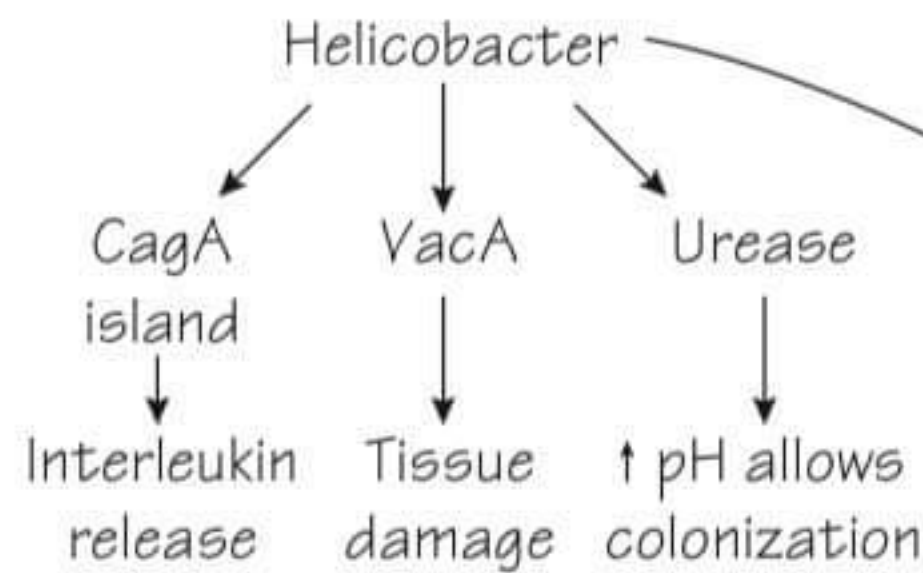
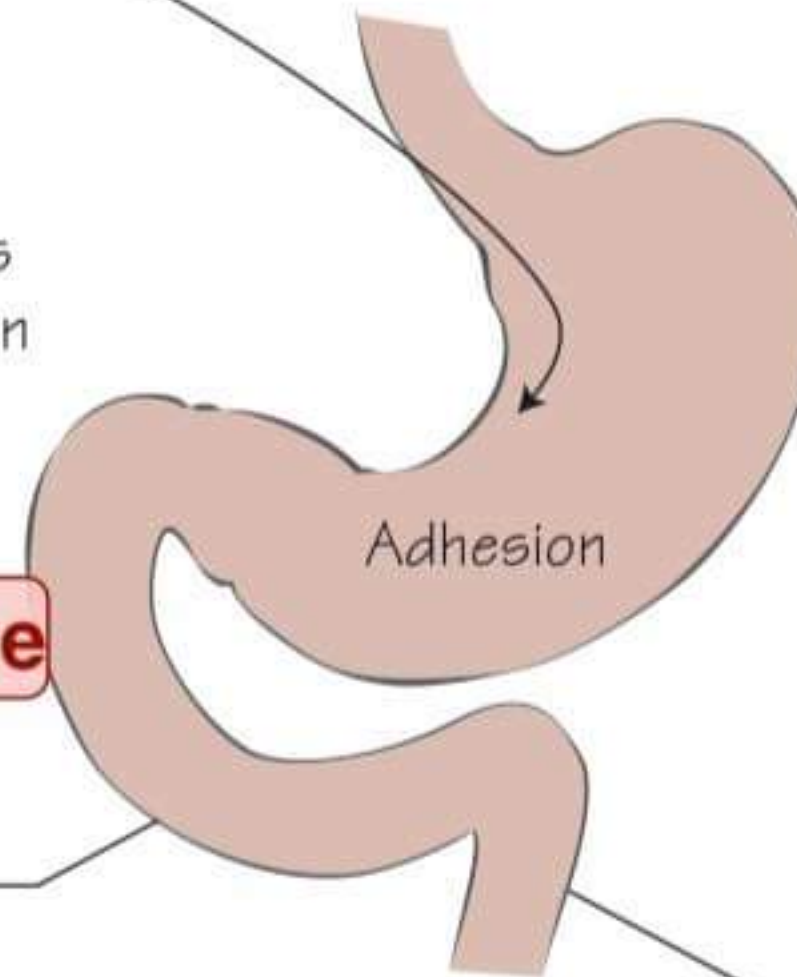




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Helicobacter pylori

Diagnosis

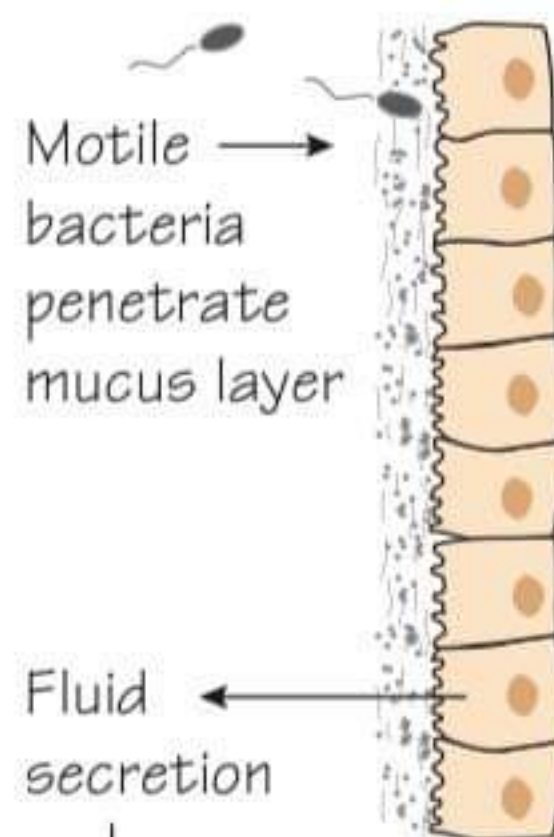
- Gastric biopsy
 - Urease
 - Histology
 - Culture
 - PCR
- Non-invasive
 - Urea breath test
 - Serology
 - Stool antigen

Treatment

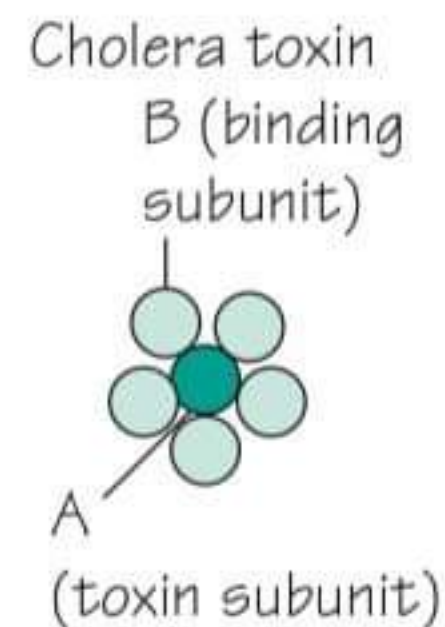
- Proton pump inhibitor + two antibiotics

N.B. Resistance emerging

Vibrio cholerae



Toxin binds via GM1 ganglioside
↑ cAMP



V. cholerae

Diagnosis

- Immobilization test on stool
- Faecal culture

Treatment

- Oral rehydration

Campylobacter

- Locally invasive transient bacteraemia
- Reactive arthritis
- Guillain-Barré syndrome

