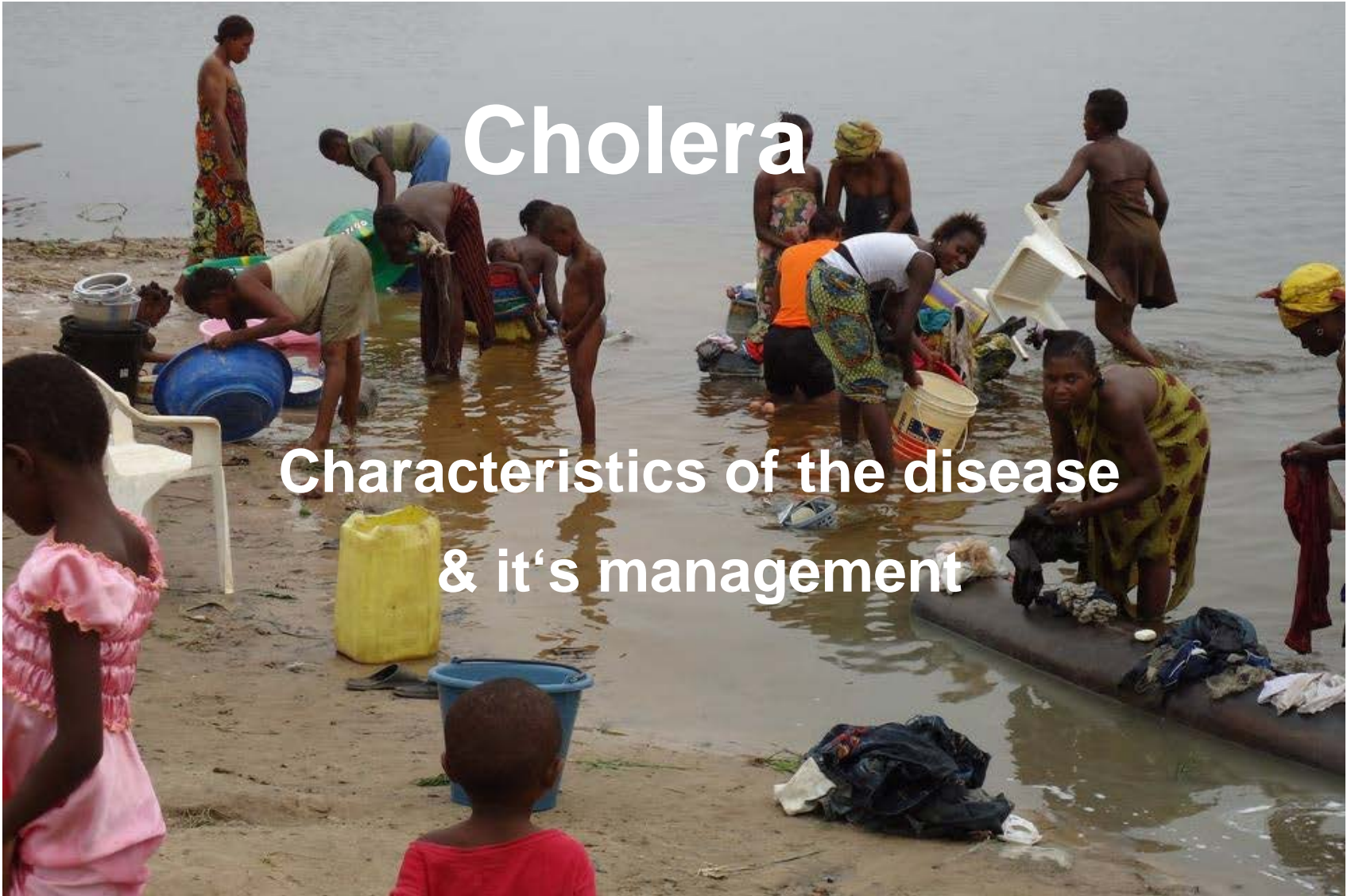


Cholera

Characteristics of the disease
& it's management

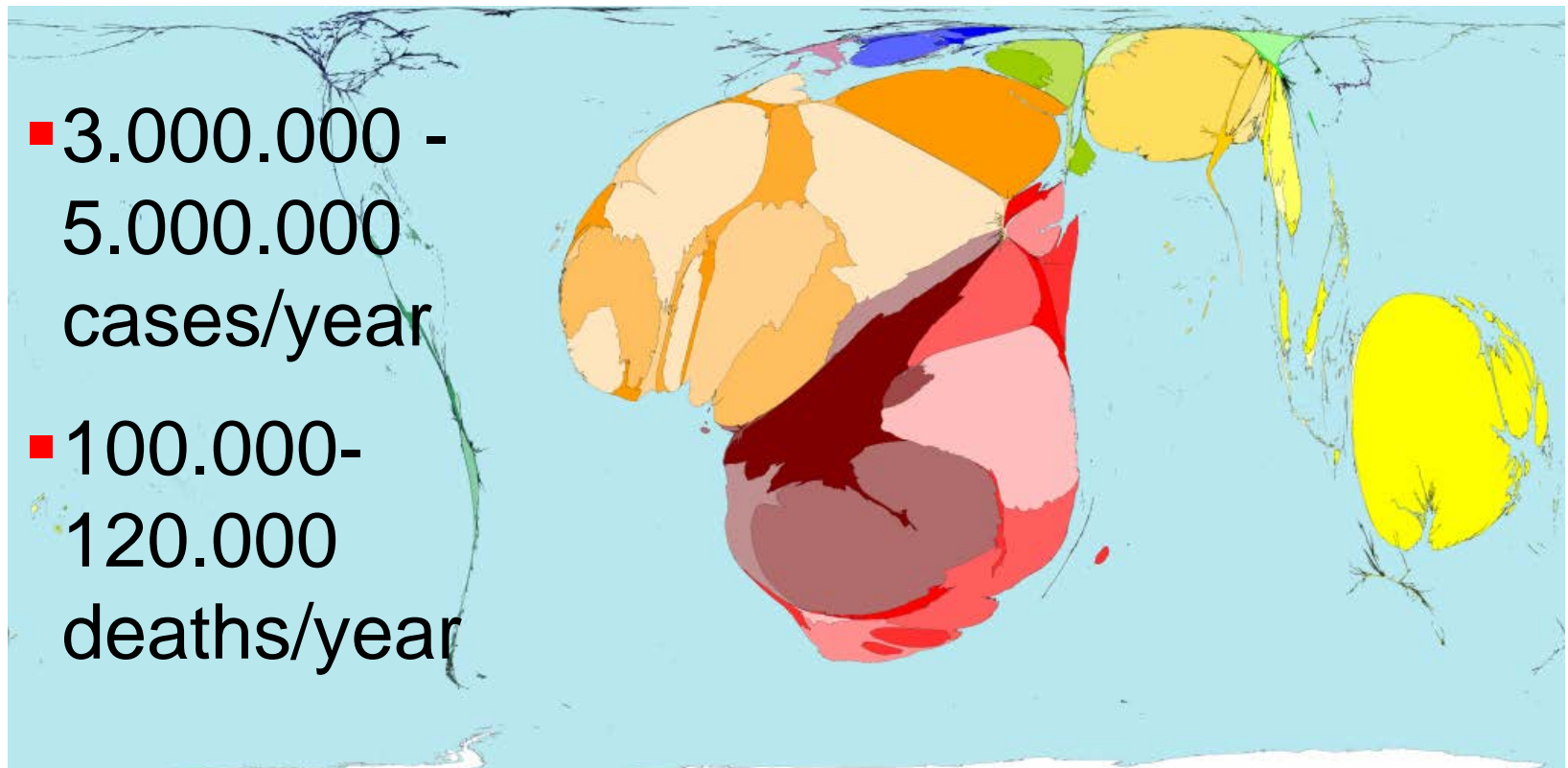


Cholera general

- Characterized by acute watery diarrhea (AWD)
- Highly contagious
- 80% mild or asymptomatic but kills in severe cases within hours due to dehydration
- Incubation period 2h – 5 days
- Case fatality rates can be up to 50% but drop to 1% with proper treatment



The world re-sized according to cholera deaths 2004



Clinical presentation acute watery diarrhea

- Rapid onset
- watery diarrhea
