

أسس العناية المركزة الكورس الاول

OCCUPATIONAL EXPOSURE LEC4

Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Anesthesia

قسم تقنيات التخدير

.....Third..... Stage

.....المرحلة... الثالثة

....محاضرة رقم 3...

نظري

Lecture No.

Theoretical

3.....

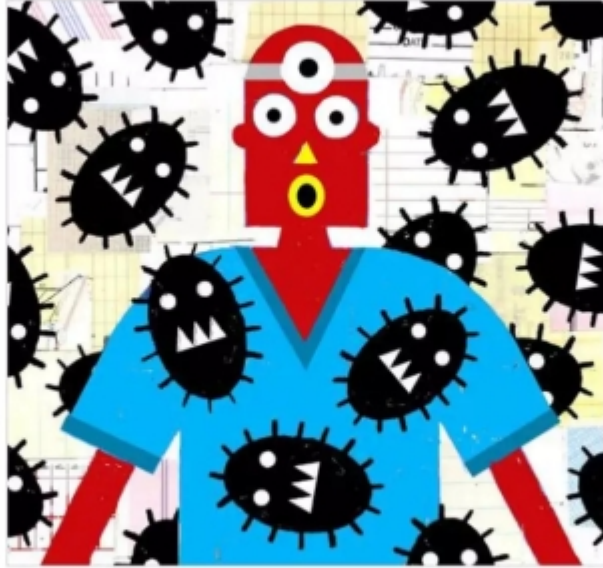
استاذ المادة : .د. ضي عبد
الكريم.....

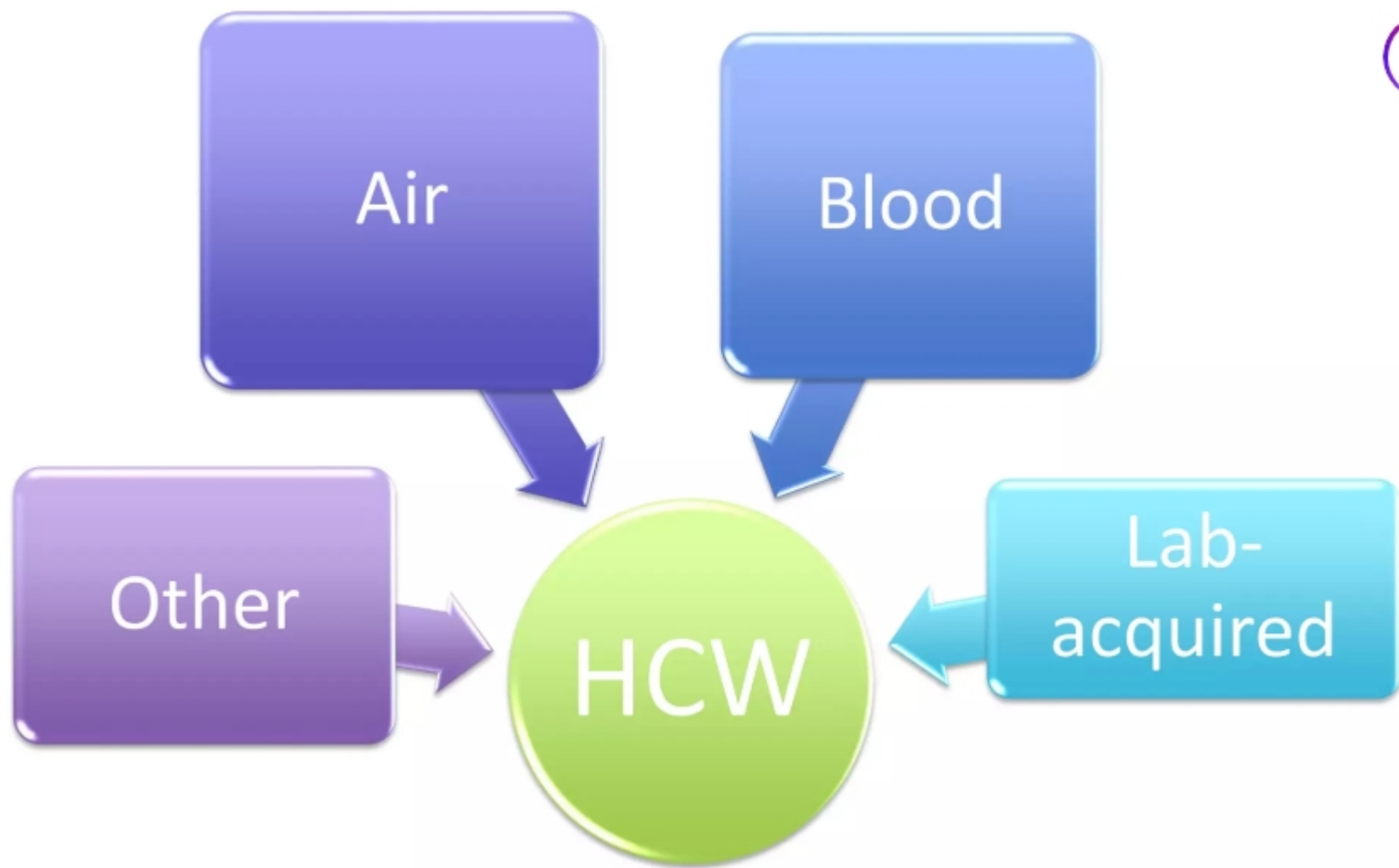
Healthcare Workers' Risks and Handling Exposures

