Selected

BACTERIAL INFECTIONS

BACTERIAEMIA

= transient presence of viable bacteria in the circulating blood

- results from ordinary activities (toothbrushing...), dental or medical procedures (catheter...)

- usually no symptoms

- sometimes complications in predisposed tissues:

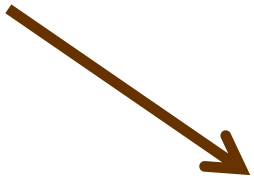
- artificial heart valve or heart valve abnormalities
  - ENDOCARDITIS
- artificial joint
  - INFECTIOUS ARTHRITIS, OSTEOMYELITIS

SEPSIS

= bacteremia triggers a serious bodywide response

= fever + weakness

Severe sepsis: failure of essential organ systems



Septic shock (failure of microcirculation)

PYEMIA = circulating infected thrombi

Complications: metastatic abscesses (septic infarcts)

- **Central** - the source in the heart

  (bacterial endocarditis)

  → metastatic abscesses **system**

- **Peripheral** - source in the venous system

  (thrombophlebitis, mastoiditis, osteomyelitis...)

  → metastatic abscesses **lung**

- **Portal** - the source in the portal circulation

  (cholecystitis, appendicitis, diverticulitis...)

  → metastatic abscesses **liver**

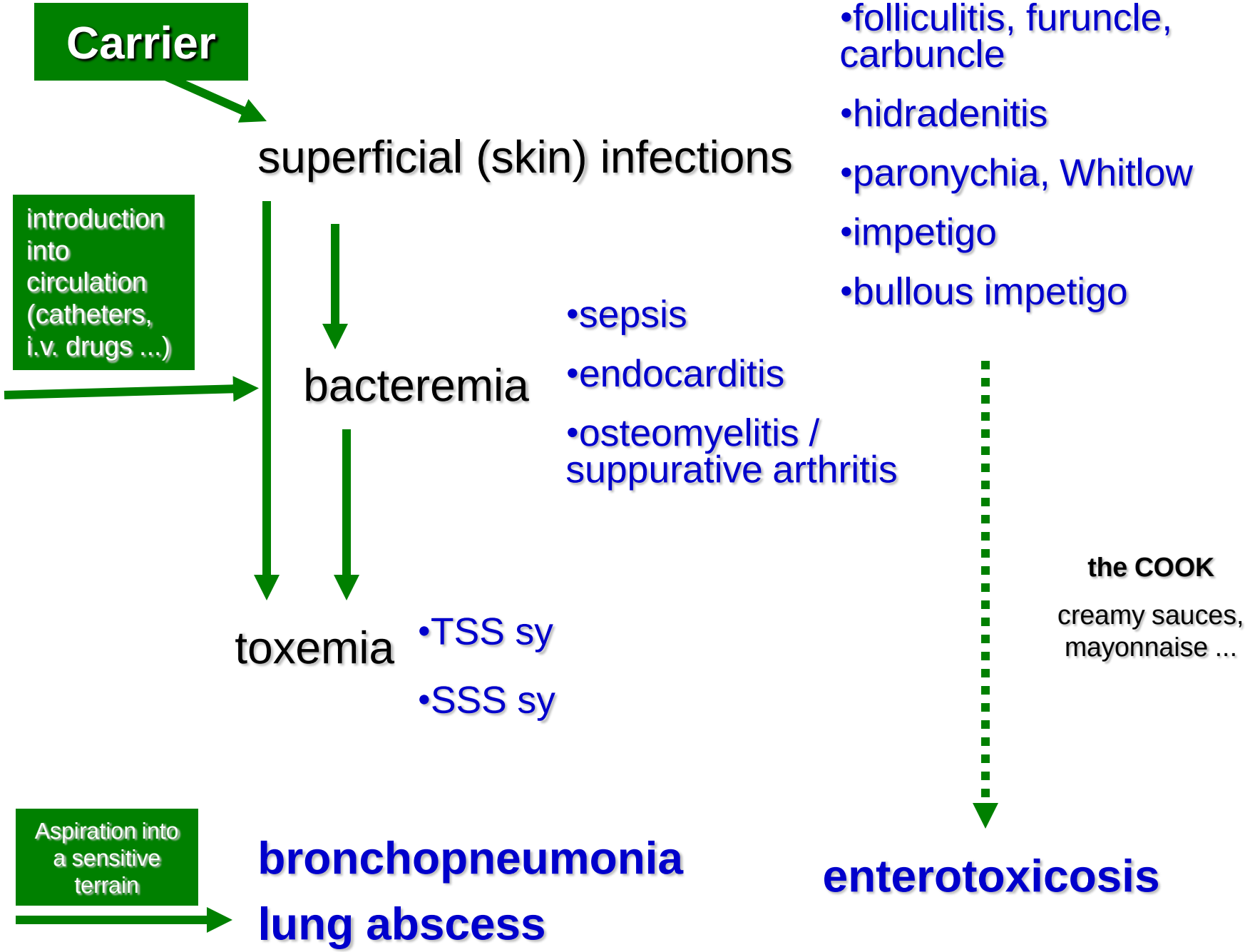
Staphylococcal infections

- ***Staphylococcus aureus*** - …
- ***Staphylococcus epidermidis***
  - Opportunistic infections catheterized patients, artificial heart valves, drug addicts
- ***Staphylococcus saprophyticus***
  - urinary tract infections in young women

Tissue reaction:

Purulent inflammation with a destructive component

= mostly ABSCESS


Carrier