(rice water stools)
- With or without
vomiting
- Often no fever/
no abdominal
pain



**Infective dose 10^6 bacteria
1ml stool or vomit contains
up to 10^8**

Clinical presentation

Severe dehydration



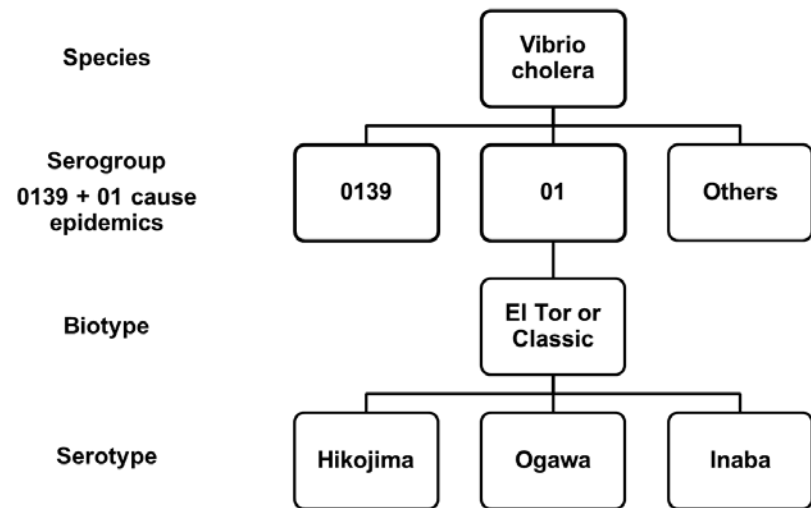
Clinical presentation impaired consciousness due to dehydration



Diagnosis – Confirming an outbreak

- Obtain 10-20 samples of stool or vomit

- Test for serogroup, serotype, biotype, antibiotic sensitivity



- Rapid diagnostic tests useful for on spot confirmation of cholera but no replacement for stool culture