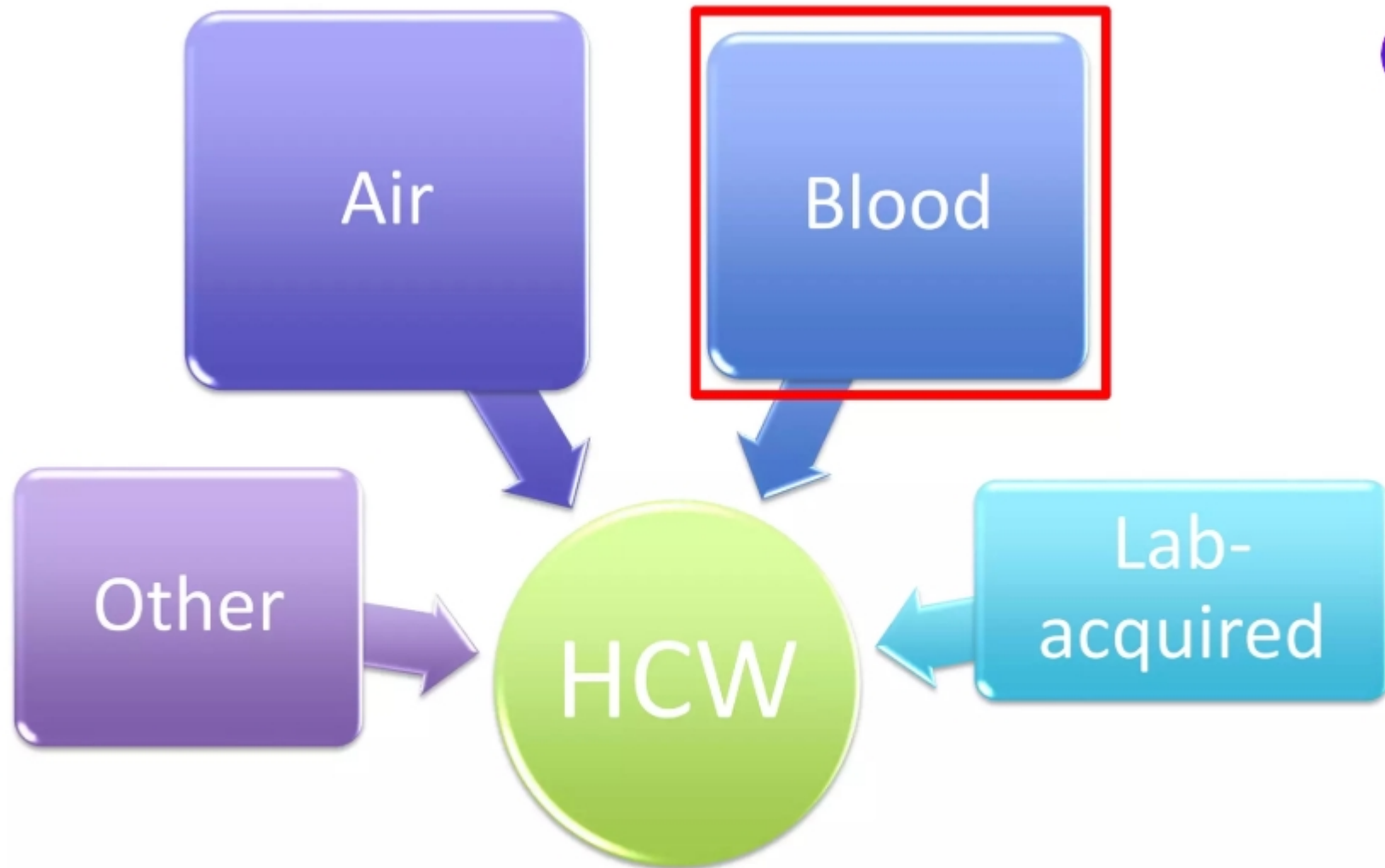


Occupational Exposure

- A reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties







Infectious Agents Potentially Transmissible by Blood

• Viruses

Hepatitis A
Hepatitis B
Hepatitis C
Cytomegalovirus
HIV-1