superficial (skin) infections
•folliculitis, furuncle, carbuncle
•hidradenitis
•paronychia, Whitlow
•impetigo
•bullous impetigo
introduction into circulation (catheters, i.v. drugs ...)
bacteremia
•sepsis
•endocarditis
•osteomyelitis / suppurative arthritis
toxemia
•TSS sy
•SSS sy
the COOK
creamy sauces, mayonnaise ...
Aspiration into a sensitive terrain
bronchopneumonia
lung abscess
enterotoxicosis

Streptococcal infections

Tissue reaction:

PURULENT INFLAMMATION without significant necrosis

= rather **PHLEGMONE**

Streptococcal infections

- β-hemolytic streptococcus
  - Streptococcus pyogenes (group A) …
  - Streptococcus agalactiae (group B) - sepsis and meningitis in newborns
- Streptococcus pneumoniae …
- α-hemolytic streptococcus – S. viridans - normal flora x endocarditis
- Streptococcus mutans – dental caries

"Flesh-eating strep" - necrotizing fasciitis

Str. pyogenes

Primary infection

- Pharyngitis (angina)
  - erytrogenic toxin → Scarlet fever
- Erysipelas
- Skin infections
  - impetigo + folliculitis, furuncle
  - necrotizing fasciitis
- Pneumonia (lung abscess)
- Puerperal sepsis

bacteraemia

Sterile post-streptococcal sequelae

- **Rheumatic fever**
- **Poststr glomerulonephritis**
- **Erythema nodosum**

Secondary infection

complication

- **sepsis**
- **purulent meningitis**
- **endocarditis**

Sterile post-streptococcal sequelae

- **Rheumatic fever**
  - rheumatic pericarditis
  - polyarthritis migrans
  - subcutaneous rheumatic nodules
  - erythema marginatum
  - chorea minor