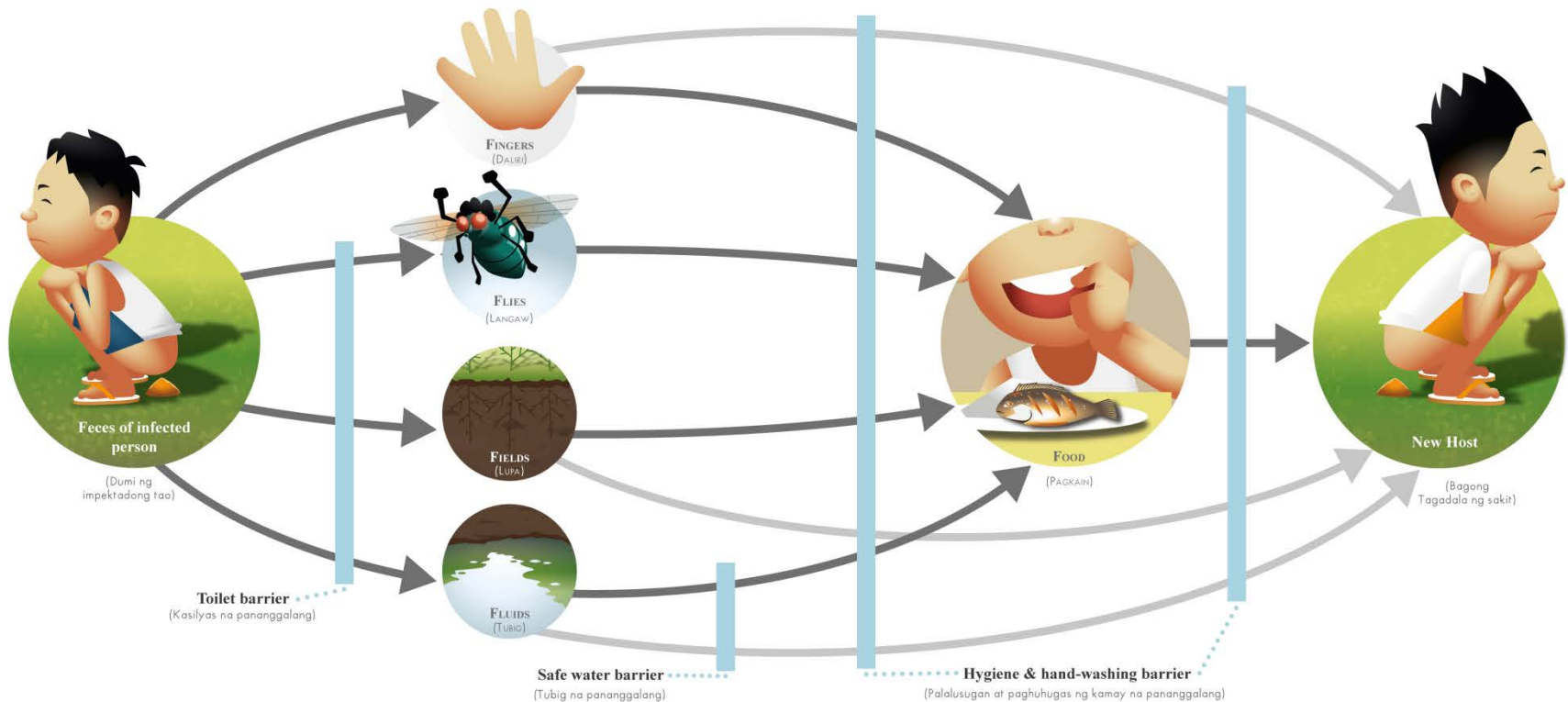
Diagnosis – during an outbreak

- Clinical - using standard case definition

Non Endemic Area	Endemic Area
Any patient ≥ 5 with AWD who dies from severe dehydration	Patient ≥ 5 years with AWD with or without vomiting

- Test randomly for shift in antibiotic sensitivity pattern

Transmission principles: The F diagram



Repetition question 1: What is the transmission route of cholera ?

1. Direct contact transmission
2. Indirect contact transmission
3. Airborne transmission
4. Vector borne transmission

Answer:

Indirect contact transmission

Special name: fecal oral transmission

Repitition question 2: What's a vehicle?

Repetition question 2: What's a vehicle?

- (sharp) objects
- Surfaces
- Food/Water
- Hands



Involved in the transmission of pathogens

Main vehicles for transmission during an outbreak

- Fecally contaminated food or water
- Human to human (e.g. dirty hands)
- Corpses
- Cholera treatment centres if hygiene measures insufficient

Risk factors for the spread

Poor personal hygiene



Risk factors for the spread of cholera

Poor sanitation and / or personal hygiene



Risk factors for the spread

Insufficient water supply



Risk factors for the spread of cholera

Insufficient water supply / Poor sanitation



Risk factors for the spread of cholera

Poor sanitation



Risk factors for the spread of cholera

High population density



Risk factors for the spread

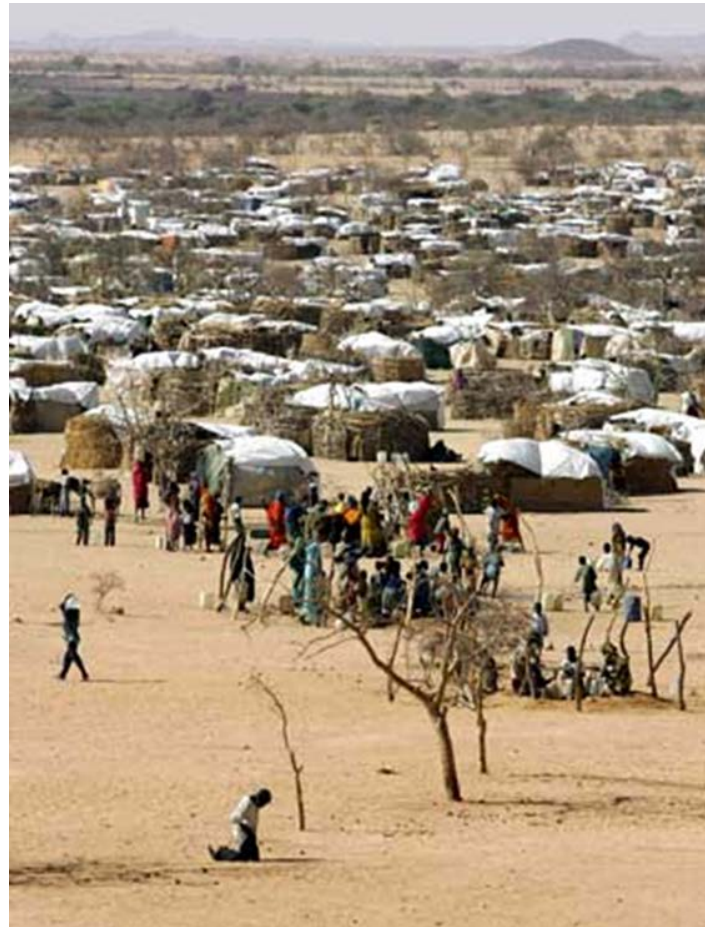
Underlying diseases



- Malnutrition
- HIV
- Tuberculosis
- Etc.

