Conceptual Frameworks for Anemia
Washington, DC | October 18, 2013

Conceptual Frameworks were developed during the Multisectoral Anemia Partners Meeting hosted by the USAID Anemia Task Force held in October 2013.

DIAGRAMS
- Causes and Consequences of Maternal and Child Anemia
- Programmatic Pathway for Maternal Anemia Prevention and Control
- Programmatic Pathways for Child Anemia Prevention and Control
Maternal and Child Anemia

Causes and Consequences of Maternal and Child Anemia

**Consequences**
- Increased maternal and perinatal mortality
- Increased early neonatal and child mortality
- Increased risk of poor pregnancy outcomes: pre-term births, LBW and PPH
- Impaired motor and cognitive development
- Reduced work productivity and economic development

**Underlying Causes**
- Inadequate maternal & child care practices
- Inadequate use of curative & preventive health services
- High number and inadequate spacing of births
- Inadequate care practices and water, hygiene and sanitation
- Socio-cultural and economic conditions and policies

**Direct Causes**
- Iron deficiency
- Other vitamin deficiencies
- Malaria & helminthes
- HIV & Tuberculosis
- Common infections, & other inflammatory conditions
- Genetic disorders

**Causes and Consequences of Maternal and Child Anemia**

Source: Adapted from UNICEF 1990 and Ruel 2008.

LBW = Low birth weight, PPH = Postpartum Hemorrhage
Discuss & decide together how to ensure women’s access to IRF within the household
• Use agriculture income to buy IRF
• Grow & raise IRF (livestock, fish, green leafy vegetables)
• Process, preserve & store IRF to prolong availability

Ensure availability/provision:
• Iron-Folic Acid (IFA) tablets
• Deworming medicine
• Intermittent preventive treatment of malaria in pregnancy (IPTp)
• Long-lasting, insecticide treated bed nets
• Diet assessment and advice

Programmatic Pathway for Maternal Anemia Prevention and Control

IRON STATUS

Iron intake | Infection | Iron Stores
---|---|---
Iron-rich foods (IRF) and absorption enhancers
• Animal-source foods, especially meat
• Fruits (vitamin C, acidic foods)
• IFA supplements/fortification

Iron absorption inhibitors
• Tea
• High-fiber foods (e.g., maize meal)

Preconception and pregnancy

Low adolescent and pre-pregnancy iron stores

RBC production with expanding blood volume

Household Actions

• Discuss & decide together how to ensure women’s access to IRF within the household
• Use agriculture income to buy IRF
• Grow & raise IRF (livestock, fish, green leafy vegetables)
• Process, preserve & store IRF to prolong availability

Nutrition and Dietary Practices

Boots and gloves, PeaStidies

Antihelminths

LLITN • IPTp

Family Planning

Postnatal Care

Preconception IFA supplements/fortification

Pregnancy IFA supplements (90+ days)

Focus on availability of and services to:
• Support food crops, female farmers, value chains under women’s control, gender-responsible tech
• Extend improved IRF varieties and breeds, and harvest/postharvest technology to minimize crop/nutrient loss
• Create women’s income opportunities within all value chains

Strengthened Policy Environment, Enhanced Agriculture & Health Services, Positive Gender Roles

<< Help women to eat more iron-rich and fortified foods and iron absorption enhancers and IFA supplements, and to avoid iron absorption inhibitors >>

<< Promote IRF consumption (incl. fortified staples), adherence to IFA supplements, bed net use, and ANC attendance >>
### Programmatic Pathways for Child Anemia Prevention and Control

<table>
<thead>
<tr>
<th>Iron intake</th>
<th>Infection</th>
<th>Iron stores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron-rich foods (IRF) and absorption enhancers</td>
<td>• Helminths</td>
<td>Low iron stores at birth</td>
</tr>
<tr>
<td>• Animal source foods, esp. liver, red meat</td>
<td>• Malaria</td>
<td></td>
</tr>
<tr>
<td>• Other sources of iron-- leafy greens, beans</td>
<td>• Diarrheal disease and other infectious disease (incl. HIV &amp; TB)</td>
<td></td>
</tr>
<tr>
<td>• Fruits (vitamin C, acidic foods)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Iron/multiple micronutrient supplements as appropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron absorption inhibitors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Tea, high-fiber foods (e.g. maize meal)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Household Actions
- Ensure children’s access to IRF and iron absorption enhancers in the household
- Provide appropriate, diverse complementary foods beginning at 6 months
- Use agriculture income to buy IRF
- Grow and raise IRF (livestock, fish, green leafy veg)
- Process, preserve, store IRF to prolong availability

#### Agriculture Extension
- Increased production, affordability, and accessibility of iron-rich food crops and animal source foods
- Harvest and postharvest technology to minimize crop and nutrient loss
- Improved IR varieties and breeds
- Improved value chains for livestock and horticulture
- Fortification of staple foods with iron, vit A, & folic acid
- Support women’s income opportunities and gender-responsible labor-saving technology

#### Health Services and other sectors
- Iron supplementation (tablets, syrups, powders)
- Prevention and treatment of malaria and infectious diseases
- Routine deworming, vaccinations, and vitamin A supplements
- Nutritional support for PLW and adolescent girls
- Counseling for optimal infant & young child practices
- Long-lasting insecticide treated bed nets (LLINs)
- Management of severe acute malnutrition
- Promotion of food safety, hygiene, sanitation
- Delayed cord clamping for newborns

#### Nutrition & Dietary Practices
- Exclusively breastfeed children for the first 6 months
- Continue breastfeeding to age 24 months or longer
- Provide iron/multiple micronutrient (MMN) supplements (incl. powders) to children as appropriate
- Practice proper sanitation, hygiene, food safety.
- Sleep under long-lasting insecticide treated bed nets (LLINs)
- Take children to immunization days & well-child visits
- Nutrition and health support for PLW (pregnant and lactating women), infants, and young children

#### WaSH
- Delayed cord clamping
- Nutrition support for PLW

#### Deworming
- LLINs

#### Child health care
- Multisectoral coordination

#### Strengthened leadership, capacity, and policy environment
- Enhanced agriculture and health services
- Knowledge and evidence building
- Multisectoral systems and collaboration
- Positive Gender Roles