Campylobacter

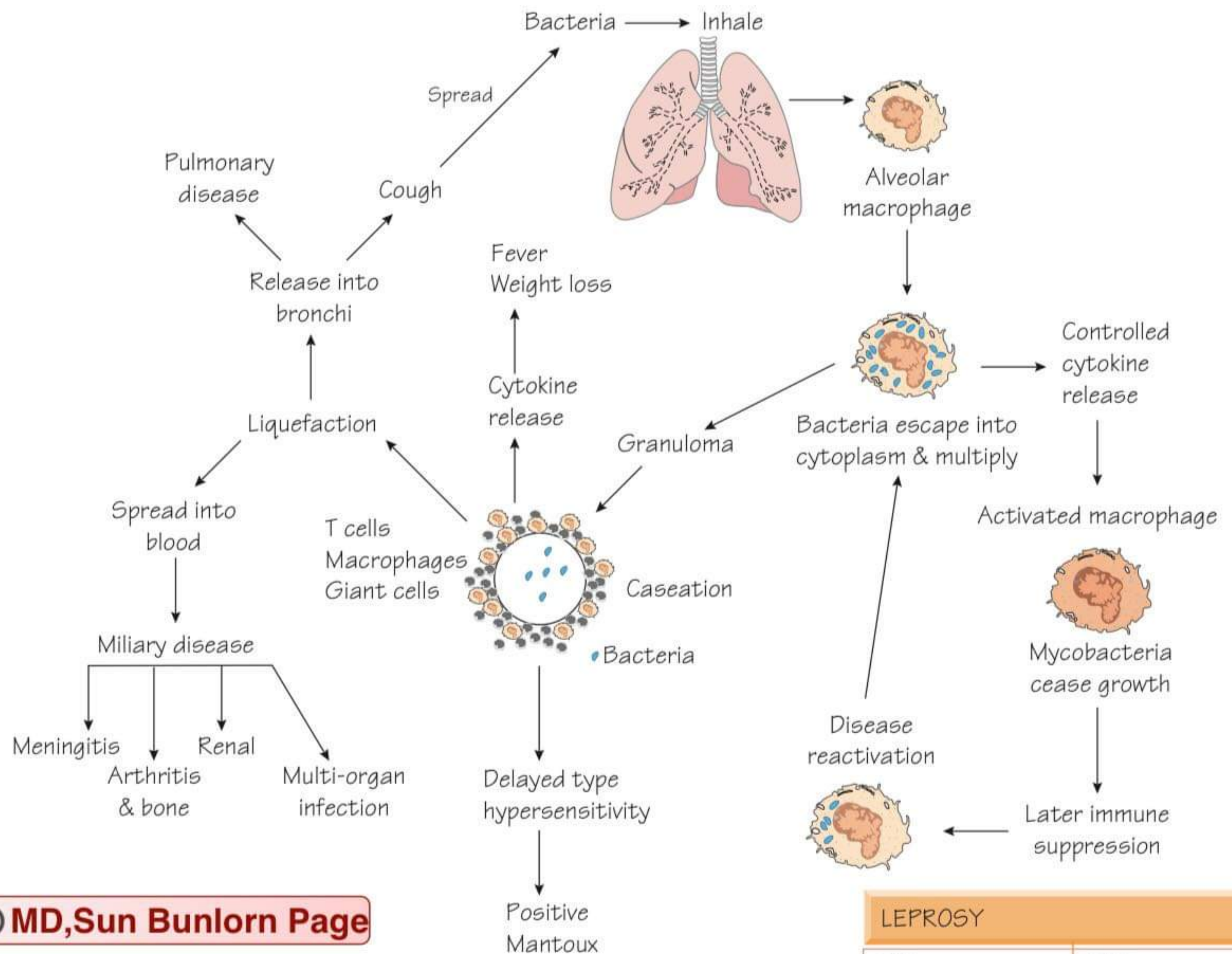
Diagnosis

- Faecal culture

Treatment

- Macrolide
- Quinolone
- Aminoglycoside (for bacteraemia)

18 Pathogenic mycobacteria



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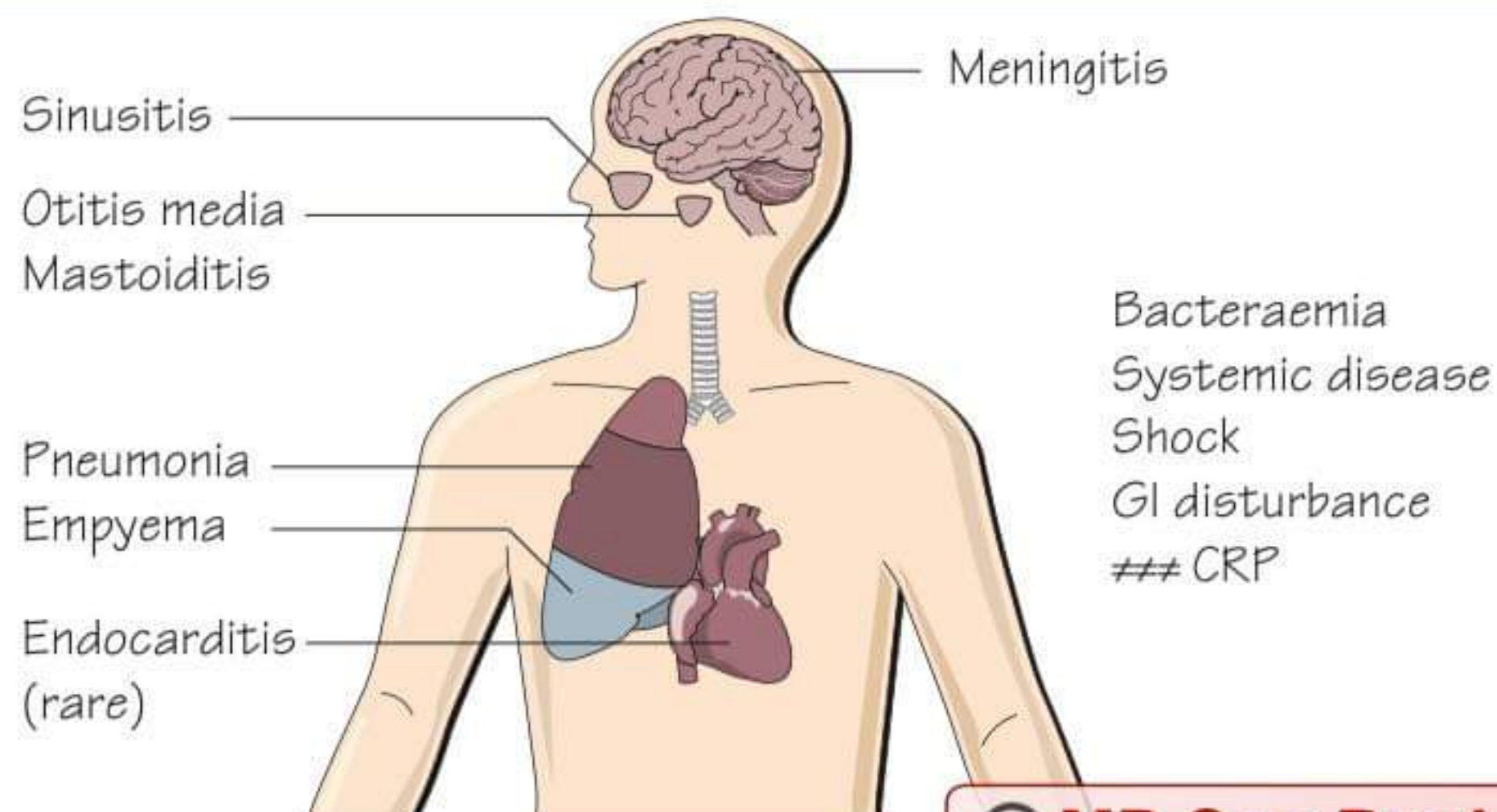
Group	Example
1 Obligate pathogens	<i>M. tuberculosis</i> , <i>M. bovis</i> , <i>M. leprae</i>
2 Skin pathogens	<i>M. marinum</i> , <i>M. ulcerans</i>
3 Opportunistic pathogens	<i>M. kansasii</i> , <i>M. avium-intracellulare</i> , <i>M. xenopi</i>
4 Non- or rarely pathogenic	<i>M. gordonae</i> , <i>M. smegmatis</i>
5 Animal pathogens	<i>M. paratuberculosis</i> , <i>M. lepraemurium</i>

