

Swiss TPH



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What are the treatable causes of febrile illness that we are presently failing to recognize in LMICs?

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Each year, 3.3 million children still die from an acute febrile episode.

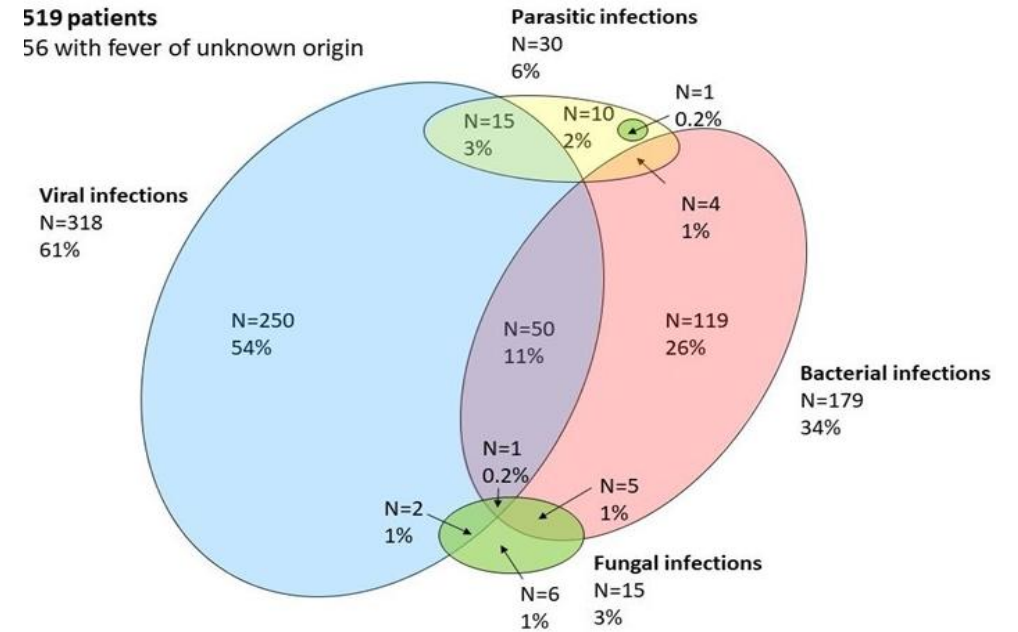
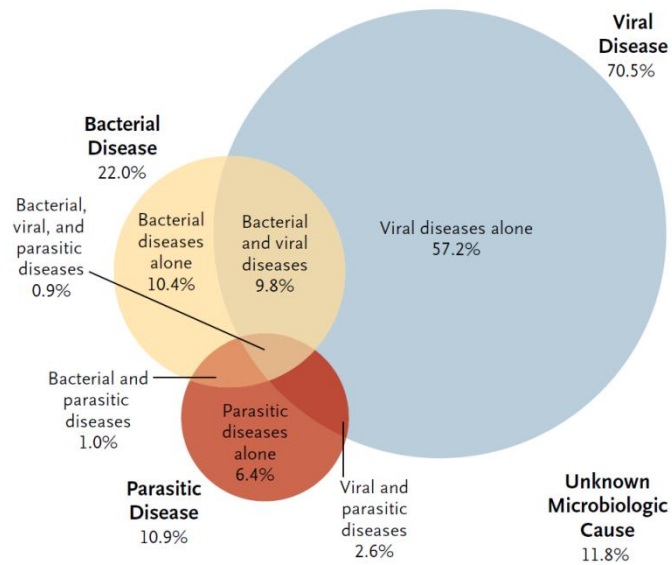


In LMICs, antibiotic consumption increased from 8 to 18 billions DDDs between 2000 and 2015.

Children in Tanzania

71% Viral **61%**
22% Bacterial **34%**

Adults in Tanzania



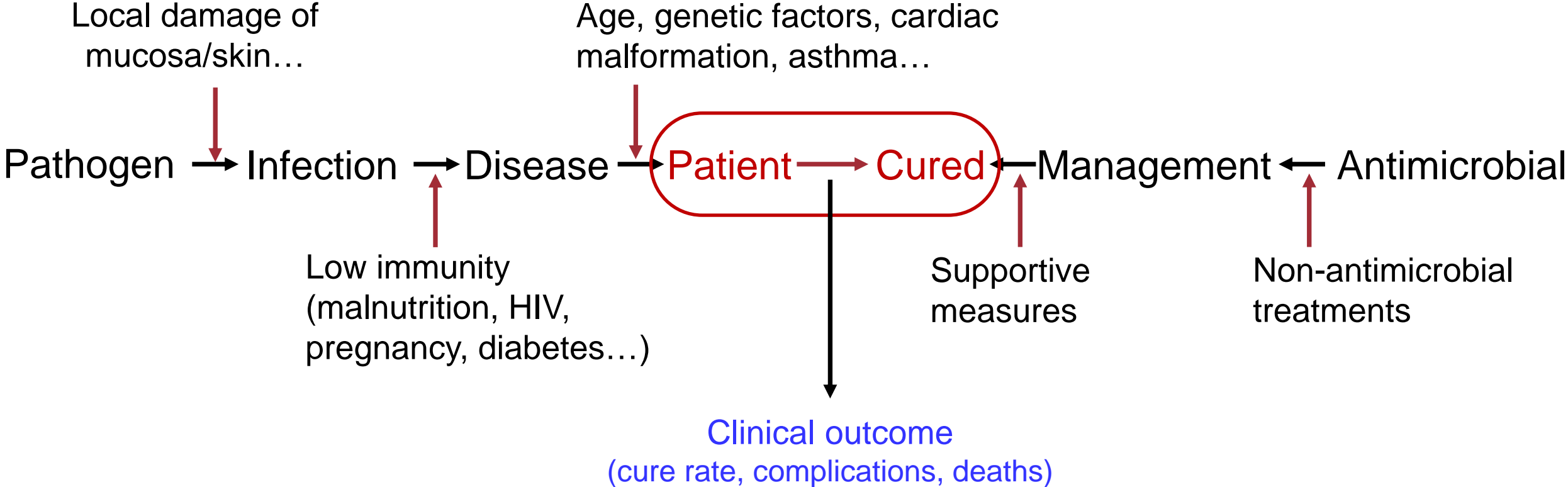


The wrong **class** of antibiotics is given at a wrong **dosage** for a wrong **duration**.