Risk factors for the spread

Seasonal Factors – dry season



Risk factors for the spread

Seasonal/environmental factors: rainy season/flooding



Risk factors for the spread of cholera (summary)

- Insufficient water supply (quantity/quality)
- Poor sanitation and / or hygiene practices
- High population density
- Underling diseases (HIV, TB, Malnutrition)
- Environmental / Seasonal factors

Clinical Mangement Principles



- Fluid loss up to 20l/day → effective rehydration saves lives
- Adapt therapy in malnourished patients
- Zink for infants

Assessing rehydration and adapting therapy

Condition	Well, alert	Restless , irritable	Lethargic, unconscious
Eyes sunken	No	Yes	yes
Thirst	Drinks normally	Thirsty,drinks eagerly	Not able to drink
Skin pitch	Goes back quickly	Goes back slowly	Goes back very slowly (>2 sec)
No tears (children only)	No	Yes	Yes
Dehydration	None	Mild	Severe
Treatment	ORS (at home)	ORS + close surveillance	IV, ORS, Antibiotics

No signs of dehydration



Condition	Well, alert	Restless, irritable	Lethargic, unconscious
Eyes sunken	No	Yes	yes
Thirst	Drinks normally	Thirsty, drinks eagerly	Not able to drink
Skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly (>2 sec)
No tears (children only)	No	Yes	Yes
Dehydration	None	Mild	Severe
Treatment	ORS (at home)	ORS + close surveillance	IV, ORS, Antibiotics

- ORS at home after initial monitoring and specific therapy plan
- Ensure adequate home care

Moderate dehydration



Condition	Well, alert	Restless, irritable	Lethargic, unconscious
Eyes sunken	No	Yes	yes
Thirst	Drinks normally	Thirsty, drinks eagerly	Not able to drink
Skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly (>2 sec)
No tears (children only)	No	Yes	Yes
Dehydration	None	Mild	Severe
Treatment	ORS (at home)	ORS + close surveillance	IV, ORS, Antibiotics

- Give ORS
- Very close surveillance
- Follow specific therapy plan

Moderate dehydration



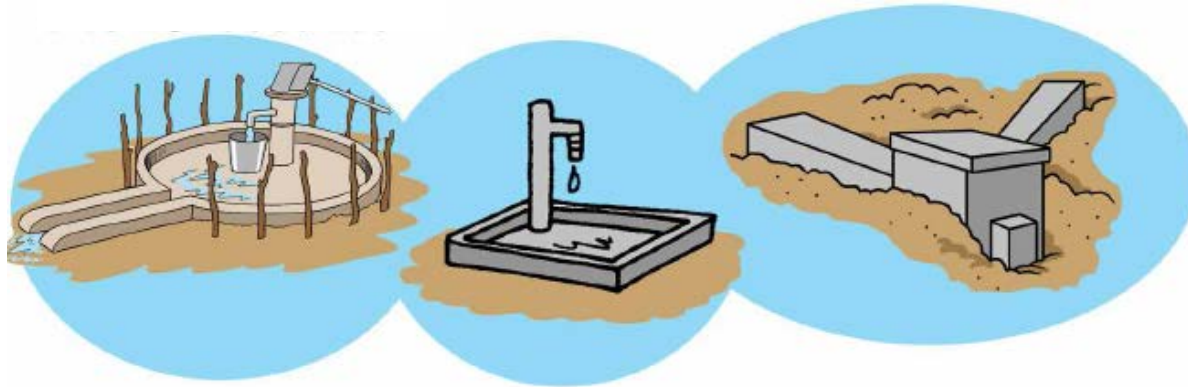
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- Give iv fluids (best option Ringer's lactate)
- Very close surveillance
- Consider antibiotics

How to reduce the epidemic spread

- Improve water and sanitation measures
- Educate people on personal hygiene
- Treat patients