LEPROSY	
Th1	Th2
Tuberculoid	Lepromatous
Few organisms	+++ organisms
Local disease	General disease
Good prognosis	Poor prognosis
Slow progression	Rapid progression
++ CMI	Poor CMI

Borderline

***Streptococcus pneumoniae*, other Gram-positive cocci and the alpha-haemolytic streptococci**

S. pneumoniae infections



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Other streptococci

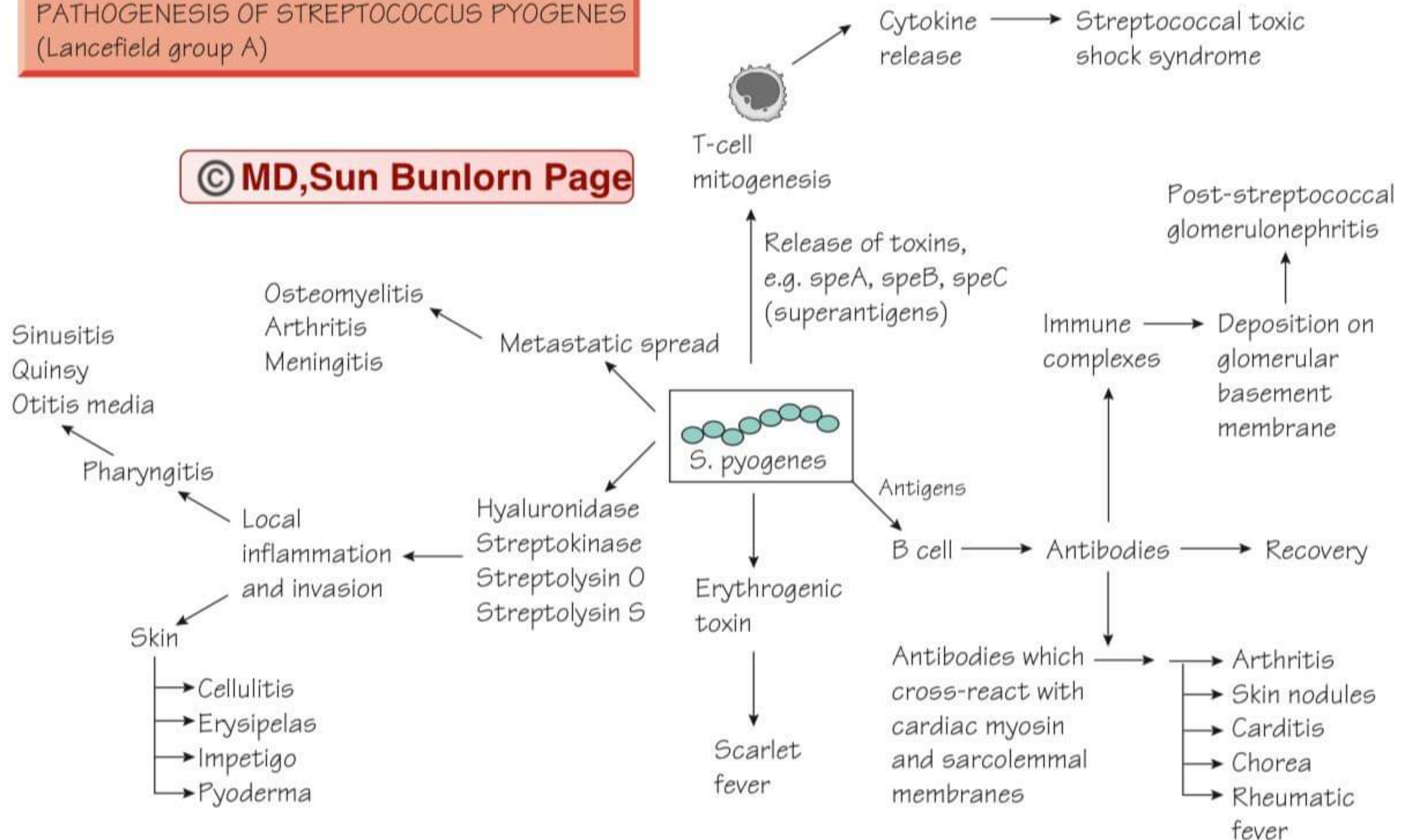
<i>Streptococcus agalactiae</i> (group B)	Neonatal pneumonia, septicaemia, meningitis, rarely adult infection
<i>Streptococcus equi</i> , <i>S. equisimilis</i> , <i>S. dysgalactiae</i> , <i>S. zooepidemicus</i> (group C)	Endocarditis, skin infection, pharyngitis
Enterococci (group D) <i>E. faecalis</i> , <i>faecium</i> , <i>E. bovis</i>	UTI, endocarditis, intra-abdominal polymicrobial infection, infection in immunocompromised, ≠ resistance to glycopeptides
<i>S. milleri</i> group	
<i>S. anginosus</i> - <i>intermedius</i> - <i>constellatus</i>	Metastatic abscesses, periodontal sepsis
<i>S. oralis</i> , <i>S. sanguis</i> , <i>S. mitis</i>	Endocarditis
<i>S. mutans</i>	Dental caries

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Streptococcal infections

PATHOGENESIS OF STREPTOCOCCUS PYOGENES
(Lancefield group A)

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Listeria, Bacillus, Corynebacterium and environmental mycobacteria

Listeria monocytogenes

Diagnosis

- Culture

Treatment

- Ampicillin + aminoglycoside

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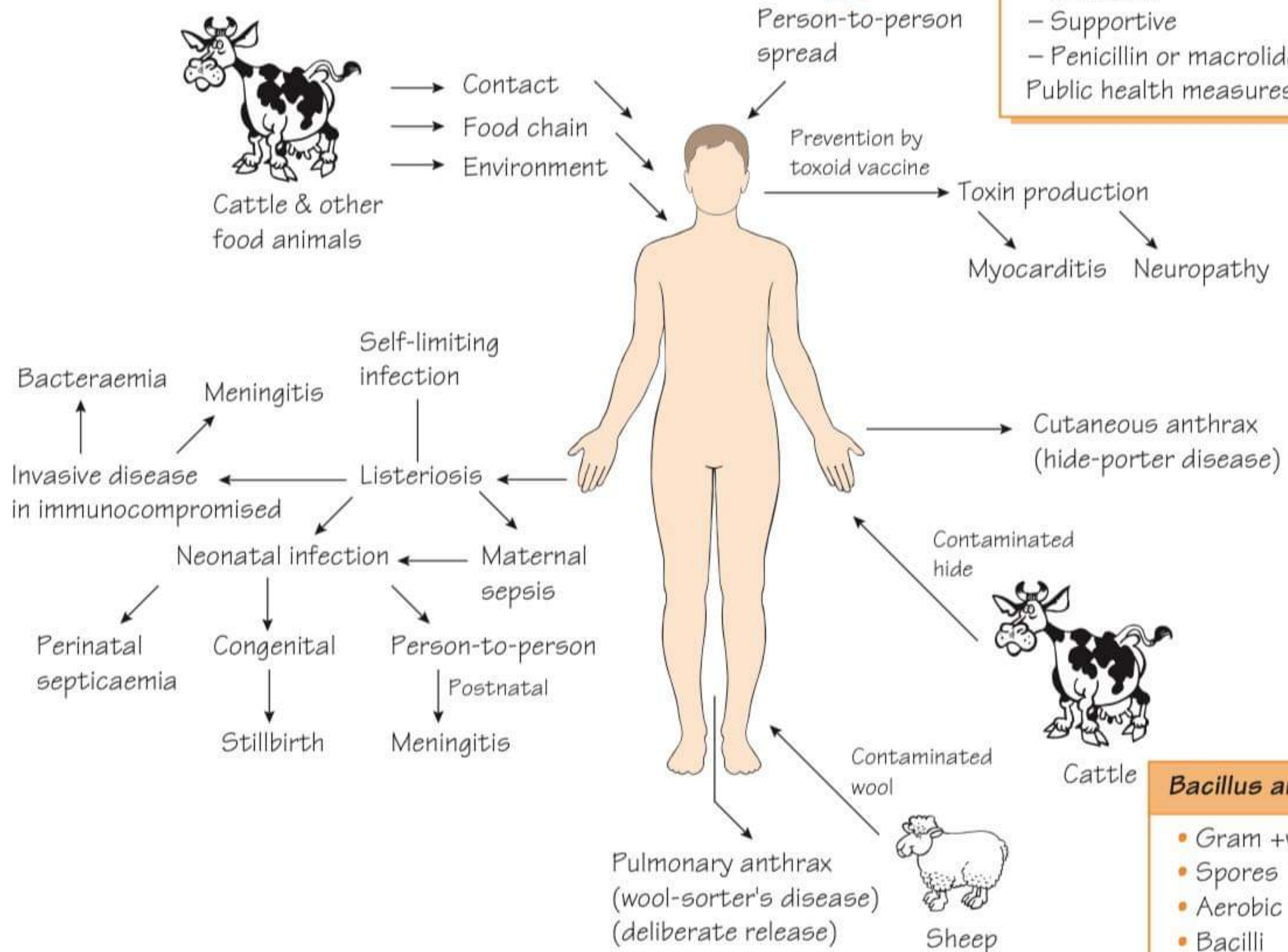
Corynebacterium diphtheriae