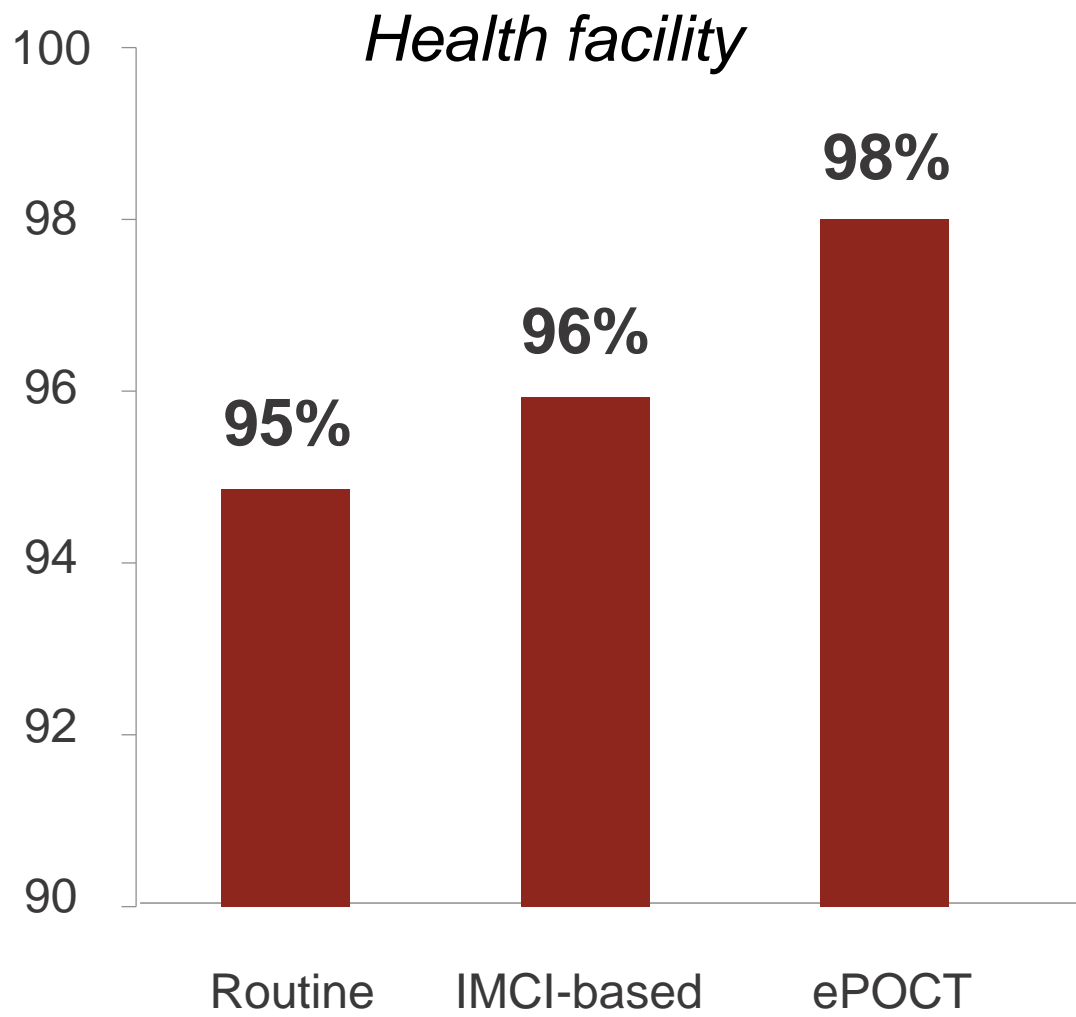
- Amoxicilline →~~X~~→ abdominal infection
- Co-trimoxazole →~~X~~→ pneumonia

- Amoxicilline given at regular (40 mg/kg) instead of high (90 mg/kg dosage to a patient with pneumonia

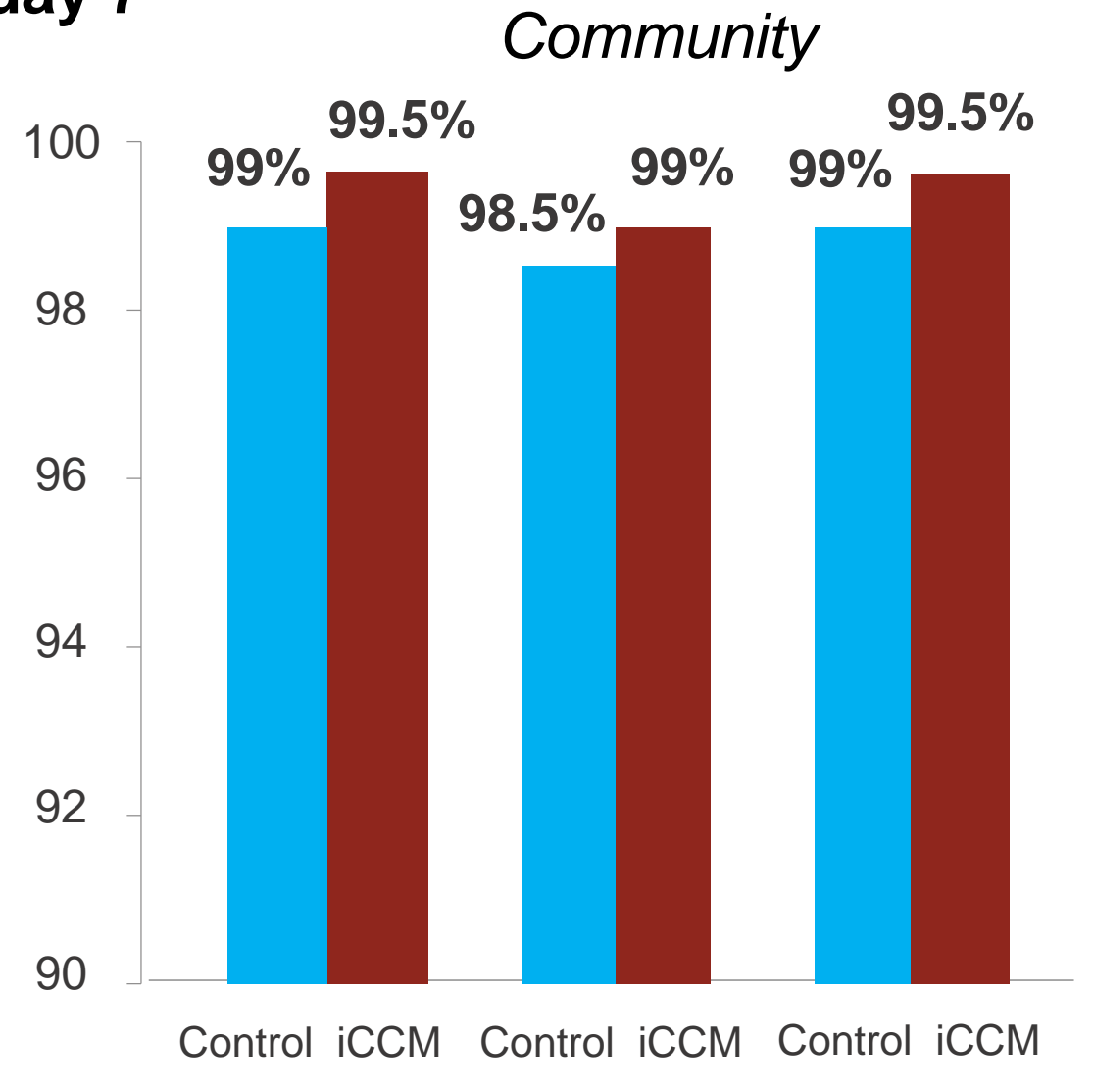
- Patient stops prematurely because she/he feels better and to save medicines for the next time