HIV-2
HTLV type 1/2
Parvovirus

• Parasites

Malaria
Babesiosis

• Spirochetes

Syphilis
Relapsing fever

• Bacteria

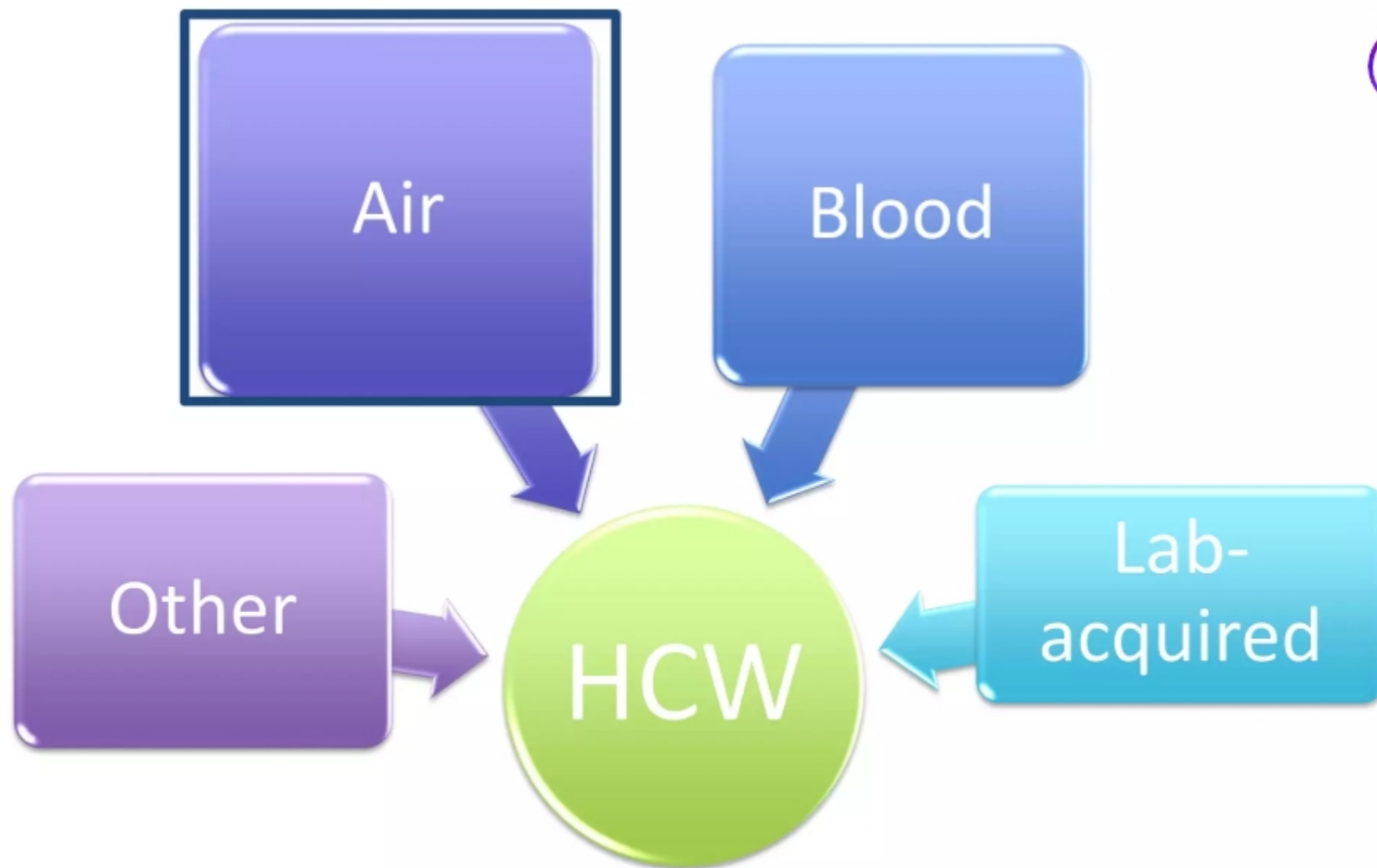
Yersinia enterocolitica
P. fluorescens
E. coli
Serratia marcescens
Brucella spp
Coagulase (-) staph