Diagnosis

- Clinical
- Culture

Treatment

- Antitoxin
- Supportive
- Penicillin or macrolide
- Public health measures

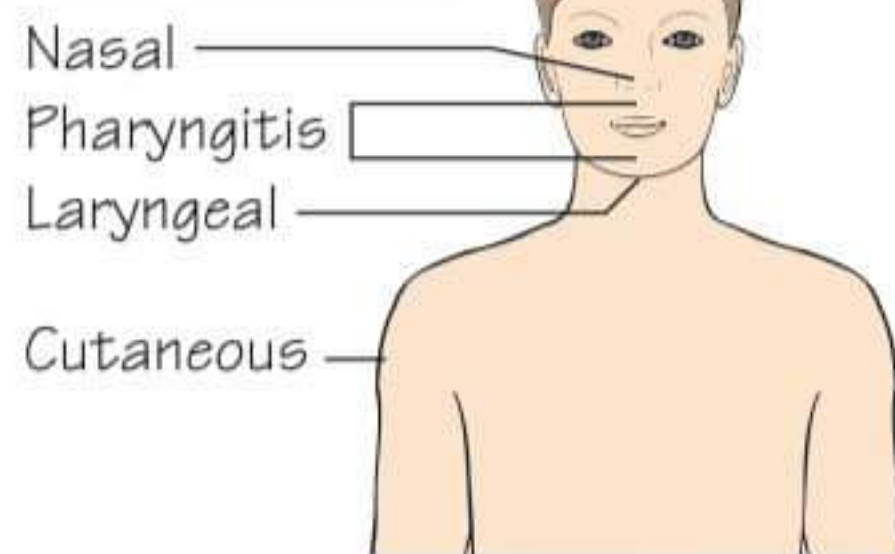


Bacillus anthracis

- Gram +ve
- Spores
- Aerobic
- Bacilli

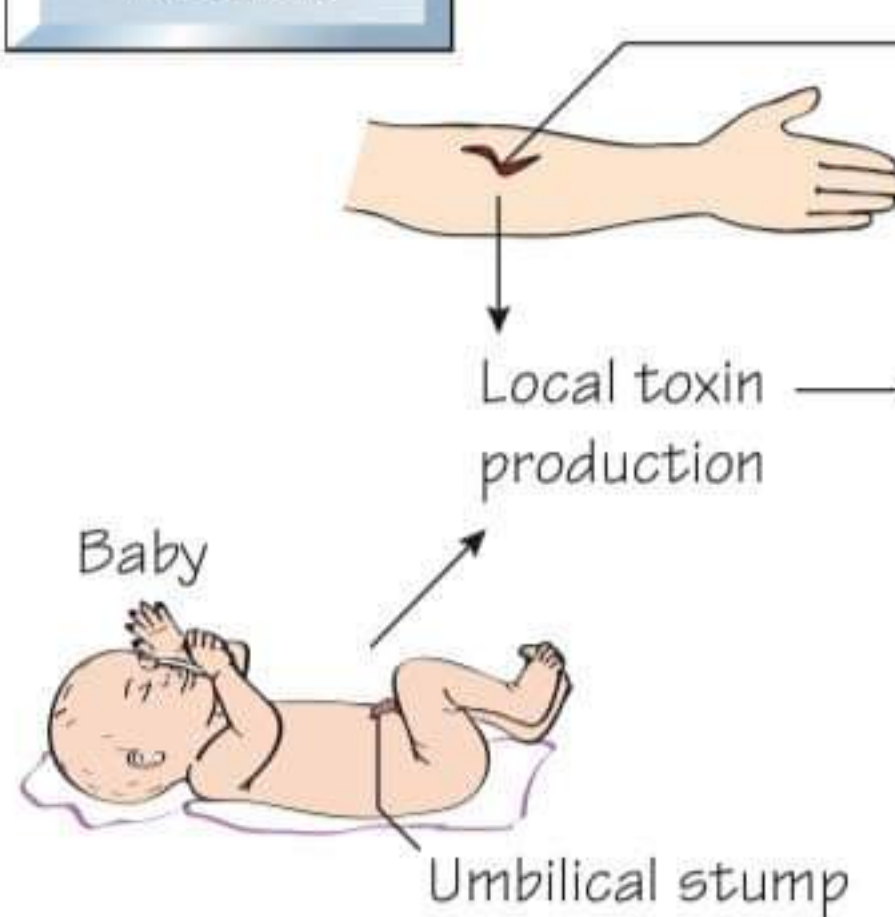
17 Diphtheria, tetanus and pertussis

Diphtheria



Toxin
– myocarditis
– peripheral neuropathy

Tetanus



