Anemia

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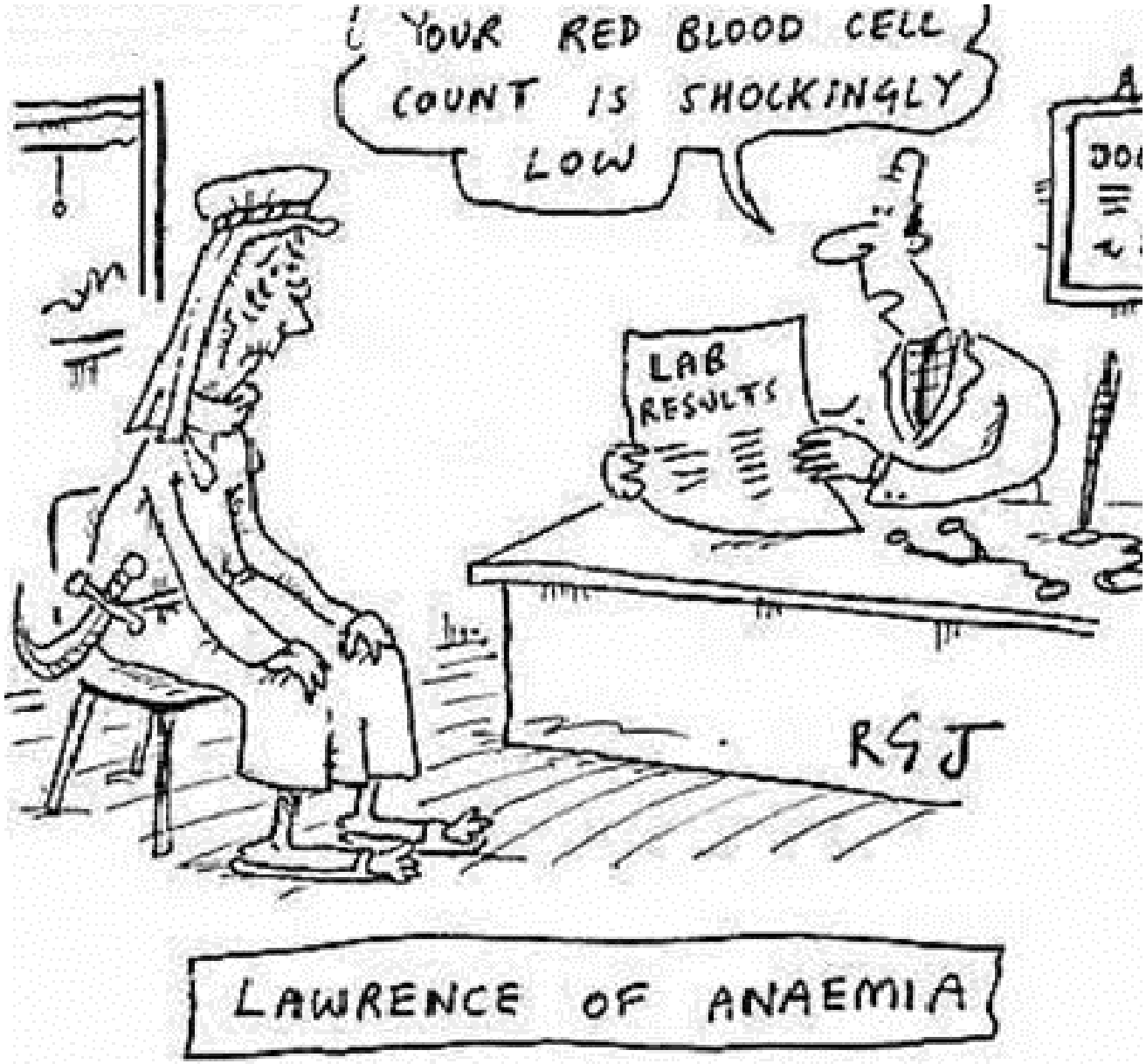