Modes Of Bloodborne Pathogen Transmission (

- Percutaneous or mucosal exposure to blood and body fluids
- Direct inoculation of virus into cutaneous scratches, skin lesions, abrasions or burns
- Inoculation of virus onto mucosal surfaces of the eyes, nose or mouth through accidental splashes
- Airborne transmission **DO NOT** occur

If an exposure occurs:

- Wash with soap and water
 - No evidence of benefit with “milking” or application of antiseptics or disinfectants
 - Avoid using bleach or other agents
- Report incident
- Document incident
- Seek “immediate” medical evaluation
 - Prompt medical evaluation
 - Time limits on effectiveness of prophylactic measures vary depending on the infection of concern



Coughing and sneezing are excellent ways to spread germs.



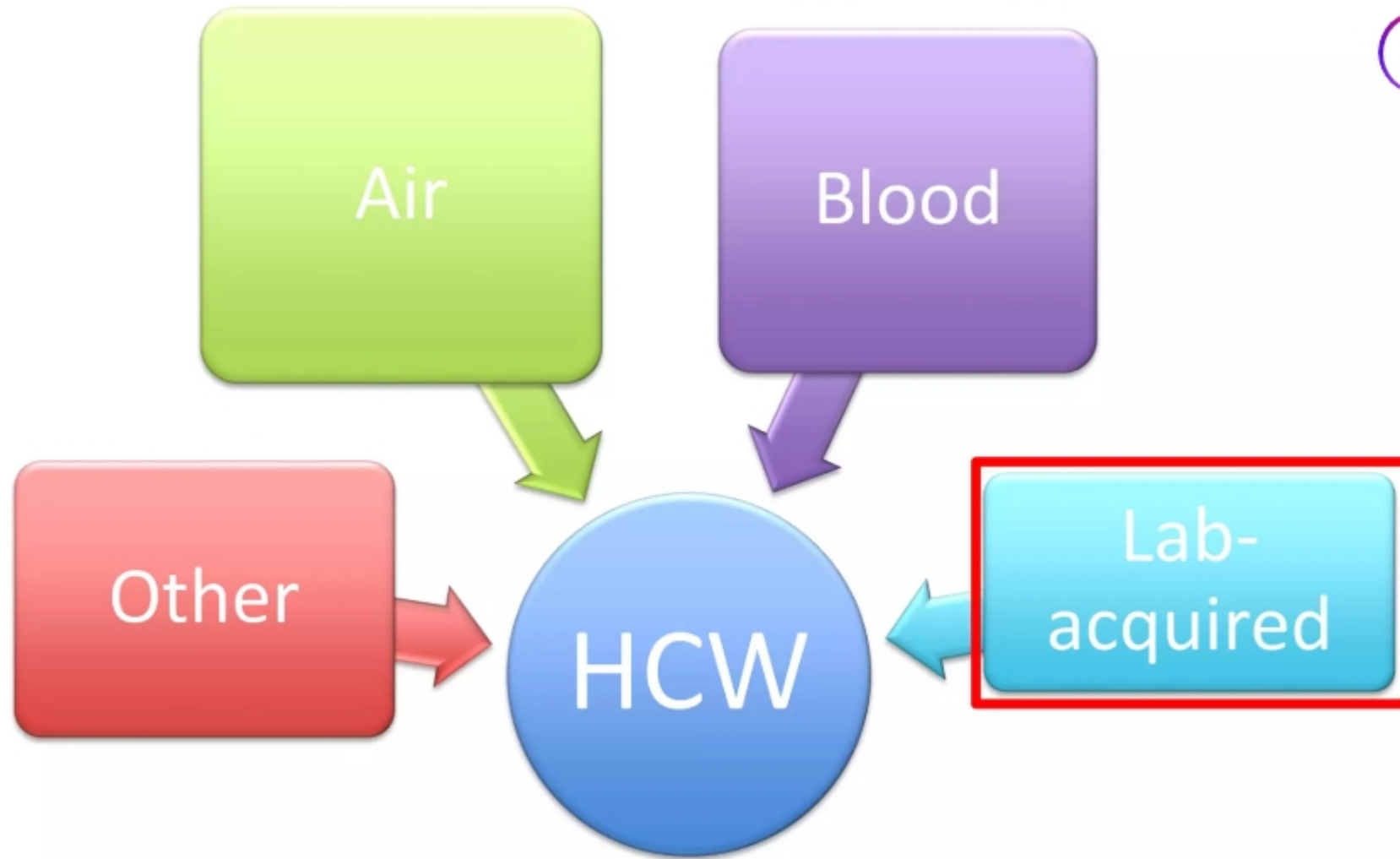
A sneeze can travel over 100 miles per hour project out 5000 droplets, containing around 10,000 bacteria and propelled up to a distance of 12 feet

TB Infection Control

- Surgical masks **DO NOT** protect the user from exposure to TB
- Disposable respirators (**N-95**) are commonly used in TB isolation rooms, in transport of TB cases in other areas of health facility
- High-risk procedures (bronchoscopy or autopsy) needs full facepiece negative pressure respirators, PAPRs, positive-pressure airline respirators



- Periodic training of HCW to enhance awareness and maintain appropriate index of suspicion for new TB cases
- Appropriate management of patients likely to have undiagnosed TB
- Use of negative pressure rooms, adequate air exchanges in rooms of patients with suspected TB, adjunctive use of UV germicidal irradiation
- Masking of patients with suspected TB
- Mandatory respiratory protection of HCW in contact with TB patients esp engaged in high-risk procedures
- TB surveillance testing