prevents γ ABA release,
muscle spasm,
respiratory embarrassment

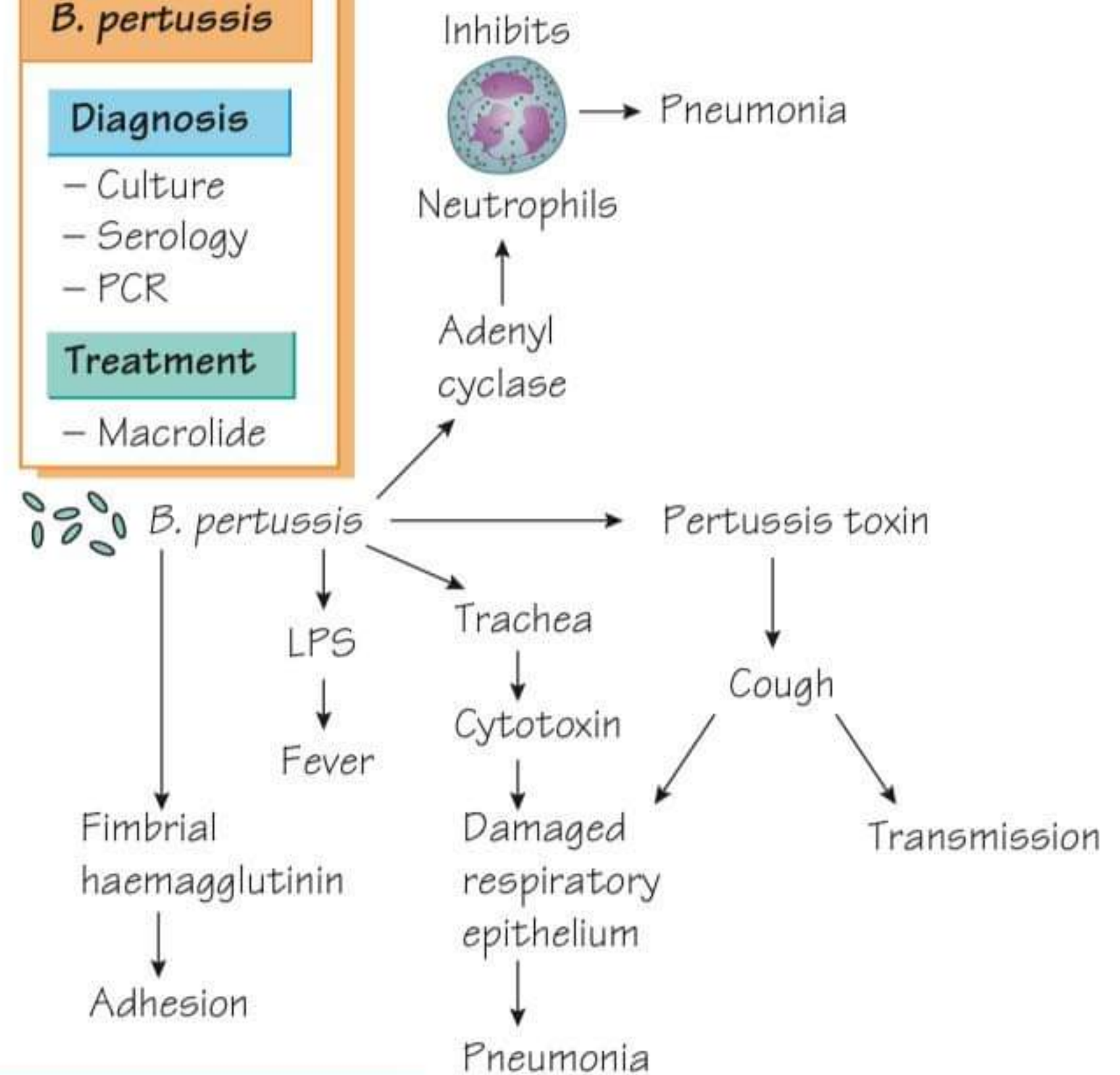
B. pertussis

Diagnosis

- Culture
- Serology
- PCR

Treatment

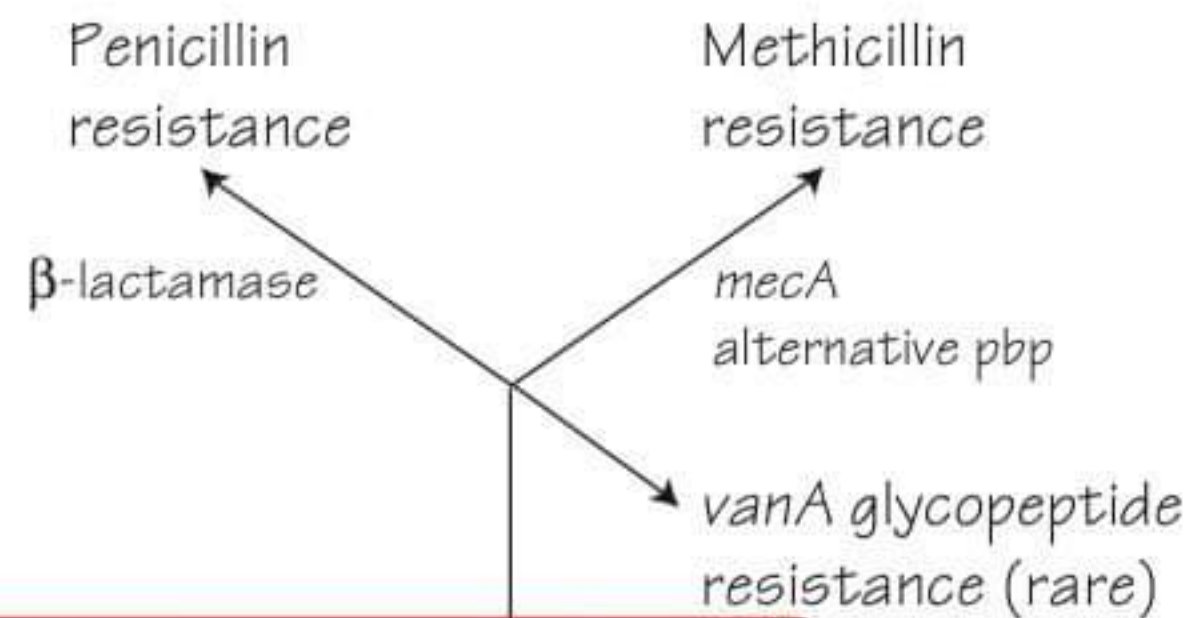
- Macrolide



TREATMENT

- Penicillin if susceptible
- Flucloxacillin if penicillin resistant
- Vancomycin or teicoplanin if methicillin resistant
– control measures needed in hospital