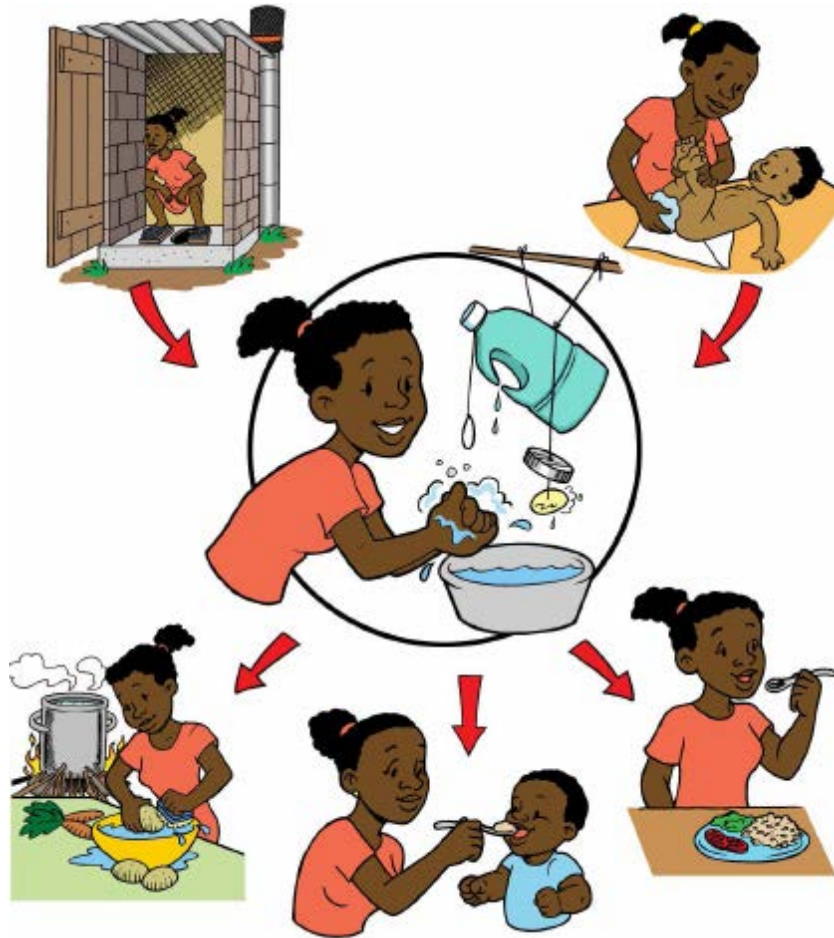
Protect the water



Treat water



Encourage personal hygiene



Setting up treatment facilities

Oral Rehydration Point (ORP)

- Decentralized
- Function 12h/d
- ORS is distributed / IPC measures are explained
- Referral for severe cases

Cholera Treatment Centres (CTC)