Cure rate at day 7



Keitel *Plos Med* 2017

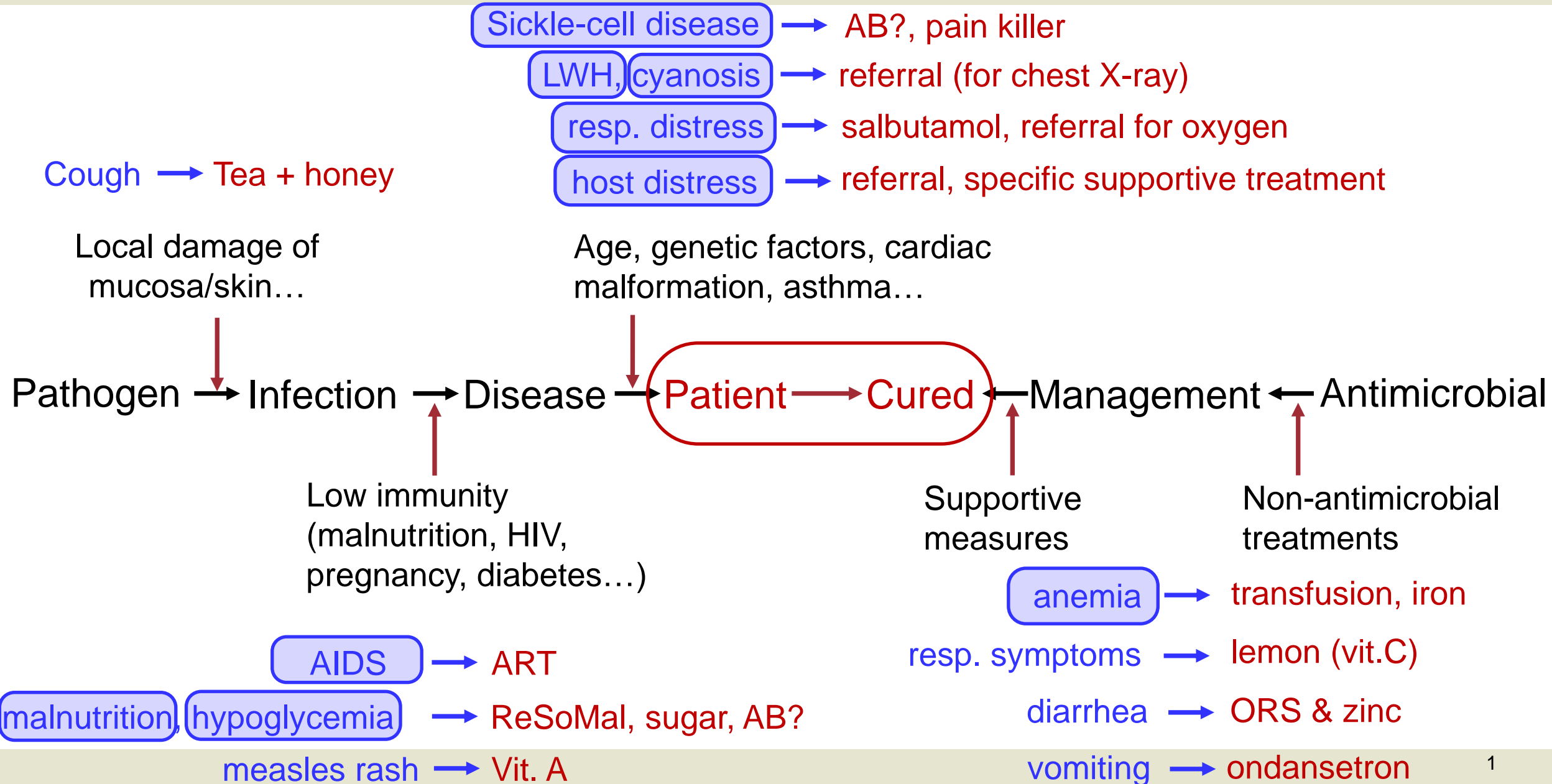


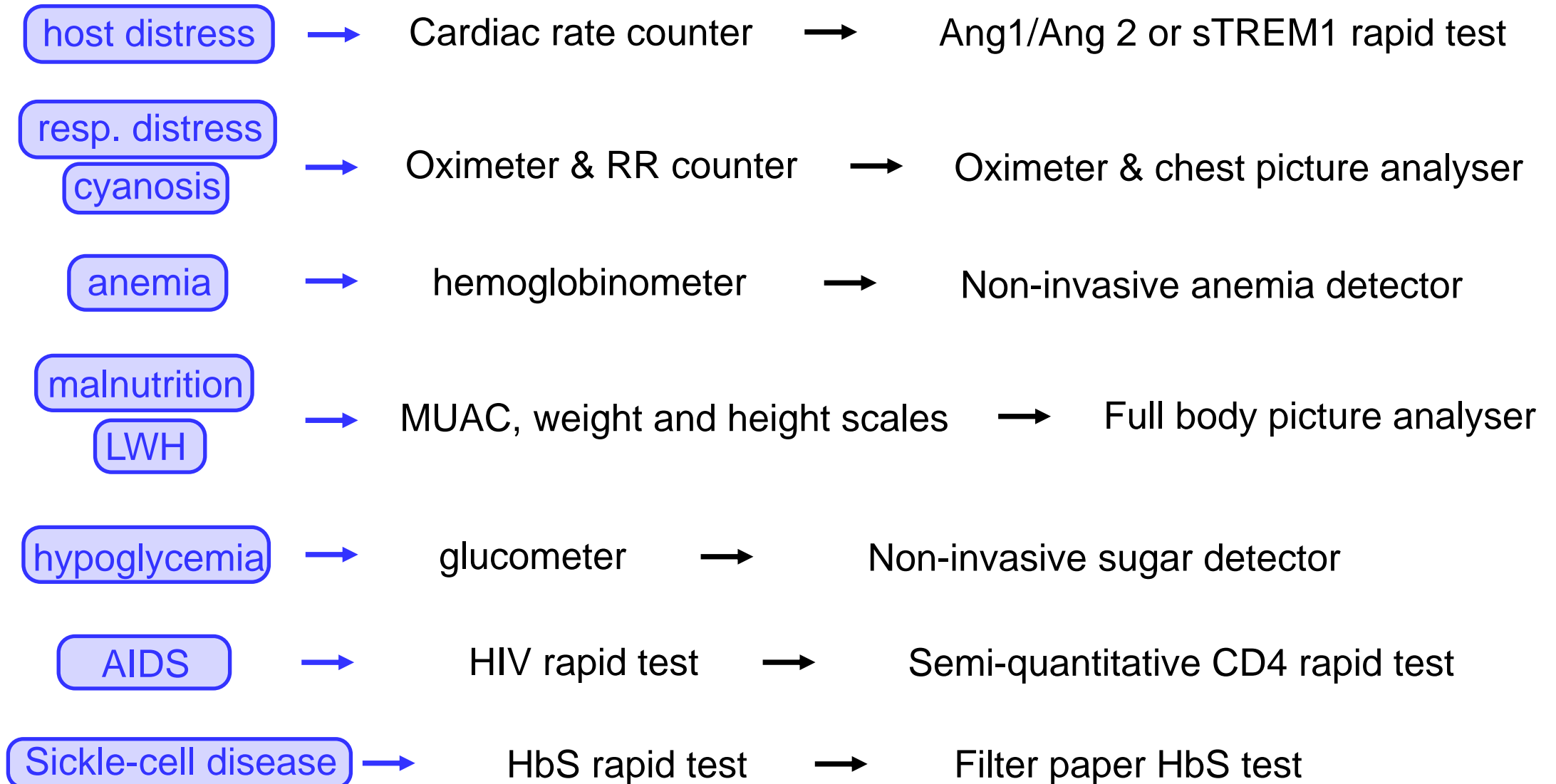
Burkina

Ghana

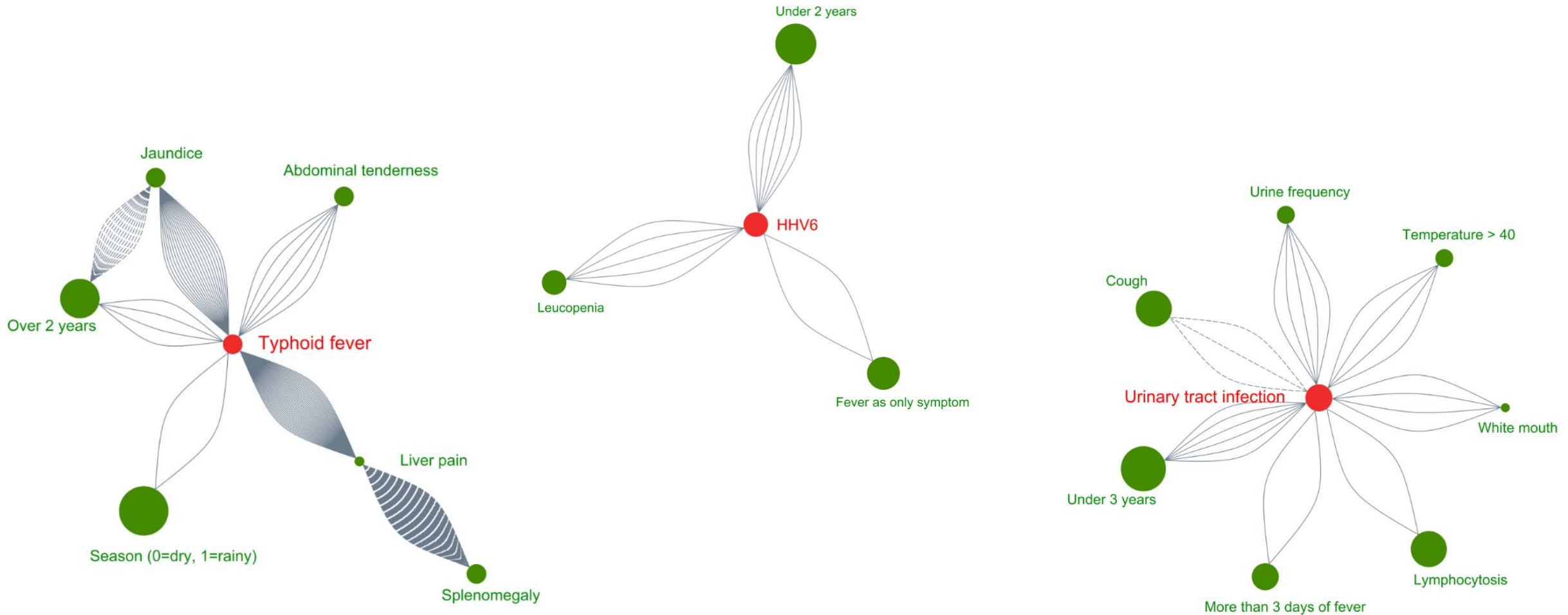
Uganda

Mukanga, *Am J Trop Med Hyg* 2012