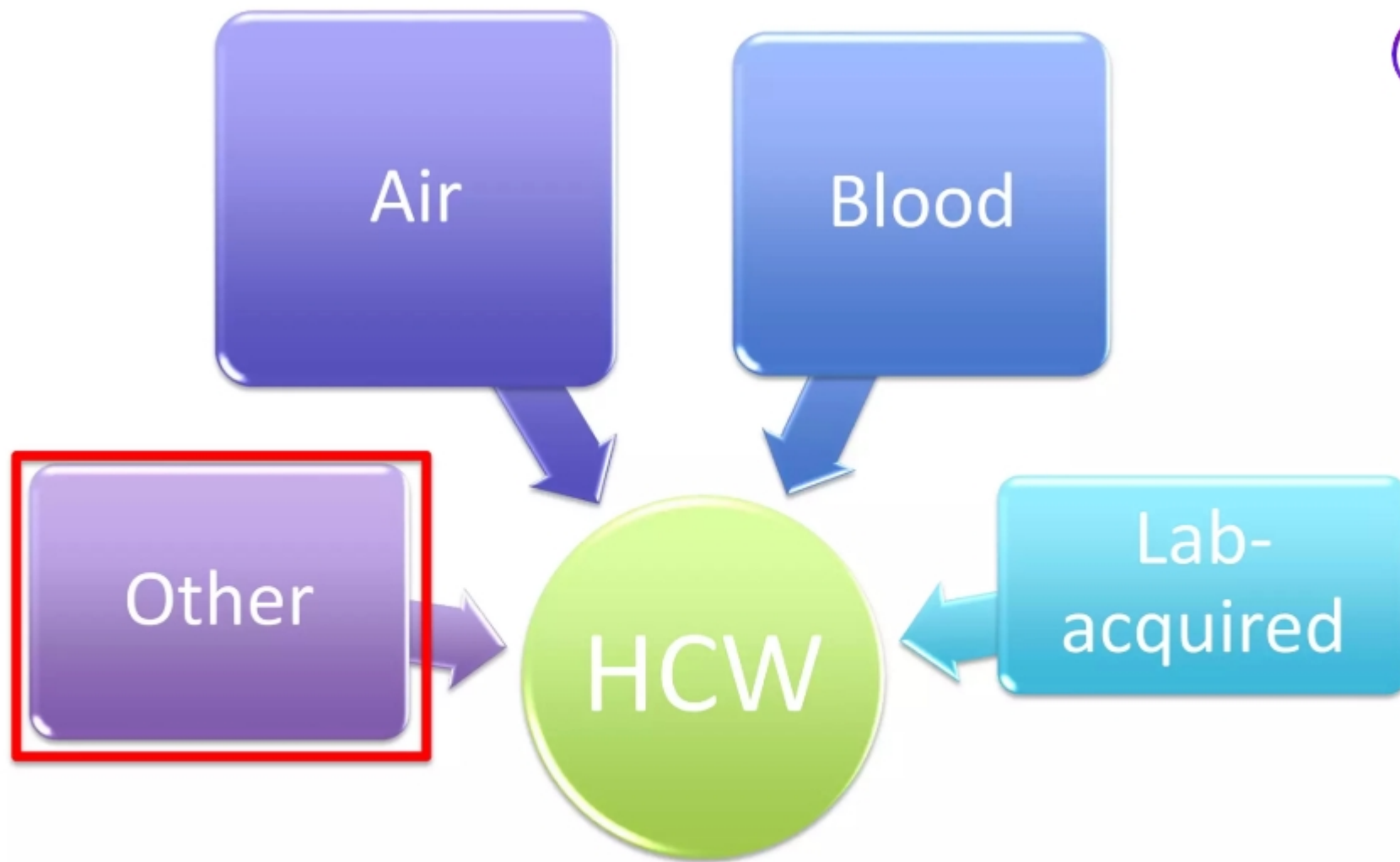
Laboratory-acquired Infections



- Handling tissue and body substances from infected patients
- Exposures for blood-borne pathogens including HBV, HCV, and HIV
- “sniffing” plates, creating aerosols and making subcultures, making slides, inoculating tubed and multiwell kit biochemicals

Safety Recommendations

- TRAIN annually
 - Risks, use of safety equipment
- Vaccination
- Use of gloves in handling specimens
- Use of plastic shields (if aerosol production is possible)
- Hand hygiene (before and after)
- Respiratory protection – N95