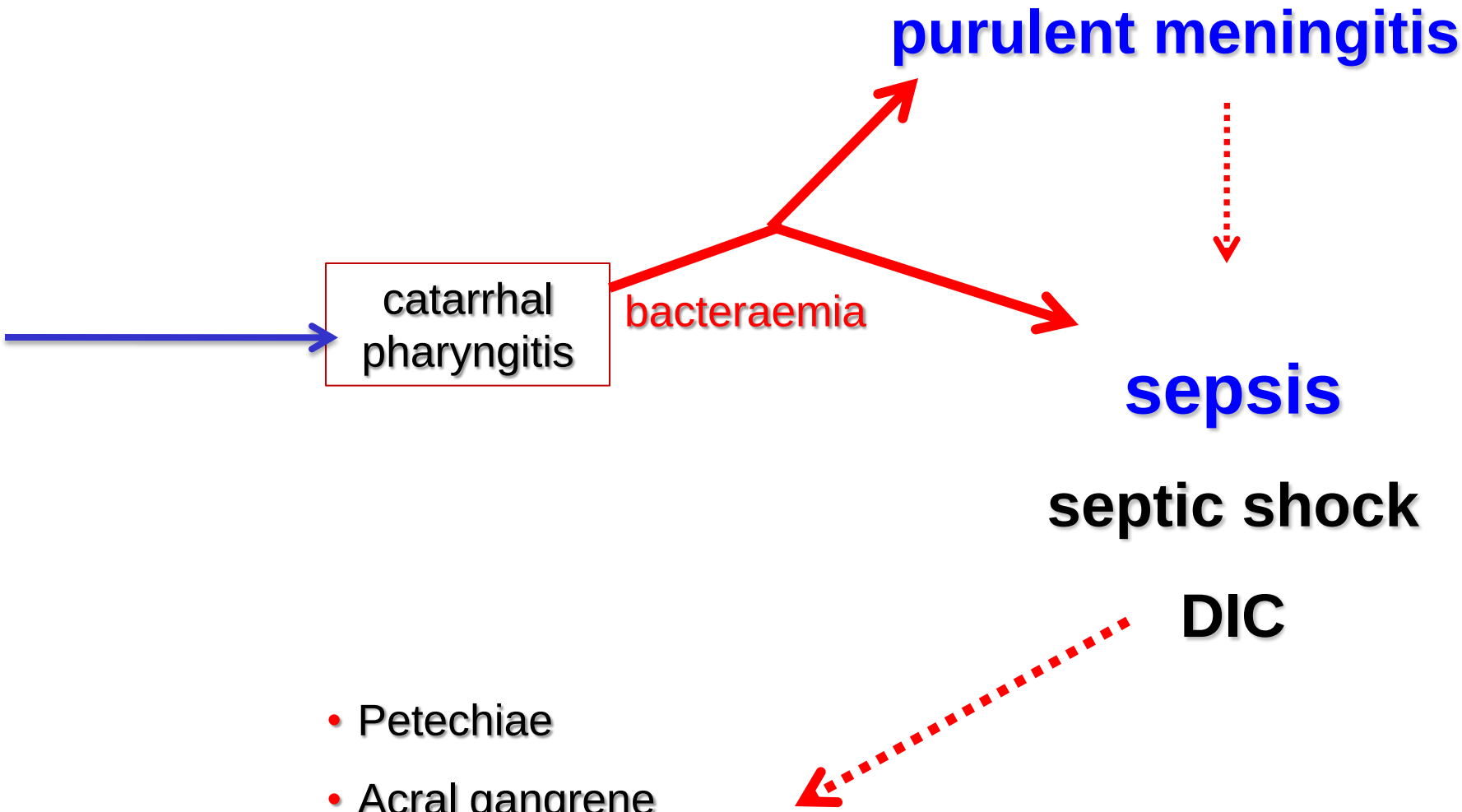
Ab x M-protein

- **Poststreptococcal acute glomerulonephritis**

Immune complexes; nephritic syndrome

- **Erythema nodosum**

MENINGOCOCCUS

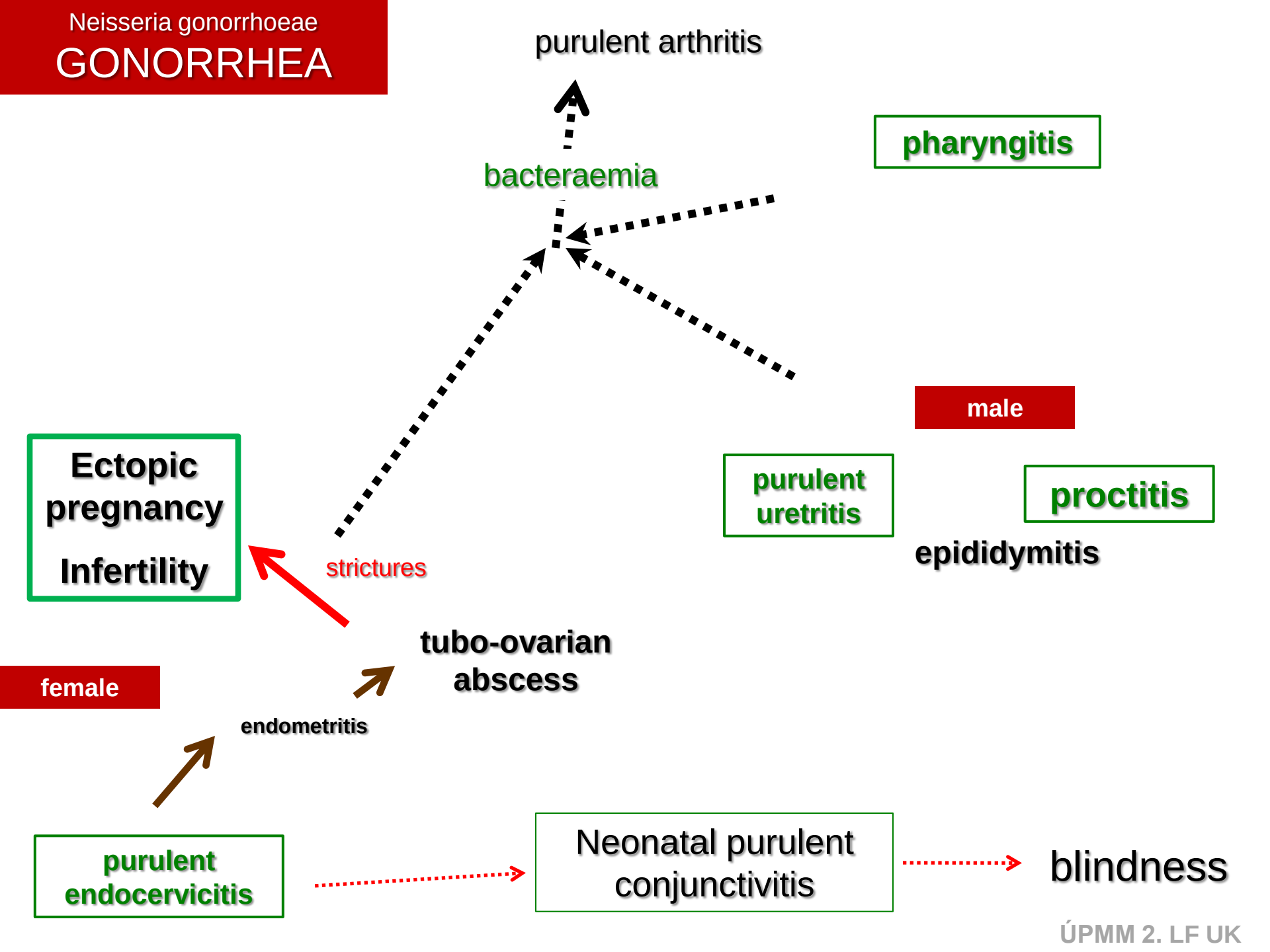


- Petechiae
- Acral gangrene
- Thrombosis - hemorrhagic necrosis of the adrenal cortex

= *Waterhouse-Friderichsen sy*

Neisseria gonorrhoeae

GONORRHEA



PERTUSSIS

Source: human

aerosol

catarrhal tracheobronchitis

CYTOTOXIN

(pertussis-toxin)

