Anemia

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Your red blood cell count is shockingly low.

Lawrence of anaemia.
Outline

• Why is anemia a problem?
• How do we measure it?
• Anemia prevalence and causes
• Multisectoral interventions for anemia
• What’s new in anemia?
• What you can do – SPRING/Uganda case study
• Take Home Messages
Take Home Messages

• Anemia is a major public health problem
• Causes of anemia are multifactorial
• Causes of anemia should drive intervention
• Integrated anemia prevention and control strategies are necessary
  ➢ Engage multi-sectors/multi-stakeholders
What is anemia?

- Anemia / Anaemia – Greek word *anaimía* “want of blood”
- Red blood cells (RBC) - transport oxygen from the lungs to cells
- RBCs contain a protein called hemoglobin that carries the oxygen
- No/less oxygen = disrupts body functions
- Anemia = insufficient RBC
Consequences of anemia

- ↑ risk of disease & disability
- ↓ economic productivity, ↑ cost to society

- ↓ birth weight, ↑ preterm delivery, ↑ maternal mortality

- ↓ development of domains – physical, cognitive & socio-emotional
  - ↑ infections
  - ↑ child mortality

Anemia measurement – Hemoglobin concentration

• Children 6-59 months/ Pregnant women : <11 g/dL
• Children 5-11 years: <11.5 g/dL
• Children 12-14 years / Women of Reproductive Age (WRA): < 12 g/dL

\[(g/dL \times 10 = g/L)\]
How widespread is the problem?

• Anemia **affects approximately a quarter of the world**
• Greatest burden in young children and women

**Prevalence of anemia**
Anemia in West Africa

Data compiled using DHS STATcompiler at http://www.statcompiler.com/
Anemia in West Africa

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Deficiency Concept

High requirement (pregnancy / lactation / adolescents / children)

Intake

Losses/not available (Malaria / Parasites)

Supplementation

Micronutrient Rich Foods

↓ Intake

↑ Losses

↑ Requirement = DEFICIENCY

Slide Courtesy: Ram Shrestha, SPRING
Causes of Anemia

**Deficient intake**
- Iron, Vit. A, Zinc, Folate, Vit. B\textsubscript{12}

**Malaria:** ↑ destruction & ↓ production of RBC

**Helminths:** Internal bleeding (loss of iron)

**Genetics:**
- Thalassemias, sickle cell, Hb-E, Hb-C

**Inflammation**
- Common chronic infections
  - ↑ Hepcidin

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Context specific causes of anemia should drive interventions

**Genetic hemoglobin disorders**
- Thalassaemias
- Hemoglobin variants
- Glucose-6-phosphate dehydrogenase deficiency
- Ovalocytosis

**Nutrition**
- Dietary deficiency
- Iron deficiency
- Folic acid deficiency
- Vitamin B12 deficiency
- Vitamin A deficiency
- Protein energy malnutrition

**Infectious disease**
- Soil-transmitted helminths
- Malaria
- Schistosomiasis
- Tuberculosis
- AIDS
- Leishmaniasis
- Tropical sprue
- Malabsorption and disorders of the small intestine

Adapted from Balarajan 2011
Interventions for Anemia

Strong evidence

• Supplementation
  • Iron-folic acid (IFA) in pregnancy
  • IFA for adolescent girls (age 15-19)
  • IFA for women of reproductive age (age 15-49)
  • Vitamin A supplementation
  • Micronutrient powders (MNPs) for 6-23 mo. Child

• Fortification
  • Mass fortification - Flour (wheat and maize), salt, sugar, fats and oils, rice
Interventions for Anemia

*Strong evidence*

• Disease control
  • Malaria – intermittent preventive treatment in pregnant women (IPTp), and malaria prevention with bednets (LLIN); indoor residual spraying; prompt diagnosis and treatment with anti-malarials
  • Worm infections – deworming in pregnancy, age 1-5
  • Common infectious diseases *
Interventions for Anemia

*Indirect evidence*

- **Dietary interventions** – at household level
  - Increase the variety and quantity of micronutrient-rich foods

- **Infant & Young child feeding (IYCF)** – at household level
  - Exclusive breastfeeding (EBF)
  - Appropriate complementary feeding

Interventions for Anemia

Indirect evidence

• **Water, Sanitation & Hygiene (WASH)** interventions – community intervention
  • Safe improved water supply
  • Improved sanitation facilities
  • Behavioral interventions to promote hygiene and use of facilities
  • Prevention of environmental enteric dysfunction (EED)

• **Family Planning** – health facility based
  • Birth spacing and counseling

• **Social and behavior change** communication (SBCC)
FOR WHOM - Interventions over the LIFE-COURSE

• **Pregnant woman** - IFA, IPTp, LLIN, malaria diagnosis/trt, deworming*, fortification, counseling

• **Woman of Reproductive age** - Birth spacing, delayed cord clamping, LLIN, EBF, fortification

• **Child (under 2 and under 5)** - BF, fortified complementary food, MNPs, supplements, deworming*

• **Adolescent woman** - IFA, family planning, birth spacing, fortification

* Albendazole, Mebendazole, Praziquantel
WHERE - PLATFORMS for Delivering Interventions

Antenatal care (ANC) at health facility: Iron-folic acid, MNPs, deworming, IPTp, family planning, malaria and infectious disease treatment

Market Based: Fortification, MNPs

School based: Hygiene, education

Community based: WASH, malaria and worm infection prevention

Household based: EBF, IYCF, LLIN, indoor residual spraying, hygiene, dietary interventions
Multiple Sectors Play a Role in Anemia Reduction

**Agriculture**
- Dietary diversity
- Iron-rich crops
- Cash crops
- Small livestock

**Health**
- Supplementation
- Deworming
- Breastfeeding
- Family planning
- Malaria

**Water and Sanitation**
- Latrines/handwashing
- Clean water
- Livestock management
- Prevent infections

**Education**
- Health and hygiene education
- Delivery platform
- Female literacy

SPRING: MULTISECTORAL ANEMIA FRAMEWORK
What’s New in Anemia

• Adherence to IFA supplementation regime
• Measurement of hemoglobin – revise cutoffs?
• Role of hepcidin in selection of interventions
• Environmental enteric dysfunction (EED) and WASH
• Modalities for Integrating anemia prevention and control strategies
SPRING – Multisectoral Anemia programming

• **Country-led** processes to create multisectoral anemia platforms

• Incorporate **key stakeholders** to support coordinated and integrated national anemia interventions

• **Document** the process to identify factors that result in successful implementation and sustainability
Multisectoral anemia platform strengthening in Uganda

- GoU initiated a relationship with SPRING to build a national anemia platform
- Established Anemia Working Group
- Held 2 stakeholder meetings
- Drafted anemia action plan
- Developing anemia strategy
- Track progress
- Process documentation

Uganda National Anemia Stakeholder Meeting held 2015
Key Lessons Learned from Uganda

• Anemia platform to set the agenda
• High level endorsement
• Dedicated staff
• Increase district involvement
• Map priorities prior to action plan
• Need defined process for funding anemia activities
• Monitoring and accountability

“People now understand...how the data that is available can be used to understand the issues or the gaps”

“We realized that anemia involves teamwork. It is not an issue of one area.”

“We need move away from these conference rooms to the field where the people are”
Take Home Messages

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Thank you!

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