- Central
- Operate 24/d
- Treatment for mild and severe cases

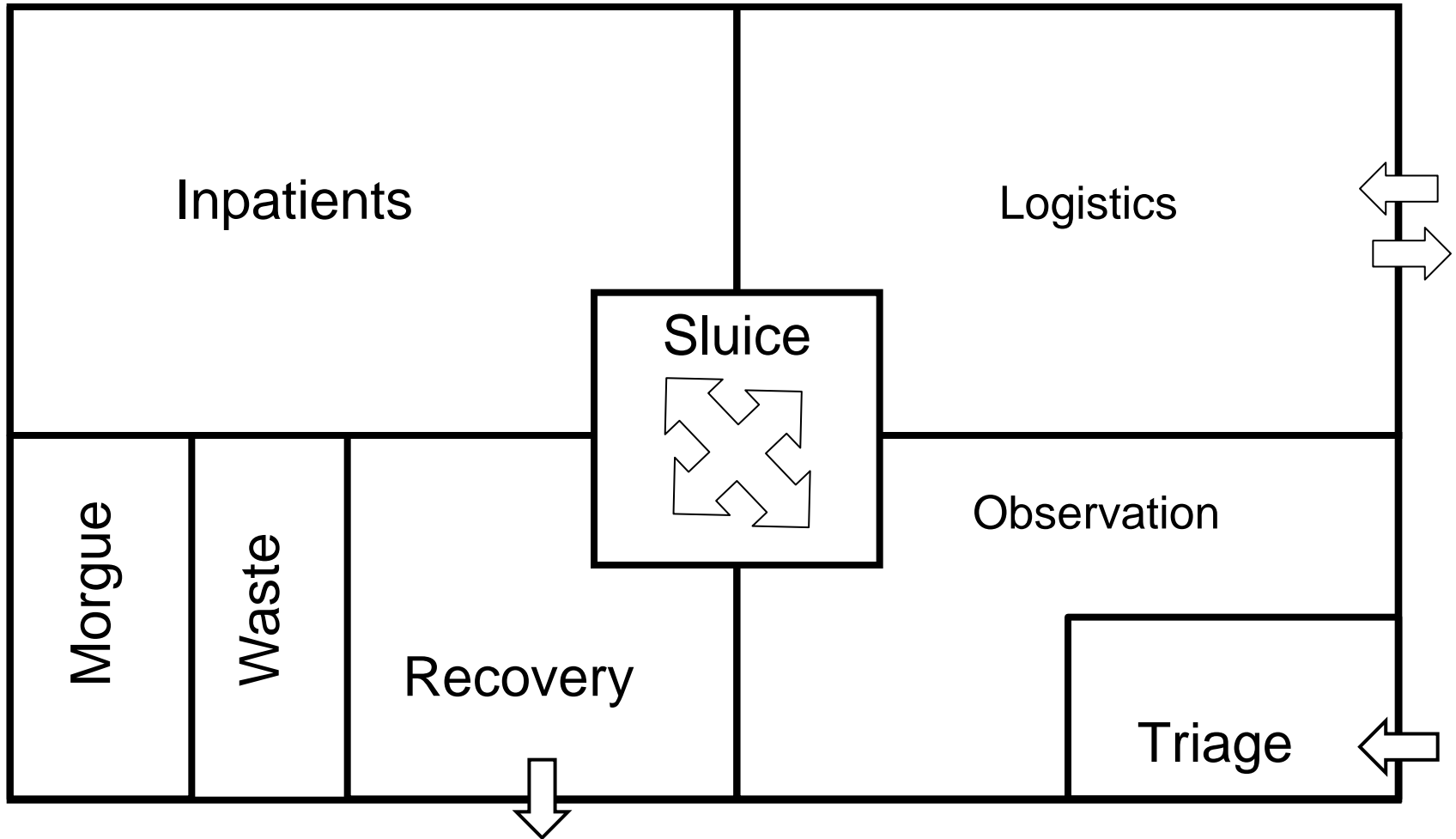
ORP



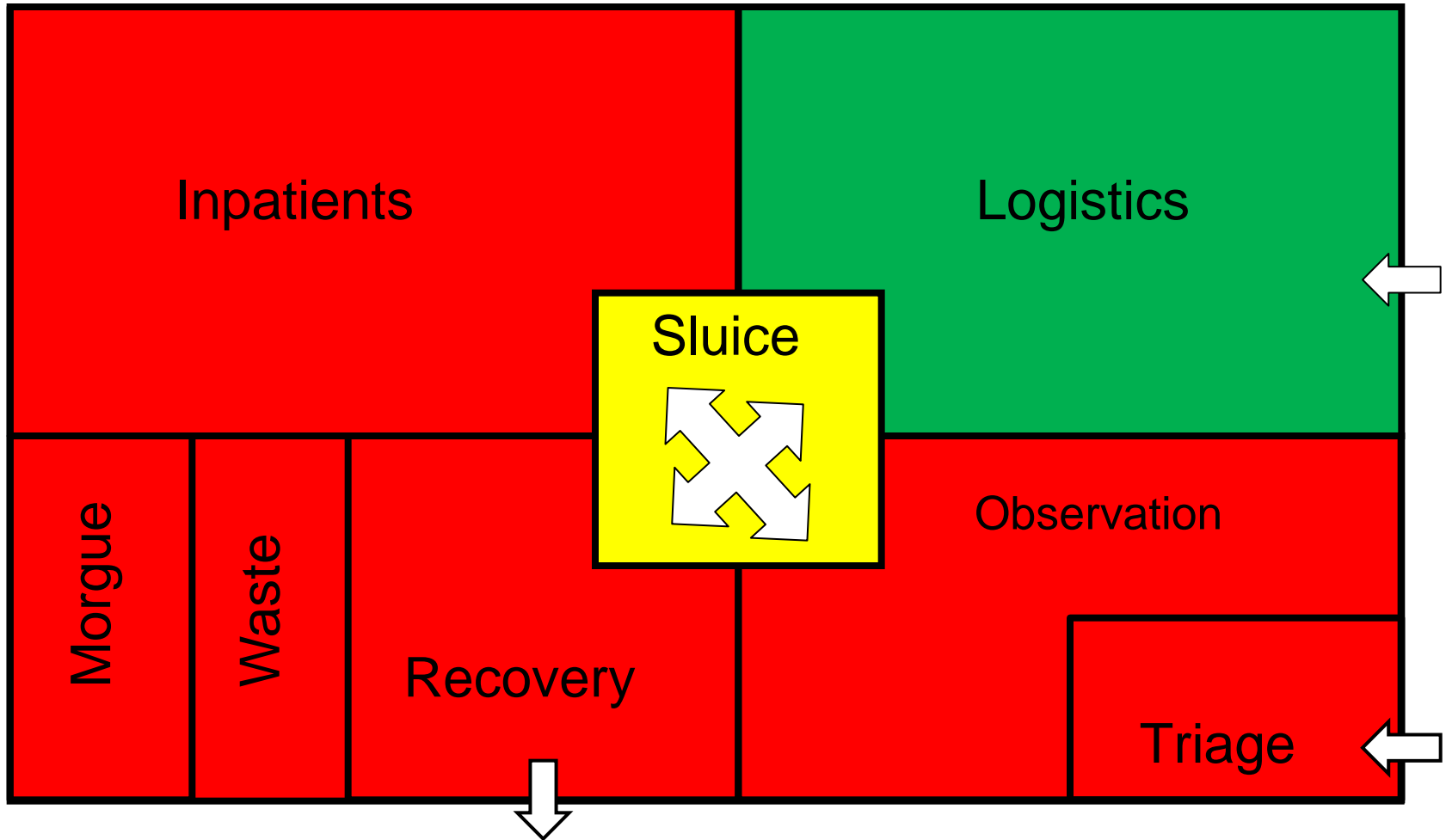
Cholera treatment centre (CTC)