YOUR RED BLOOD CELL COUNT IS SHOCKINGLY LOW
LAB RESULTS
RGJ
LAWRENCE OF ANAEMIA

Outline

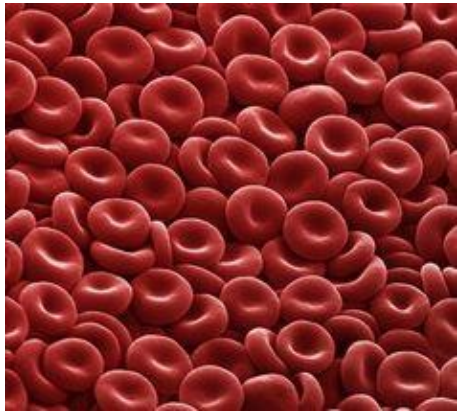
- Why is anemia a problem?
- How do we measure it?
- Anemia prevalence and causes
- Multisectoral interventions for anemia
- What's new in anemia?
- What you can do – SPRING/Uganda case study
- Take Home Messages

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

- ↓ Quality of life for adolescent
- ↓ academic performance

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

WHO 2001 Black 2013 Christian 2009
Kassebaum, 2014 Stoltzfus 2003

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

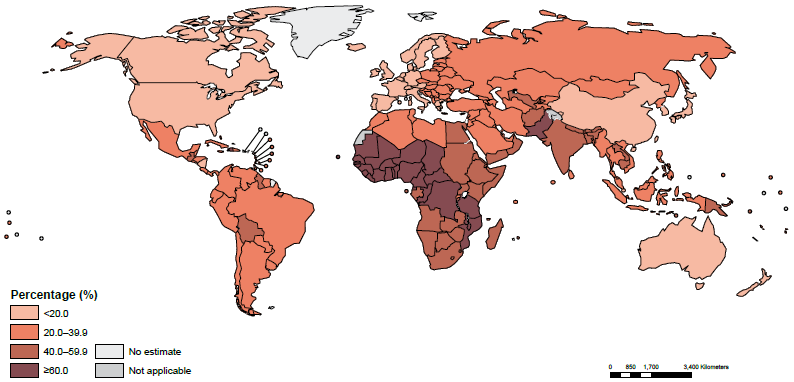
*(g/dL * 10 = g/L)*

WHO 2011

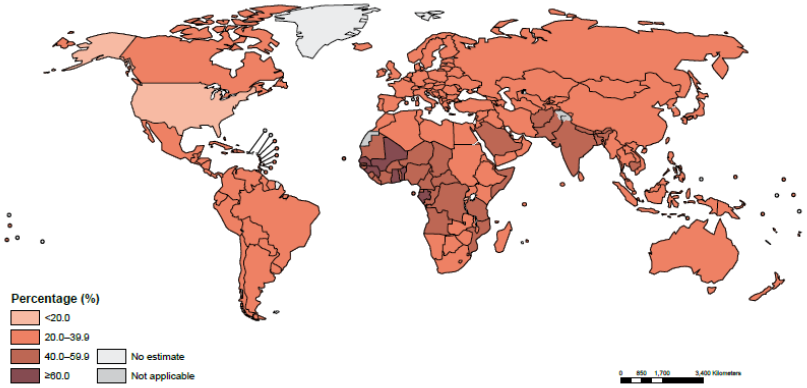
How widespread is the problem?