CNS

paroxysmal cough

„whoop“

lymphocytosis

up to leukemoid

necrosis of the respiratory epithelium

catarrhal ulcers

risk of superinfection and bronchopneumonia

Clinical stages

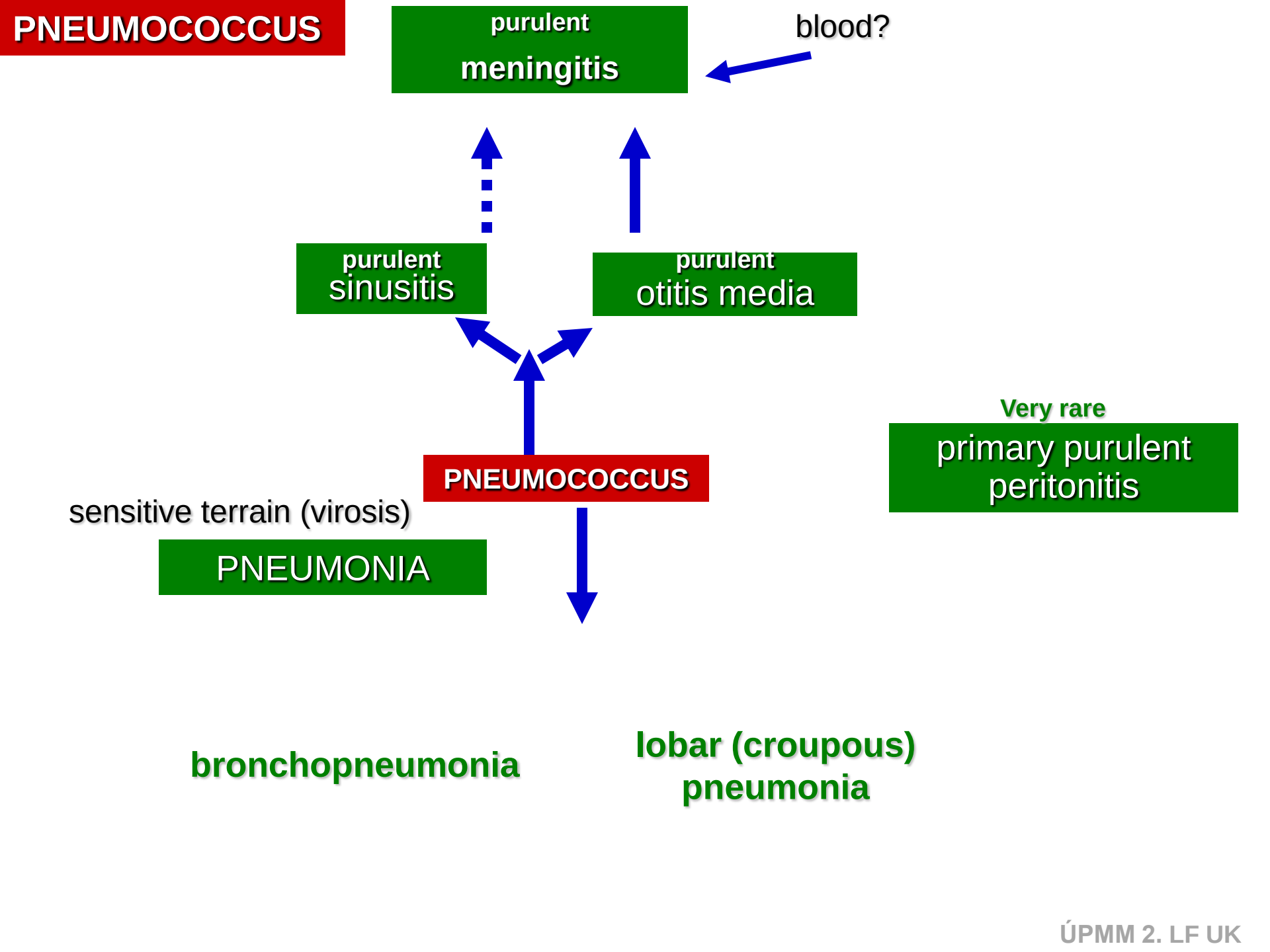
catarrhal stadium

1 week

paroxysmal stage

2-3 weeks

convalescence


PNEUMOCOCCUS
purulent
meningitis
blood?
purulent
sinusitis
purulent
otitis media
Very rare
primary purulent
peritonitis
PNEUMOCOCCUS
sensitive terrain (virosis)
PNEUMONIA
bronchopneumonia
lobar (croupous)
pneumonia

KLEBSIELLA

+ Enterobacter

Nosocomial infection

catheter → weakened immunity → purulent infection

- Endotracheal tube → Abscessing bronchopneumonia; Necrotizing lobar pneumonia
- Catheterization of the biliary tract → Ascending cholangitis
- Urinary catheterization → Purulent pyelonephritis

+ purulent WOUND infections

Infections caused by

SALMONELLA

ENTERITIS	**Salmonela enteritica, typhimurium…**
Typhoid / paratyphoid	**Salmonela typhi** **Salmonela paratyphi**

Salmonellosis

zoonosis (poultry, eggs ...)

↓

ingestion

↓ **1-2 days**

invasion of enterocytes (ileum)
+ toxins

↓

catarrhal enteritis

(1-3 days)

Typhoid fever

- The only source: human carrier
- Transmission:

  „**disease of dirty hands**“

  (urine, feces, secretions ...)

Infection of macrophages

↓

IL1, TNF

Intestinal pathology

↓

„medullary infiltration"

= Hyperplasia of the lymphatic tissue

+ salmonella in macrophages = typhoid cells

Sometimes clusters in other organs ("typhomas")

↓

hypertrophy of Peyer's plaques with coagulation necrosis of mucosa

+ ulcers

E. coli

opportunistic infections

- G- pneumonia
- G- sepsis

- ETEC
- EPEC
- EIEC
- EHEC

enterocolitis

Diarrhea

urinary infection

pyelonephritis

cystitis

urethritis

neonatal purulent meningitis

CHLAMYDIA

- **STD - Non-gonococcal urethritis (NGU)**

  + neonatal conjunctivitis

  Ch. trachomatis serotype D-K

- **STD - Lymphogranuloma venereum**

  Ch. trachomatis serotype L1-3

- **Trachoma**

  Ch. trachomatis serotype A, B, C

C. trachomatis serotype D-K

Chlamydial urethritis (NGU)

STD

Male **- urethritis, epididymitis, proctitis**

often asymptomatic or purulent discharge

Female

- **purulent cervicitis, endometritis, salpingitis**
- **generalized infection of adnexae**

= PID (pelvic inflammatory disease)

Recurrent episodes of salpingitis

→ **scarring**

→ **infertility, ectopic pregnancy**

MYCOPLASMA

otitis media

Mycoplasma pneumoniae

aerosol → pharyngitis → tracheobronchitis → **Interstitial pneumonia**

- Mild
- but: superinfections

Ureaplasma urealyticum

NGU