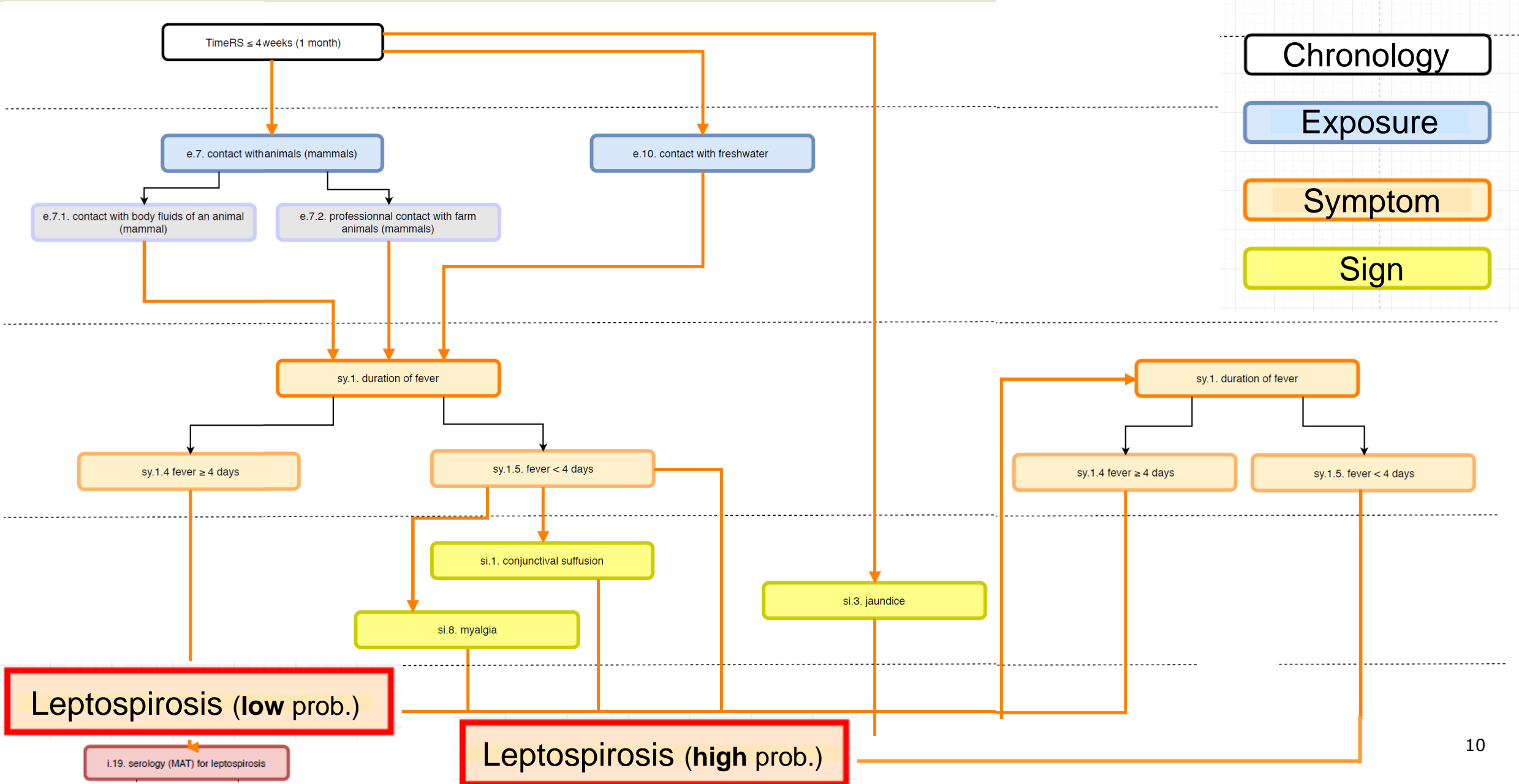




Clinical predictors with their strength of association

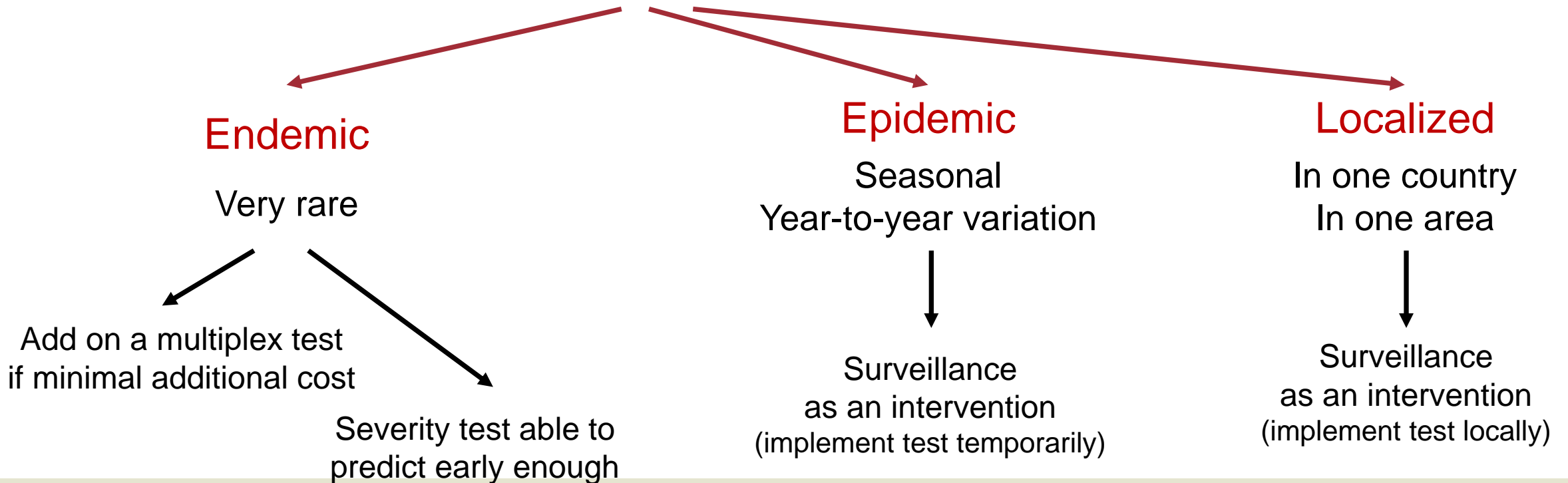


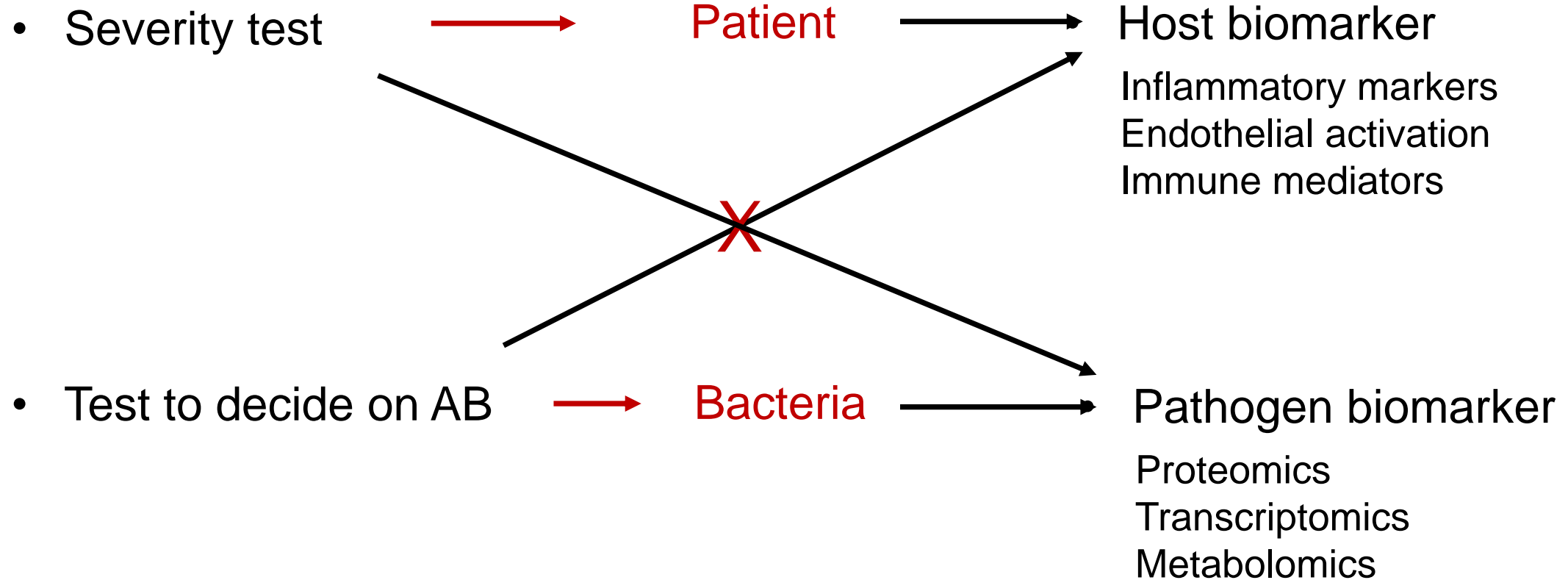
Do we always need a lab test to diagnose a disease?