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

Children 6-59 months



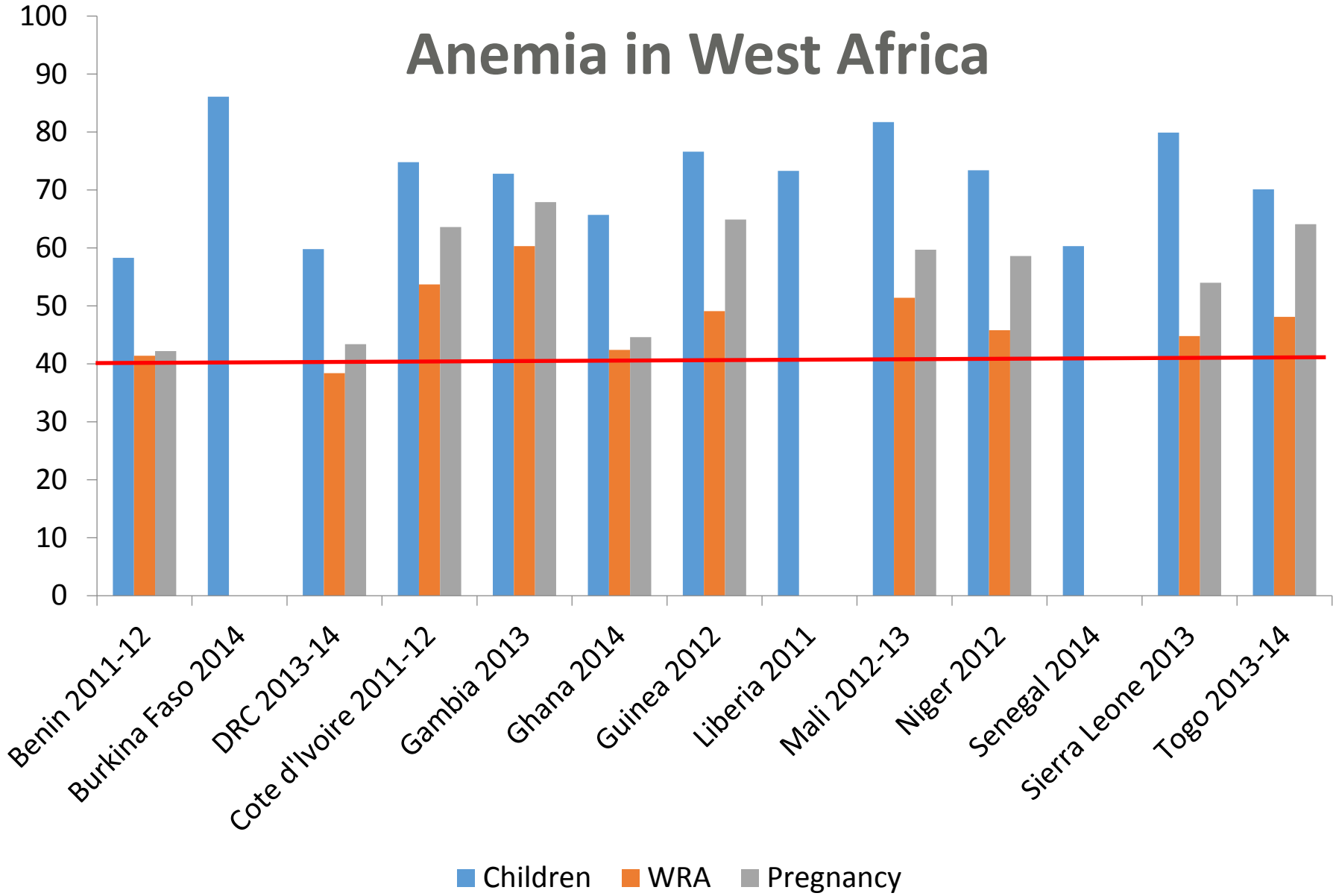
Pregnant women



Prevalence of anemia

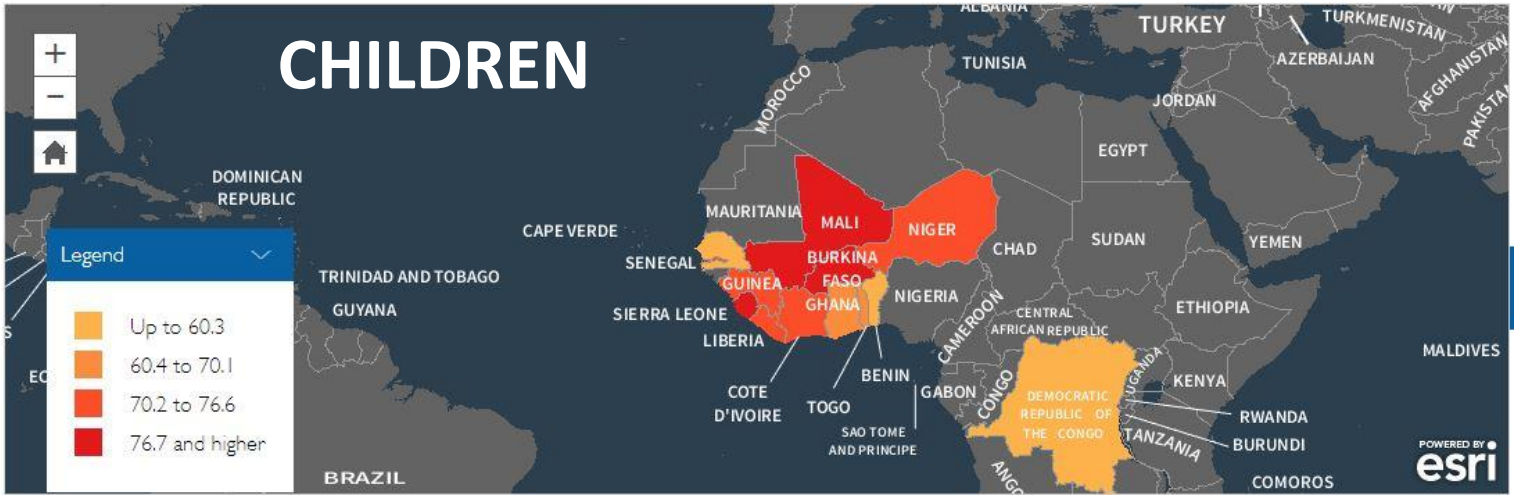
WHO 2011

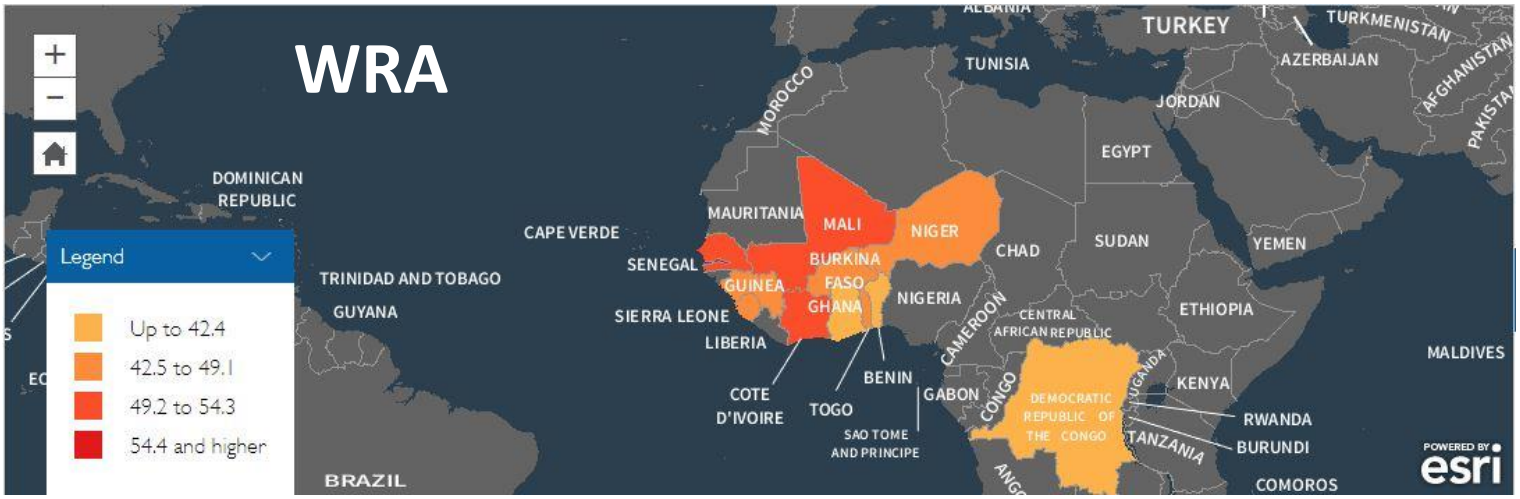