Antibiotic-resistant Infections in the Critically Ill

- ESBL, MRSA, Carbapenemase-producing organisms, MDROs
- Patient-to-patient transmission is common through hands of HCWs and their equipment especially when hand hygiene is suboptimal or not observed

General Control Measure: Hand Hygiene

- Core element of patient safety
- Prevention of HAI and spread of antimicrobial resistance
- Effectively interrupts microbial transmission during care sequence

My 5 moments for hand hygiene



Stress ulcer prophylaxis

Epidemiology of Stress-Related Mucosal Disease (SRMD)

- ▶ It occurs in most patients within 1-2 days after ICU admission.
- ▶ 50-70% mortality in critically ill pts
- ▶ There is clinically sig. decrease in SRMD due to prophylaxis & early resuscitation

Characteristics of SRMD

- ▶ Multiple superficial erosive lesions occurring early in the course of critical illness, and may progress to deep ulcers
- ▶ Stress ulcers are diffuse in nature and do not respond to endoscopic therapy, heal over time w/o intervention.

Stress & peptic ulcers



Stress ulcers	Peptic ulcers
Multiple superficial lesions at the proximal stomach bulb; involves superficial capillaries; results from splanchnic hypoperfusion	Few deep lesions in the duodenum; typically involves a single vessel; results from break in gastric, duodenal, or esophageal lining from the corrosive action of pepsin

Pathophysiology of SRMD

1. Decreased gastric blood flow and mucosal ischemia are the primary causes of stress ulcer-related bleeding.

2.Reduced splanchnic blood flow is caused by mechanisms common to critical illness

- ▶ Hypovolemia
- ▶ Reduced cardiac output
- ▶ Proinflammatory mediator release
- ▶ Increased catecholamine release
- ▶ Visceral vasoconstriction

1. Independent risk factors for SRMD:

- ▶ respiratory failure requiring mechanical ventilation for ≥ 48 h

OR

- ▶ coagulopathy: platelet count $< 50\,000$ cells/mm³, INR > 1.5 , or aPTT > 2 x normal

1. Antacids:

- ▶ Dose-dependent.
- ▶ Not rcd for routine use b/c of frequency of administration (up to qh) S.E & intx.
- ▶ S.E: diarrhea, constipation, electrolyte abnormalities.



2. Sucralfate:

- ▶ Complexes with albumin and fibrinogen to form a viscous, adhesive substance that adheres to ulcers in the presence of a pH less than 4
- ▶ less effective than H2RAs.
- ▶ Not rcd for routine use b/c of S.E. and intx by chelation
- ▶ S.E: constipation, aluminum toxicity, hypophosphatemia

3. H2RA:

- ▶ MOA: Competitive blockade of histamine subtype 2 receptors on the basolateral membrane of the parietal cells
- ▶ Dose-dependent increase in gastric pH
- ▶ Adverse effects such as mental status change, thrombocytopenia, sinus bradycardia and risk for nosocomial pneumonia.
- ▶ Drug interactions with CYP450 isoenzymes and PH dependent interaction.
- ▶ Dosing: Cimetidine: 300mg IV/PO q6h or continuous infusion at 37.5–50mg/hr
Ranitidine: 150mg PO q12h, or 50mg IV q8h

1. Independent risk factors for SRMD:

- ▶ respiratory failure requiring mechanical ventilation for ≥ 48 h

OR

- ▶ coagulopathy: platelet count $< 50\,000$ cells/mm³, INR > 1.5 , or aPTT > 2 x normal

4.PPIs: esomeprazole, lansoprazole, omeprazole (

- ▶ MOA: Inhibiting active proton pumps.
- ▶ Prodrug
- ▶ Dose-dependent increase in gastric pH, with maximal activity reached 3 days after initiation.
- ▶ Rebound acid hypersecretion may occur after discontinuation.
- ▶ Drug interactions: all are hepatically metabolized by CYP450 isoenzymes and PH dependent interaction

Any questions?

*Thank
You*

QUIZ