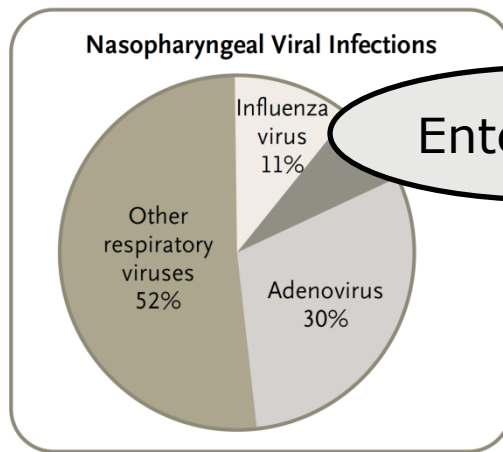
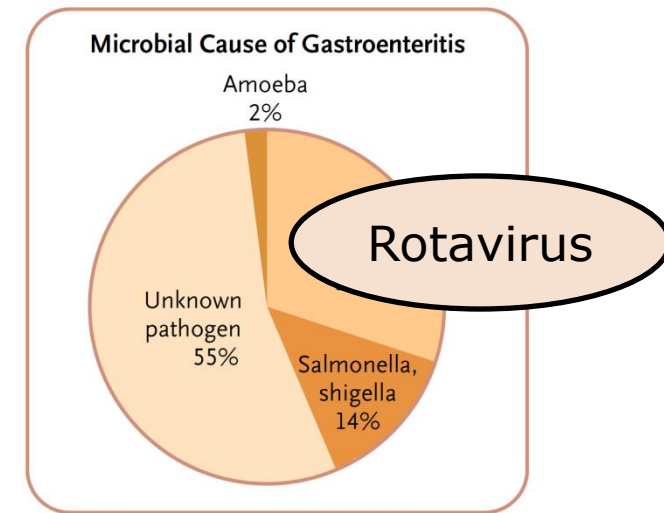
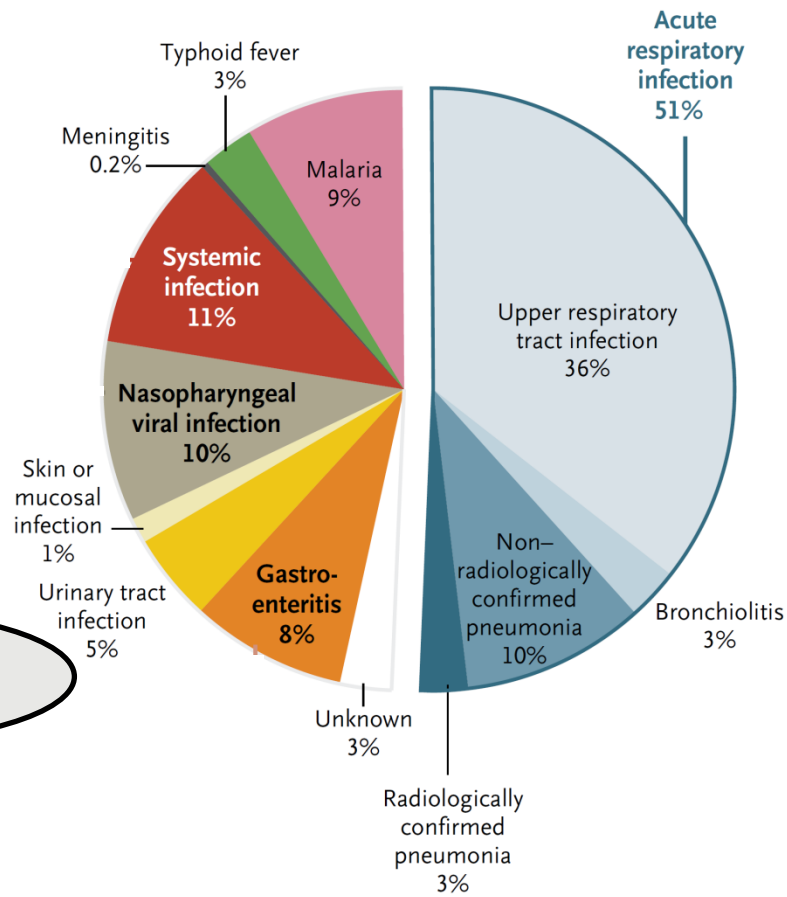
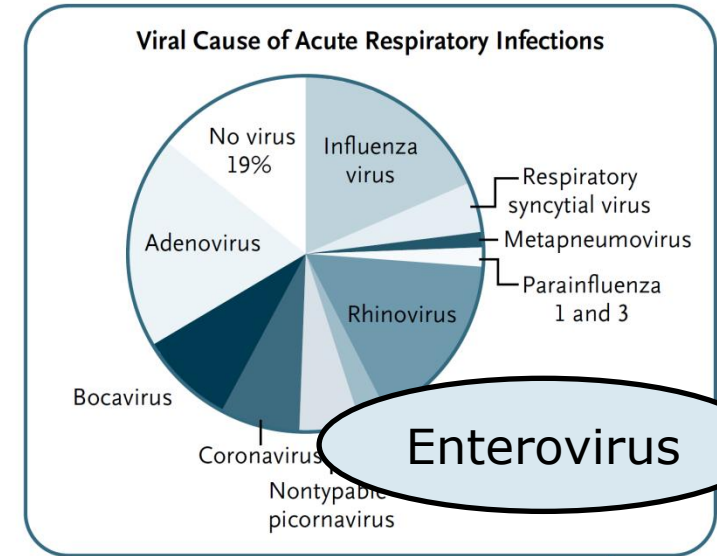
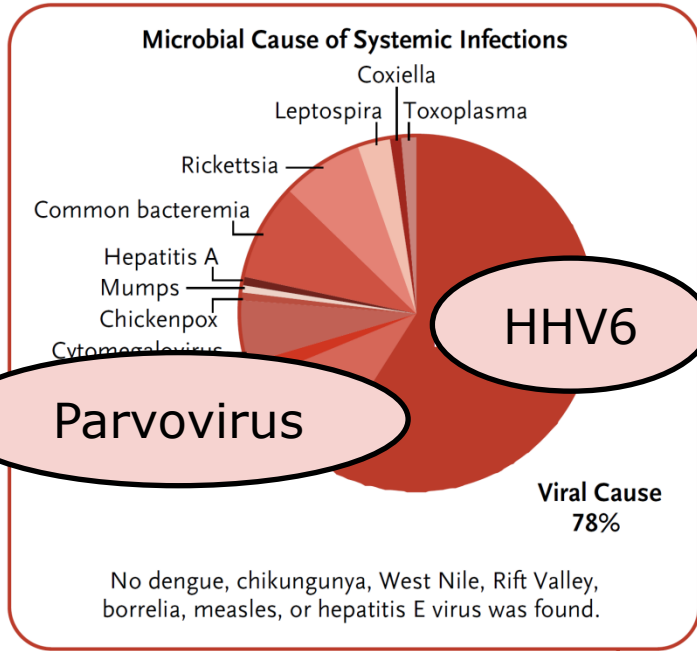