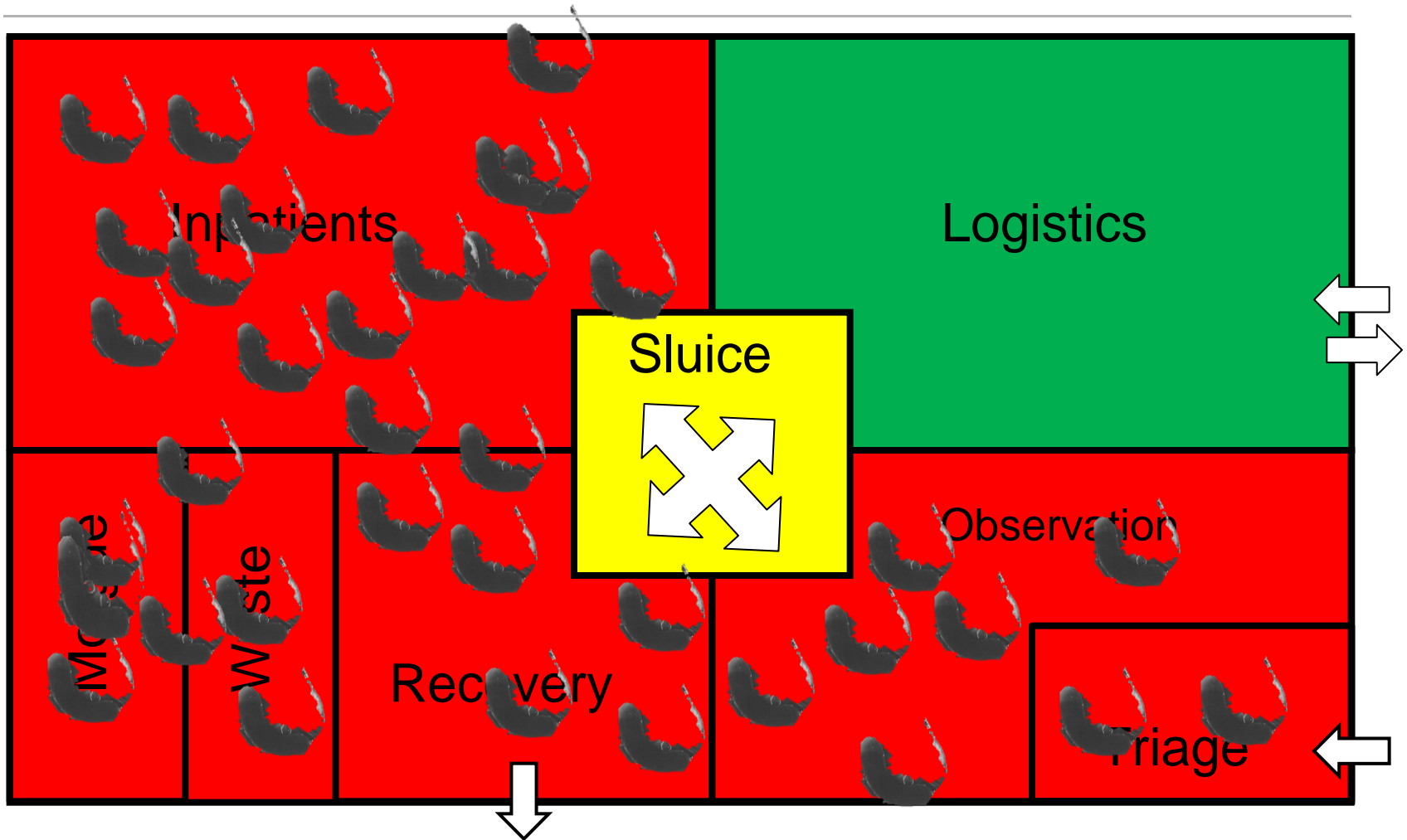
Design of a cholera treatment unit



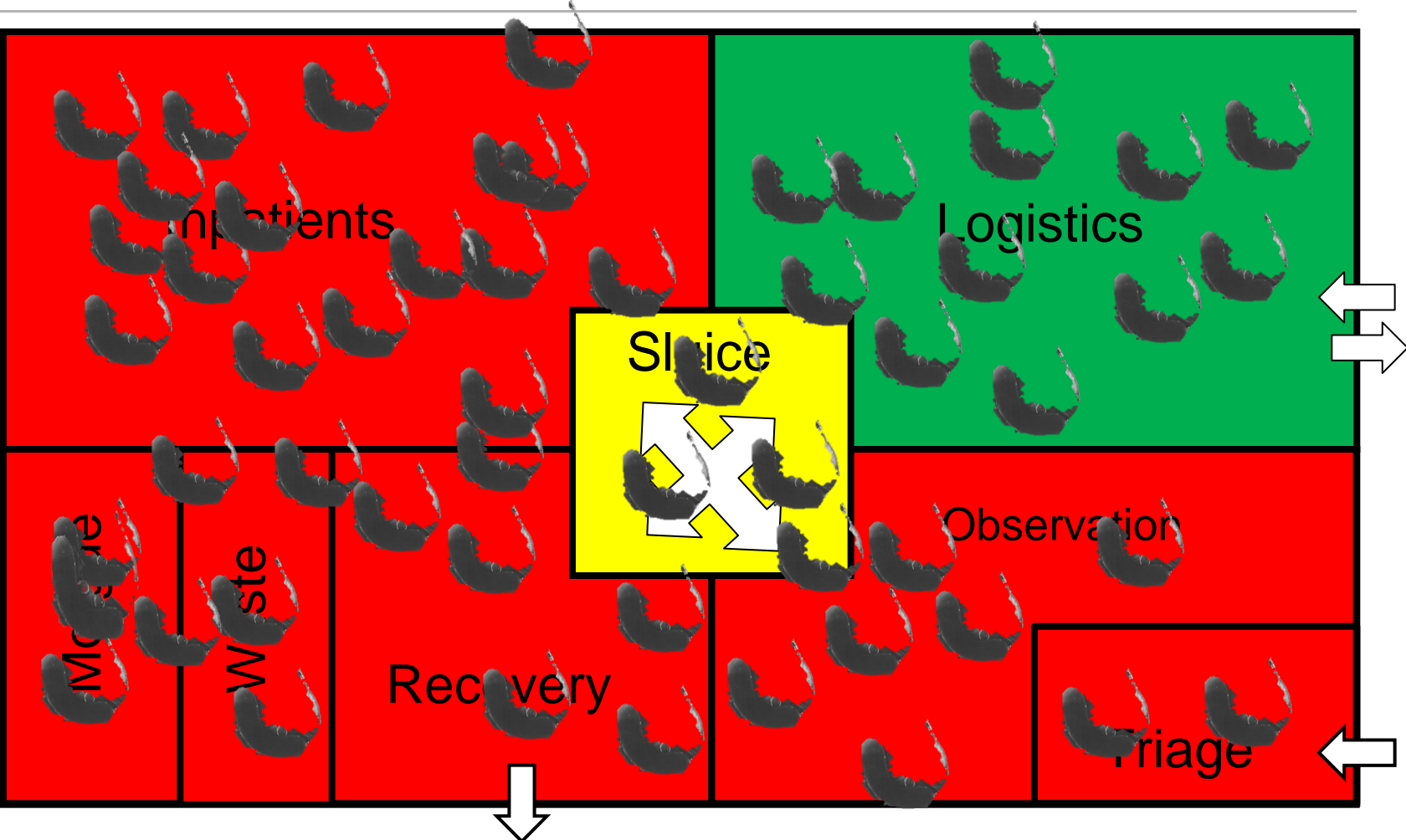
Design of a cholera treatment unit



Design of a cholera treatment unit



Without proper hygiene cholera treatment centers become a main source for infection!