Anemia in West Africa



Data compiled using DHS STATcompiler at http://www.statcompiler.com/

Anemia in West Africa





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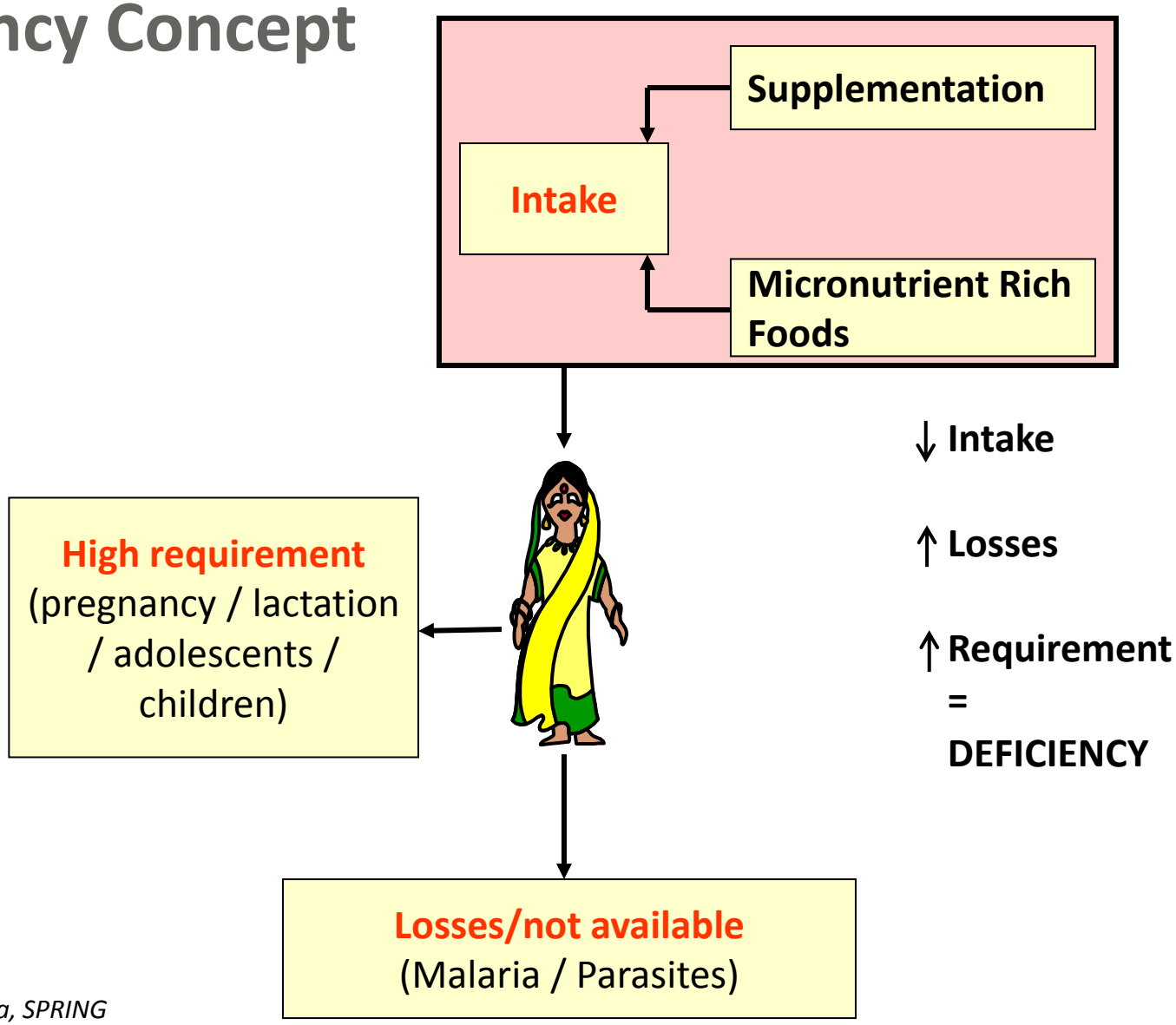
Deficiency Concept

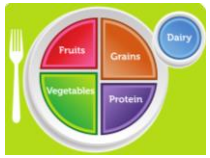


Slide Courtesy: Ram Shrestha, SPRING

Causes of Anemia

Deficient intake

Iron, Vit. A, Zinc, Folate, Vit. B_{12}



Malaria: ↑ destruction & ↓ production of RBC

Helminths: Internal bleeding (loss of iron)