- Treatable with an antimicrobial
- Requiring a specific management
- Frequent ~~enough~~
- Potentially severe





Comparison with conventional tests





HHV6 = Fever of 3 days = Roseola = Exanthema subitum = 6th disease



- Treatable with an antimicrobial ✗
- Requiring a specific management ✗
- Frequent enough ✓
- Potentially severe ✗

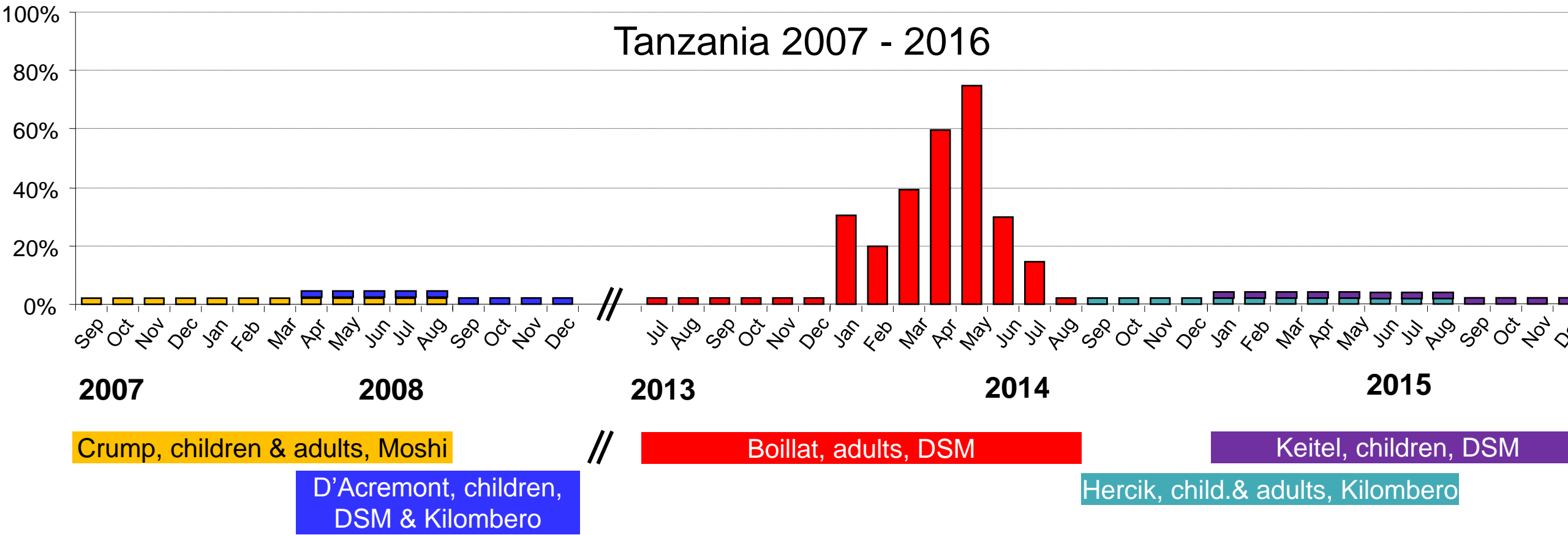
➤ Test useful only to exclude a bacterial infection...

Parvovirus B19 = Slapped cheek disease = Erythema infectiosum = 5th disease



- Treatable with an antimicrobial ✗
- Requiring a specific management ✗
- Frequent enough ✓✓
- Potentially severe ✓✓

➤ Better test for anemia...