Antibiotic resistance



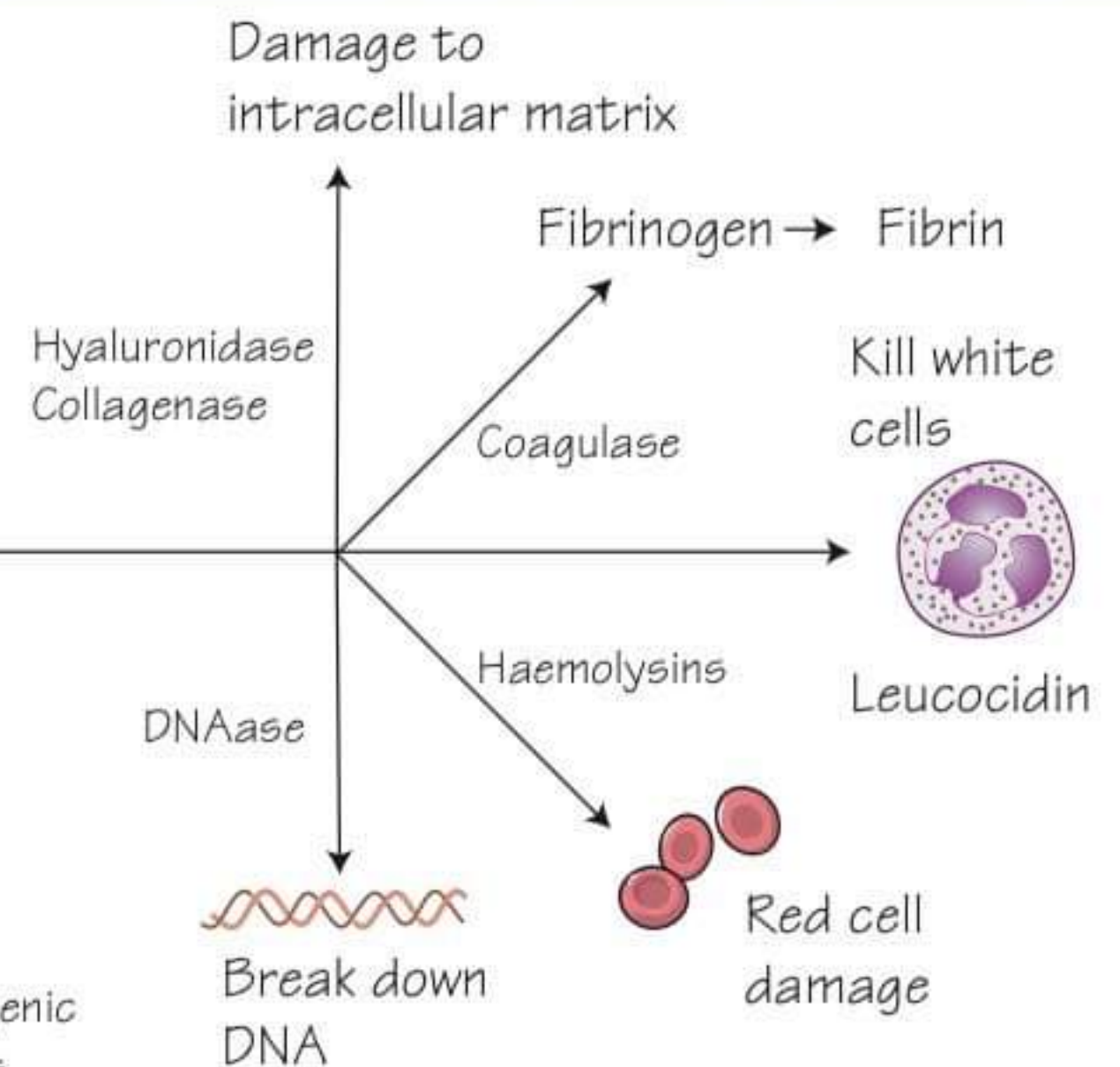
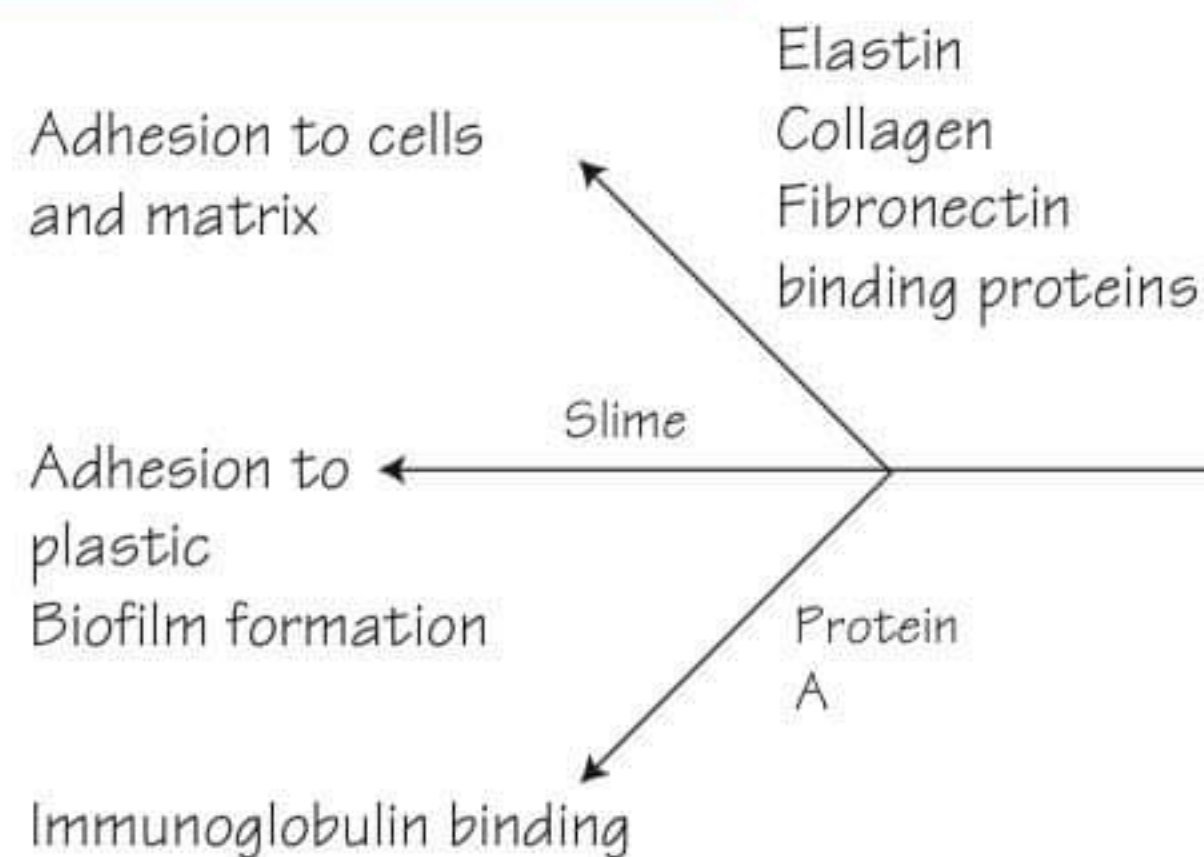
LOCAL INFECTIONS

- Skin
 - Impetigo
 - Furunculosis
- Lung
 - Cavitating pneumonia
- Bones and joints
 - Osteomyelitis
 - Septic arthritis

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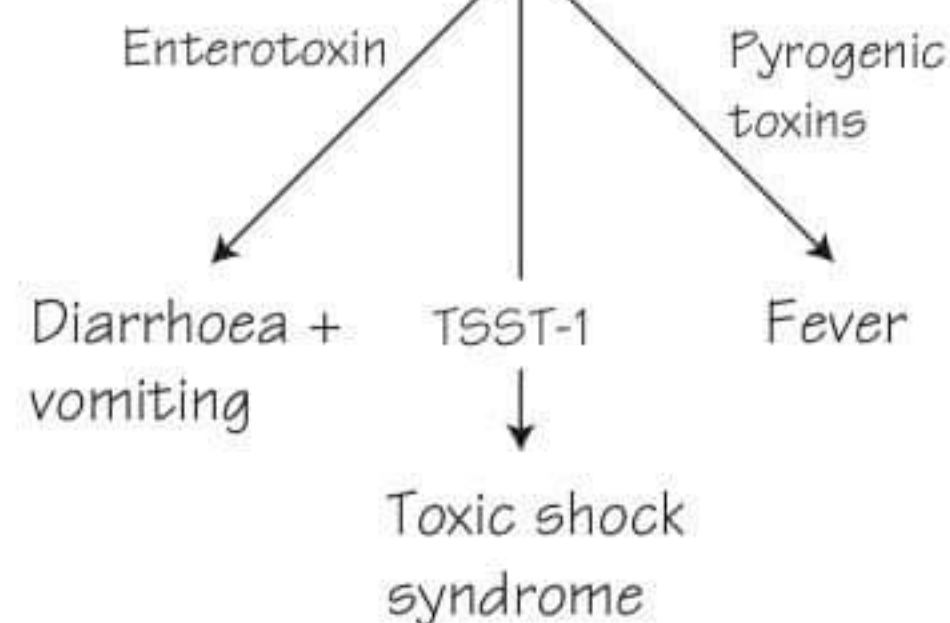
Mechanisms of tissue damage and abscess formation

Establishment of infection



TOXIN-MEDIATED DISEASE

- Acute gastroenteritis
- Toxic shock syndrome
- Staphylococcal scalded skin syndrome



Toxin-mediated disease

SYSTEMIC INFECTION

- Bacteraemia
- Metastatic abscess
- Endocarditis
- Line-related sepsis

Small Gram-negative coccobacilli: *Haemophilus*, *Brucella*, *Francisella*, *Yersinia* and *Bartonella*