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

↑ destruction &

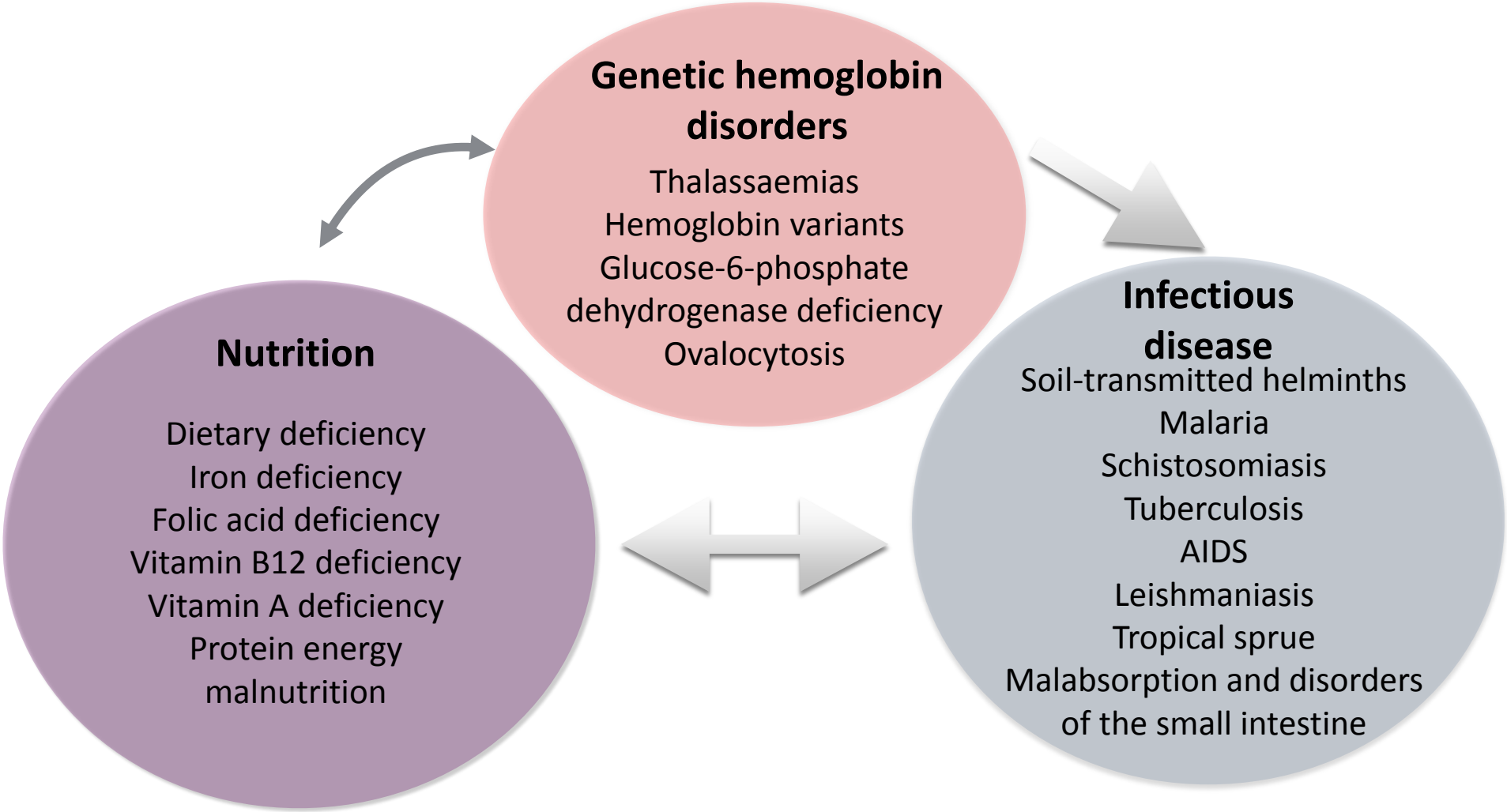
↓ production of RBC

Inflammation

- Common chronic infections
- ↑ Hepcidin

Cook, et al. 1994; Scott et al. 2007; Selhub et al. 2009; Ganz et al. 2011; George, et al. 2012; Pasricha et al. 2010; Suchdev et al. 2012

Context specific causes of anemia should drive interventions



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

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

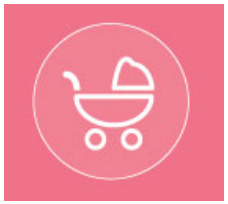
©HarvestPlus: A woman harvests high iron beans in Northern Province, Rwanda. Photo: HarvestPlus/Angoor Studios - See more at: http://bit.ly/1JVO3W0

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

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

LANDSCAPE ANALYSIS → STAKEHOLDER MEETING → ANEMIA ACTION PLAN → TRACK PROGRESS

- 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

- 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

Thank you!

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