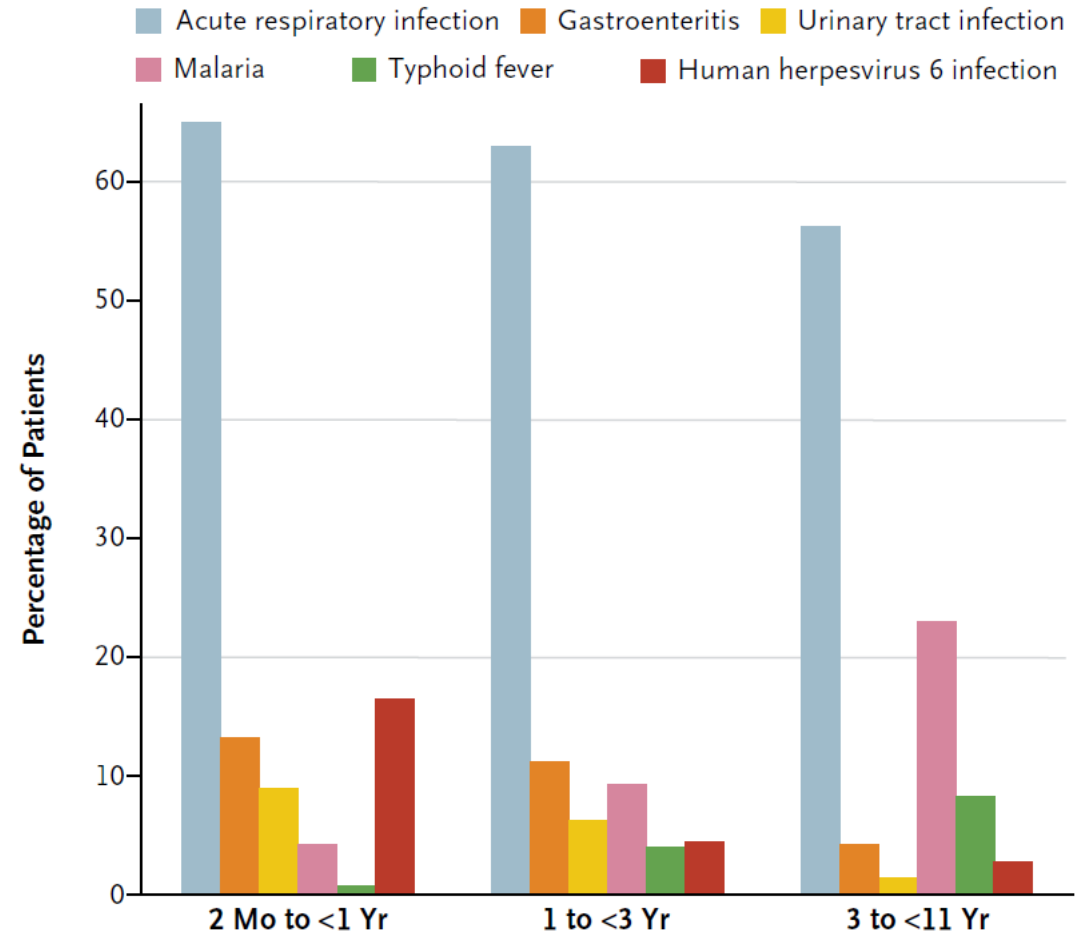


- Treatable with an antimicrobial ✗
- Requiring a specific management ✓
- Frequent enough ✓✓
- Potentially severe ✓✓

➤ Targeted (undifferentiated fevers with myalgia?) surveillance in sentinel sites

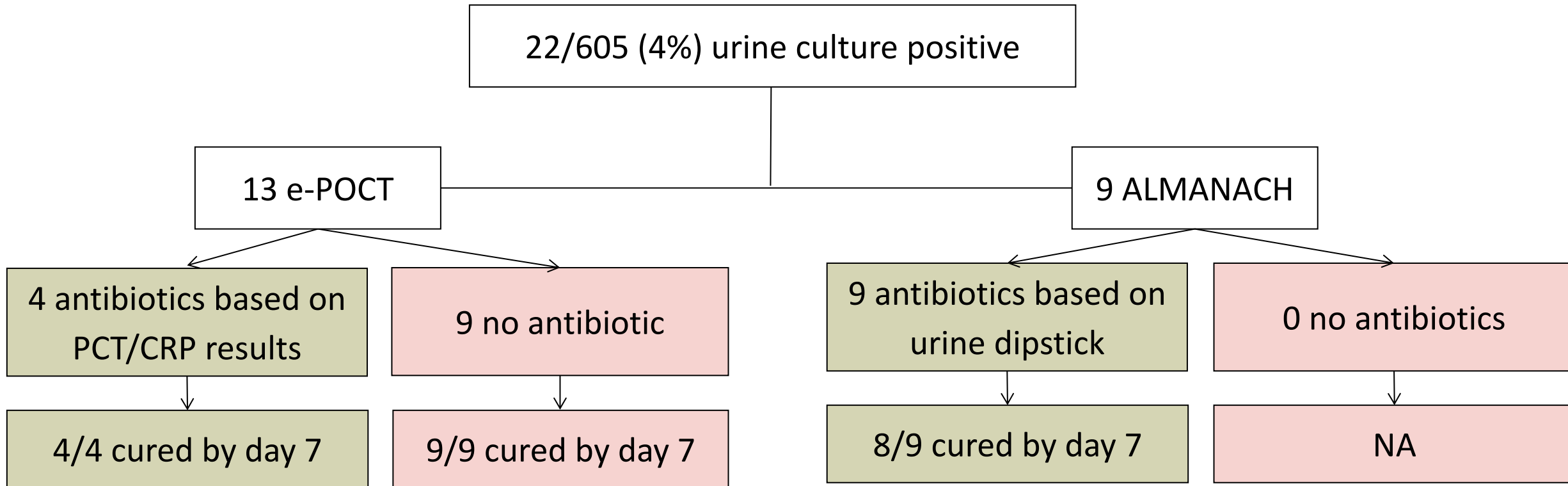
- Treatable with an antimicrobial ✓
- Requiring a specific management ✗
- Frequent enough ✓
- Potentially severe ✗

➤ Urine dipstick in adults with urinary complaints & pregnant women



➤ Urine dipstick in children <2 years with unspecific fever

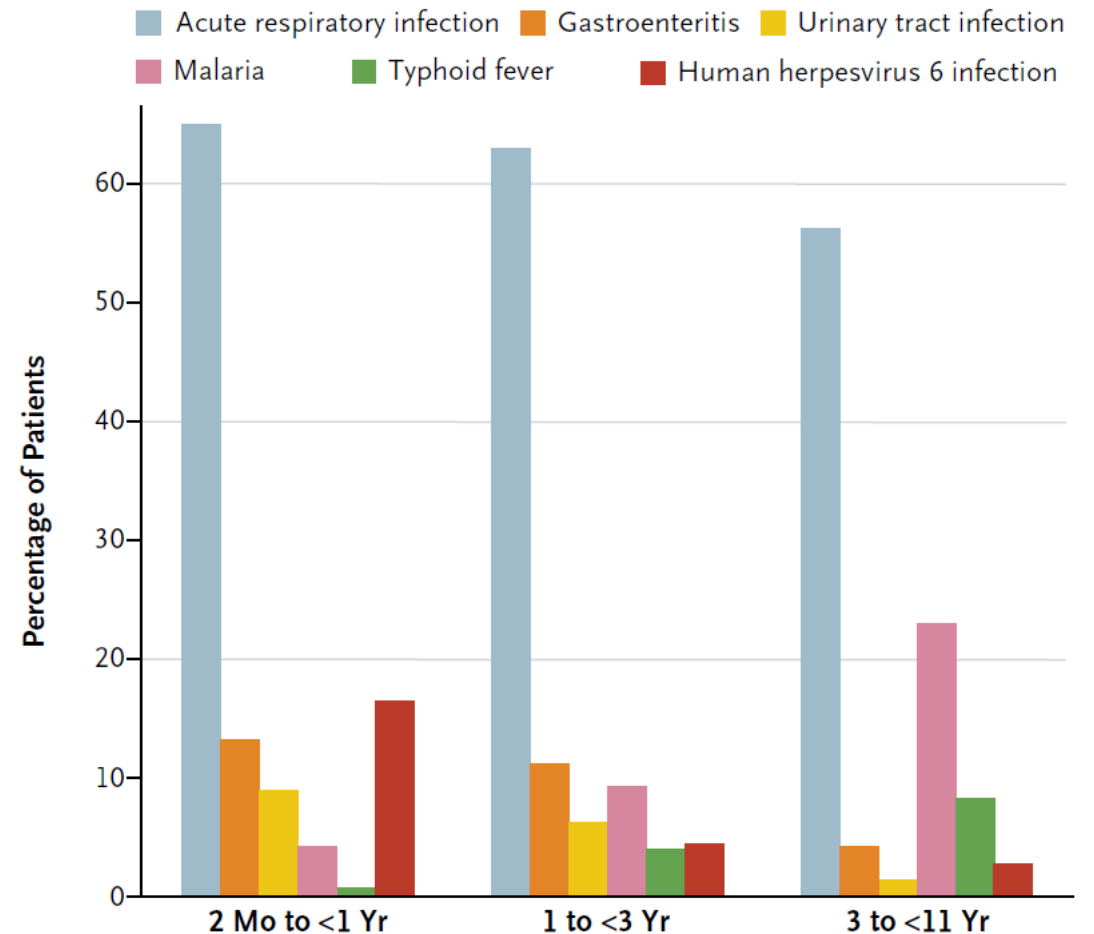
But is urine dipstick the right test to detect children at risk?