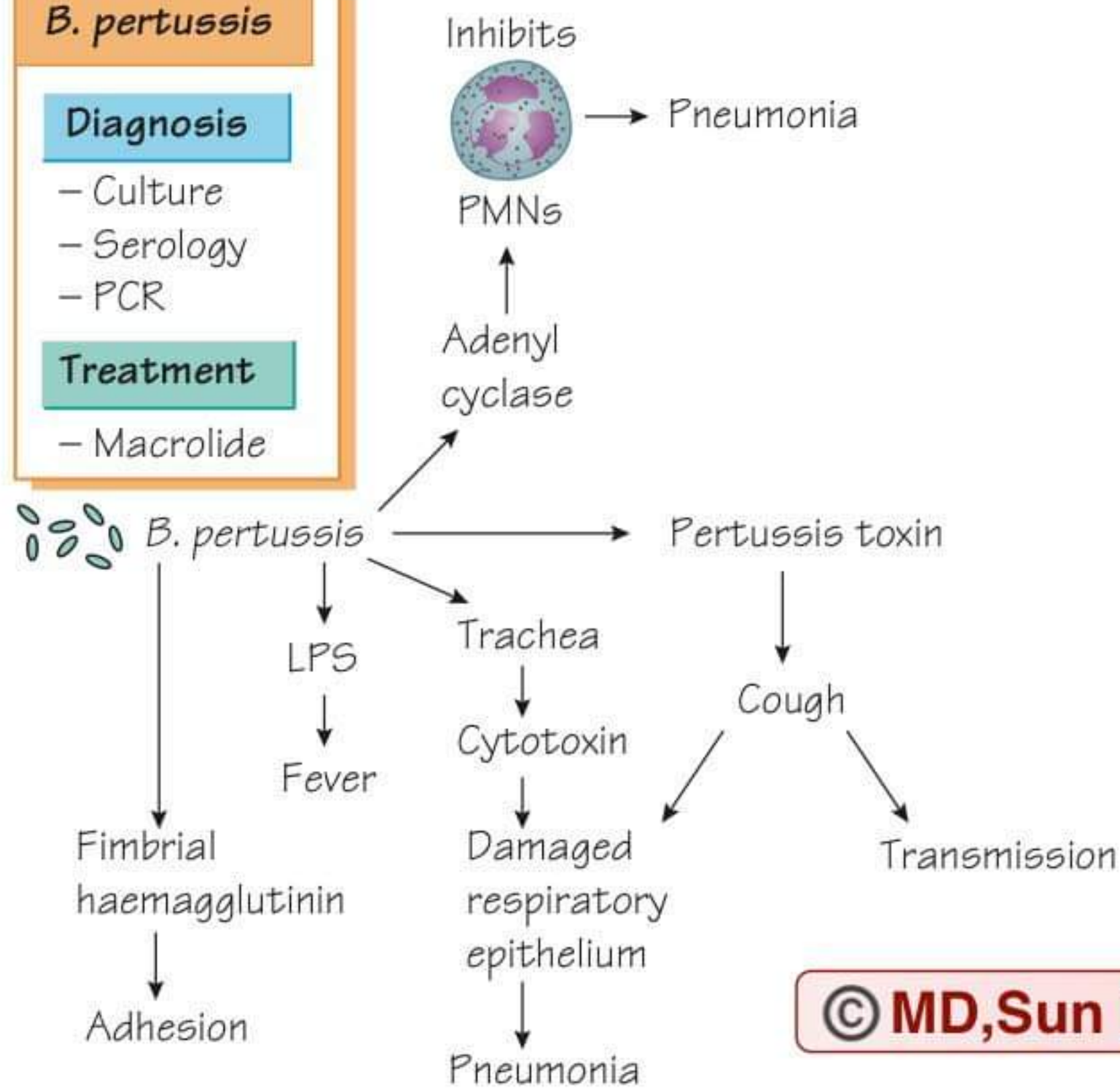
B. pertussis

Diagnosis

- Culture
- Serology
- PCR

Treatment

- Macrolide



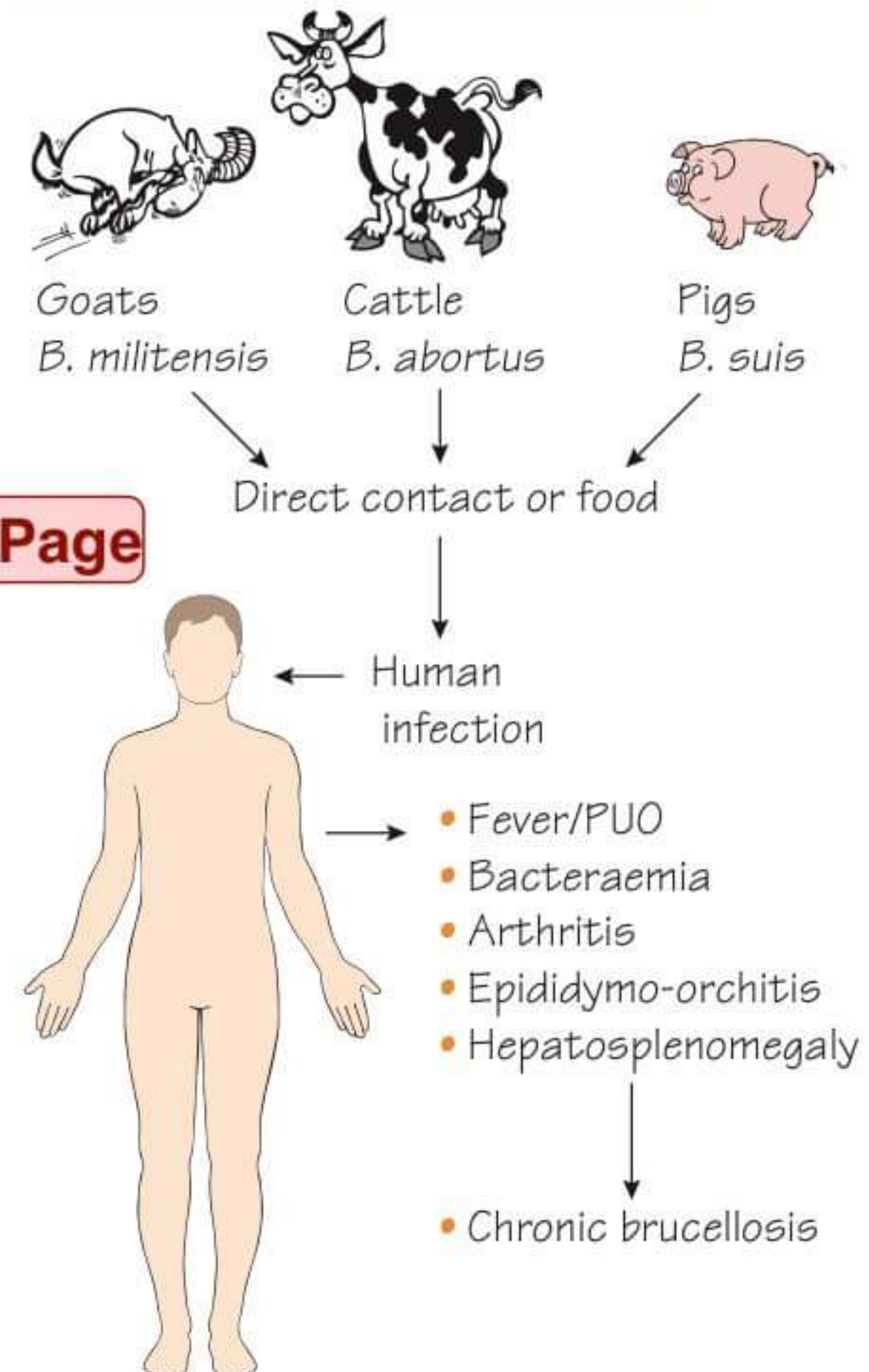
Brucella spp.