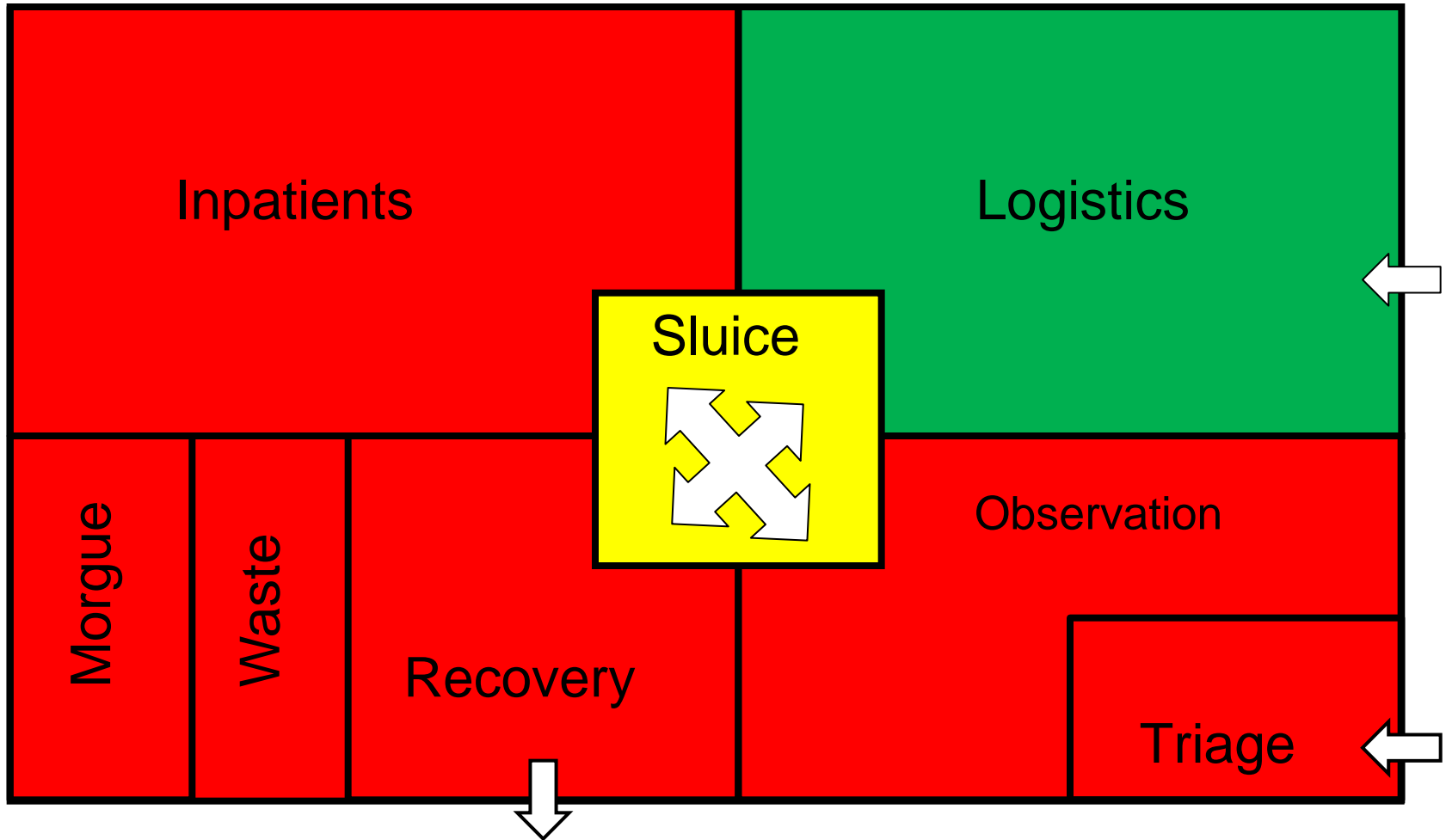
Cholera survival times

Surfaces	Few hours (longer on absorbent material)
Food	5 days at 20 degrees
Raw sewerage	10 days
Sea water	2 months
Plankton, algae, crabs, shrimps	2 years

Desinfection and hand hygiene mandatory!



Desinfection and hand hygiene mandatory!



Strict hygieneprocedures in cholera treatment centres

- Handwashing before and after attending a patient, after handling infected material, after going to the toilet, before eating and before entering the clean area
- Feet spraying or footbath on entering and exiting and before walking from the patients' area to the clean area

Strict hygiene in a Cholera Treatment Centre

Chlorine 0,5%	Chlorine 0,2%	Chlorine 2%
<ul style="list-style-type: none">• Bare skin (e.g hand washing, bathing a soiled patient)	<ul style="list-style-type: none">• floors• spraying patient's home• spraying beds• foot sprayers or foot baths• disinfection of clothes: rinsing and washing afterwards	<ul style="list-style-type: none">• Vomit / feces• corpses

A high-speed photograph of a water droplet hitting a surface, creating a series of concentric ripples. The droplet is captured mid-air, just above the point of impact, with a small crown of water forming at the base. The background is a solid, deep blue color. The word "Questions?" is written in a bold, white, sans-serif font, centered horizontally and positioned in the lower half of the image.

Questions?

Foto courtesy Icddr,b



Fotos courtesy: J. Butenop



Fotos courtesy: A. Stich

