confident on how to document Hb results within the longitudinal registers that document ANC care per pregnant women (vs. ANC care per visit)	<ul style="list-style-type: none"> Obtain a copy of the ANC register used to document patient level information Identify and assign a staff person knowledgeable on using the existing tools/ registers to document client information Identify a practical antenatal case study on the day of the mentorship sessions Carry out a practicum with staff on how to update the register with the job aid as guidance Crosscheck staff person's understanding and give a chance for questions and clarifications Refer staff to the job aid for reference when recording client information and test results in the registers 	<p>This change was tested in Mpumudde HC IV and Budima. Completeness of the Hb column in the ANC longitudinal register improved from 0% (0/141) in March 2015, to 68% (106/155) in March 2017 of the Hb results for women that were sent to the lab completed accurately.</p> <p>Implemented in Buwenge HC IV, Budondo HC IV, Lukolo HC III, Kakaire HC III and Magamaga HC III.</p>
Assign skilled staff to oversee documentation of Hb results in the ANC register on a daily basis	<ul style="list-style-type: none"> No internal supervision mechanisms to improve data quality 	<ul style="list-style-type: none"> Review duty roster to ascertain staff numbers and cadre present each day Assign a skilled staff person to supervise documentation of patient vitals and Hb in the ANC register throughout the day 	This change idea was tested and implemented by Buwenge General Hospital. No improvement was seen in documentation since the facility was unable to improve Hb testing due to lack of the required equipment.
Set up a regular records review by		<ul style="list-style-type: none"> Identify staff person knowledgeable on use of the ANC register 	This change idea was implemented by Jinja

Change ideas to improve completeness and accuracy of Hb recording in the ANC register			
Change idea	Specific challenge addressed	How the change was tested/implemented	Comment
skilled provider/ records personnel		<ul style="list-style-type: none"> Assign that staff person to review the register at the end of the day or the following day prior to start of the ANC clinic Give staff feedback on the findings of the review Train staff on gaps identified in the register 	<p>Regional Referral Hospital, Buwenge GH, Lukolo HC III, Mpumudde HC IV and Budima HC III.</p> <p>As a result, records were more complete than before implementation of the change idea except at Buwenge GH and Budima HC III where Hb testing was not being conducted. This change idea also improved completeness of other parameters within the registers.</p>

III. RECOMMENDATIONS

To summarize and add to the change ideas listed above to improve screening/detection, diagnosis, and management of anemia in pregnancy, it is recommended that facilities aiming to improve provision of a complete ANC package address the following areas:

- Improve documentation
- Strengthen team work
- Analyze care processes and prioritizing areas for improvement
- Communicate with patients
- Set up demonstration gardens at the health facilities to educate pregnant women on how to grow iron rich foods
- Equip all health facilities with functional hemoglobin meters
- Conduct follow-up of measurement of hemoglobin levels for mothers diagnosed with anemia at the next ANC visit to check for responsiveness to treatment
- Strengthen referral system for women diagnosed with severe anemia in pregnancy

In addition, given the necessity of ensuring the availability of essential supplies and equipment for high quality, comprehensive antenatal care and the significant gaps that teams found in this area we recommend that new teams start by addressing factors that frequently lead to stock-outs.

IV. REFERENCES

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