- Treatable with an antimicrobial ✓
- Requiring a specific management ✗
- Frequent enough ✓
- Potentially severe ✓

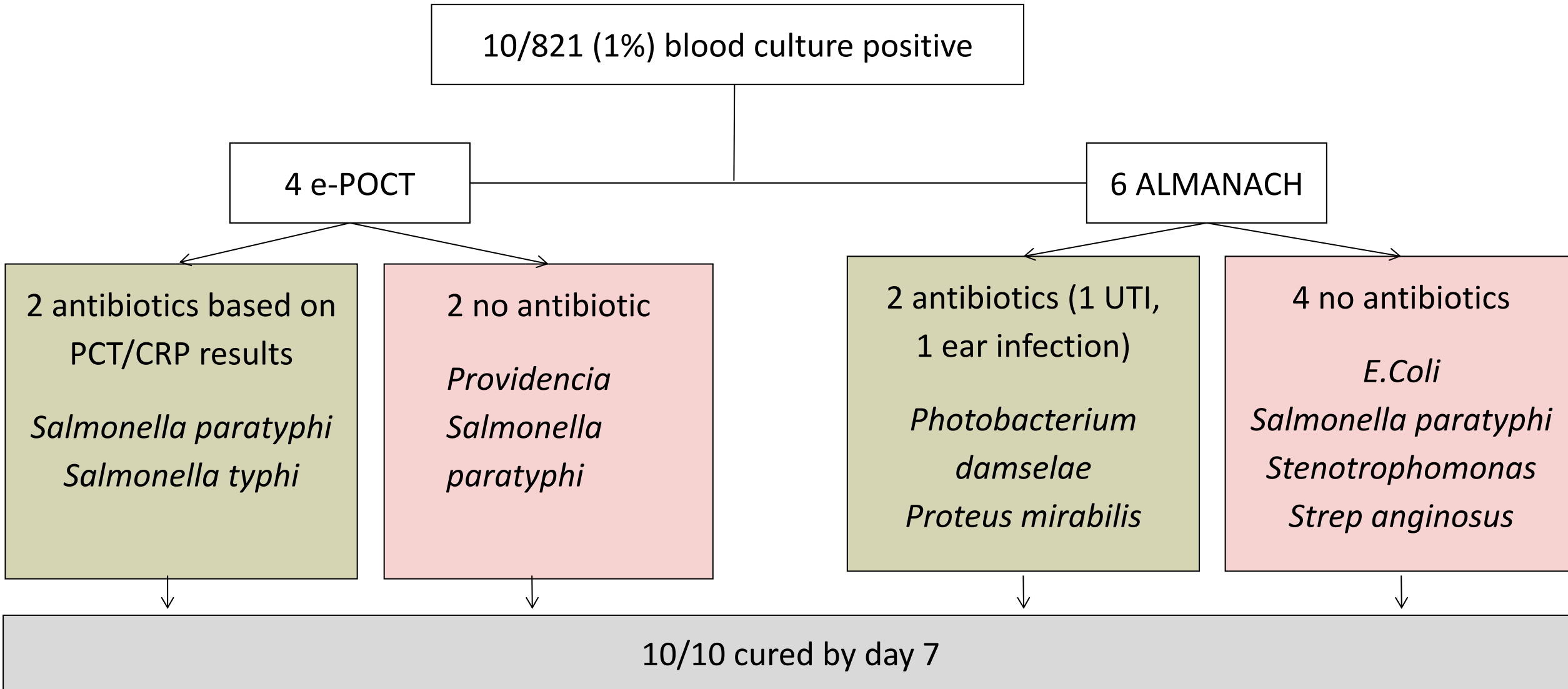
➤ Blood culture in admitted adults?
(PCR is not sensitive enough)

Also because the next most frequent infection
in adults is common bacteremia



➤ Rapid test in children >2 years with abdominal tenderness?

What about bacteremia in children at primary care level?





1. Syphilis in adults

- Treatable with an antimicrobial ✓
- Requiring a specific management ✗
- Frequent enough ✓
- Potentially severe ✓

2. Acute HIV in adults

- Treatable with an antimicrobial ✓
- Requiring a specific management ✓
- Frequent enough ✓
- Potentially severe ✓

➤ Rapid test for HIV & syphilis in all febrile adults

3. CMV & EBV in children & adults

- Treatable with an antimicrobial ✗
- Requiring a specific management ✗
- Frequent enough ✓
- Potentially severe ✗

4. Rickettsia in children & adults

- Treatable with an antimicrobial ✓
- Requiring a specific management ✗
- Frequent enough ✓
- Potentially severe ✓

➤ ??? (combination of exposure, symptoms & signs
(PCR? but not sensitive enough))



Leptospirosis

- Treatable with an antimicrobial ✓
- Requiring a specific management ✗
- Frequent enough ✗
- Potentially severe ✓

➤ Rapid test in patients with specific exposure, symptoms or signs?

Chikungunya

- Treatable with an antimicrobial ✗
- Requiring a specific management ✓
- Frequent enough ✗
- Potentially severe ✗

➤ Targeted (undifferentiated fevers with arthralgia?) surveillance in sentinel sites

Disseminated tuberculosis

- Treatable with an antimicrobial ✓
- Requiring a specific management ✓
- Frequent enough ✗
- Potentially severe ✓

➤ HIV Rapid test, POCT CD4 → LAM

Zika (only pregnant women)

- Treatable with an antimicrobial ✗
- Requiring a specific management ✗
- Frequent enough ✗
- Potentially severe ✓ in offspring

➤ Pregnancy test → Rapid test



“Fever” tests

- Severity test
- Test to decide on AB

Co-factors

- Anemia
- Respiratory distress
- Hypoglycemia

Co-morbidities

- Acute & chronic malnutrition, failure to thrive
- HIV
- Sickle-cell

Diseases requiring immediate testing

- Malaria & typhoid
- UTI in sub-group of patients
- Dengue in Asia
- HIV & syphilis in adults
- Common bacteriemia (admitted)
- Rickettsia in sub-group of adults
- Leptospirosis in sub-group of adults
- Zika in pregnant women

Diseases requiring surveillance

- Dengue in Africa
- Chikungunya
- Ebola, Marburg
- Yellow fever

Diseases ?

- Lassa, Crimean-Congo
- Plague