Diagnosis

- Blood & marrow culture
- Serology
- Antigen detection

Treatment

- Tetracycline & aminoglycoside



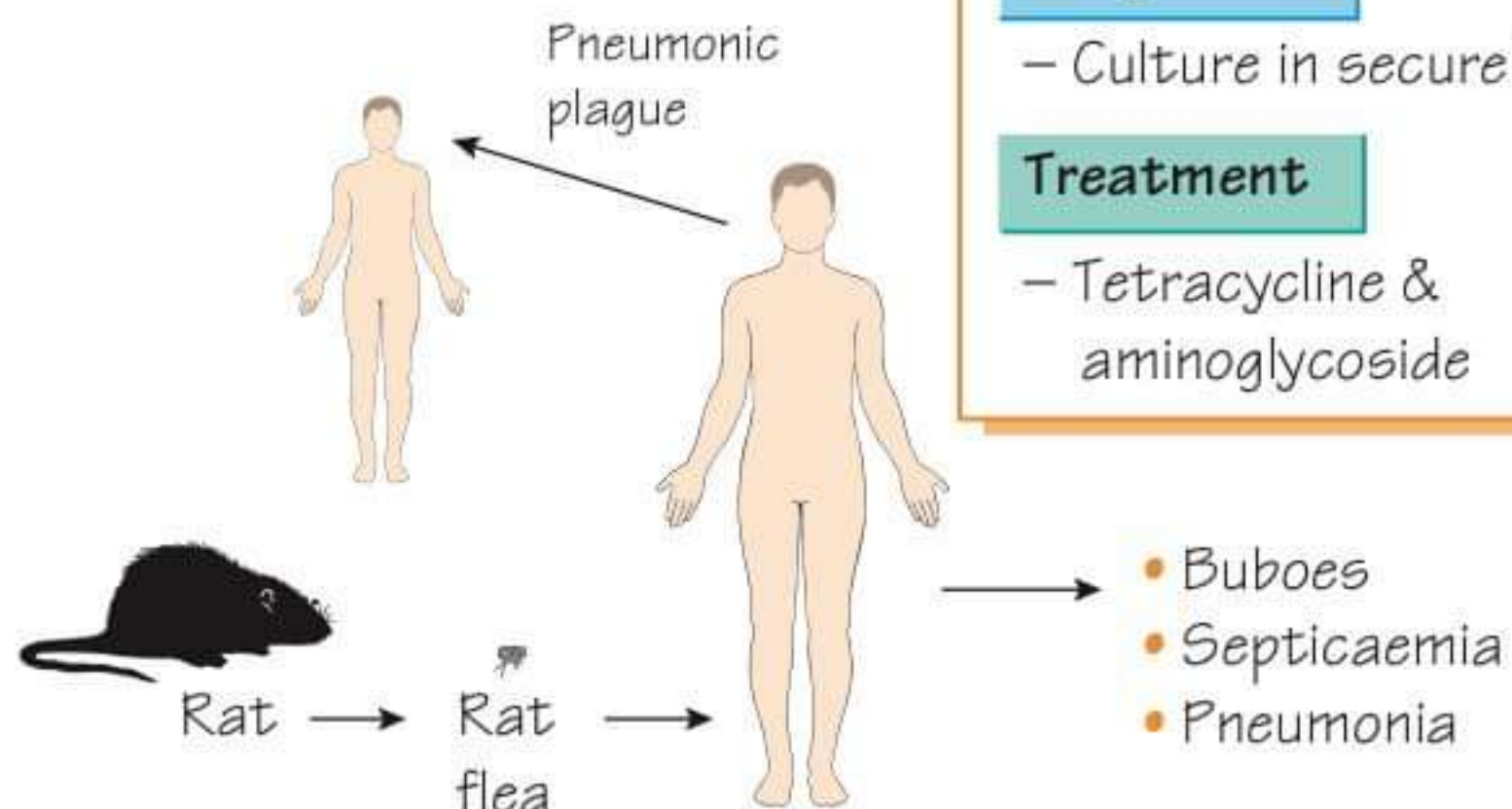
Y. pestis

Diagnosis

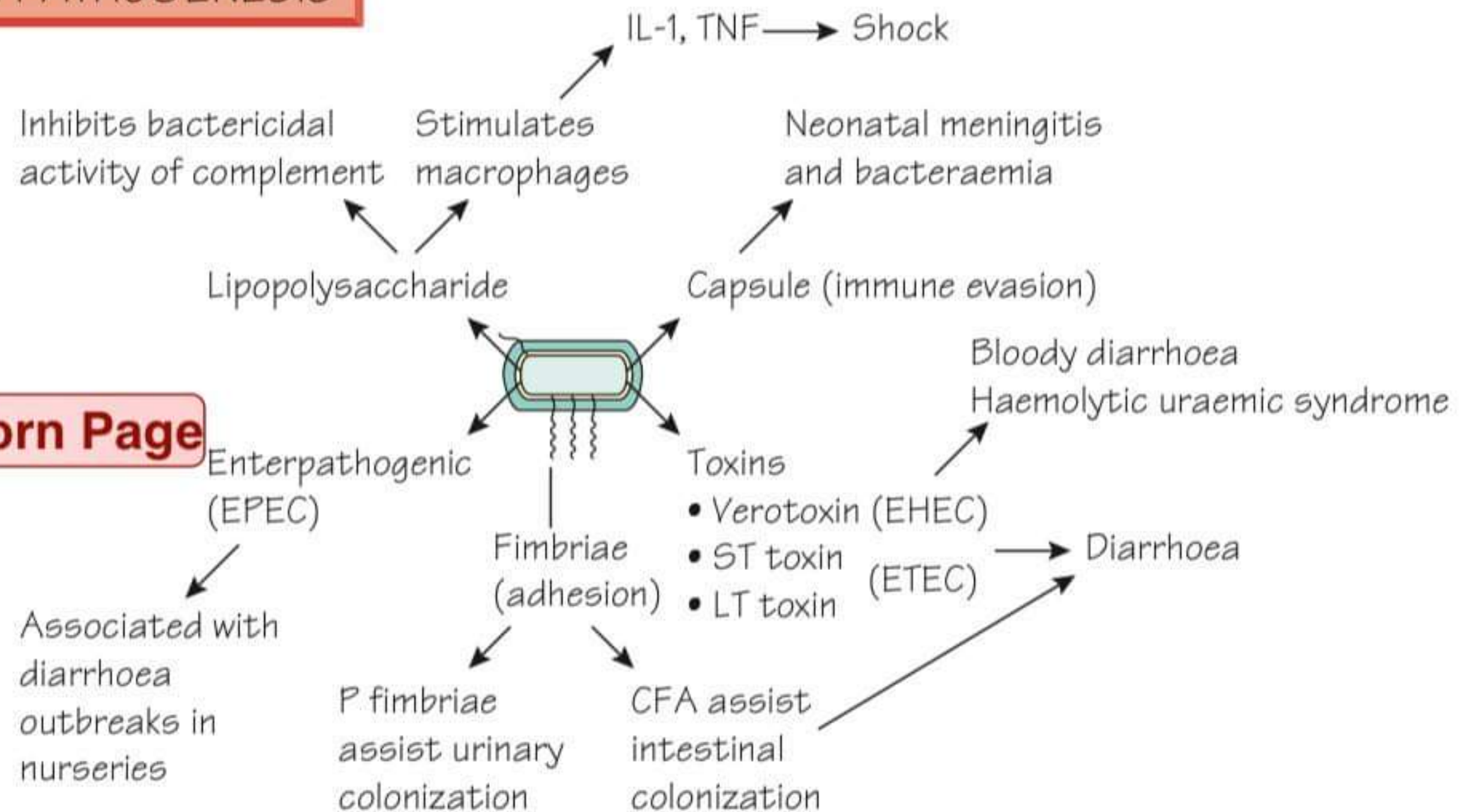
- Culture in secure lab

Treatment

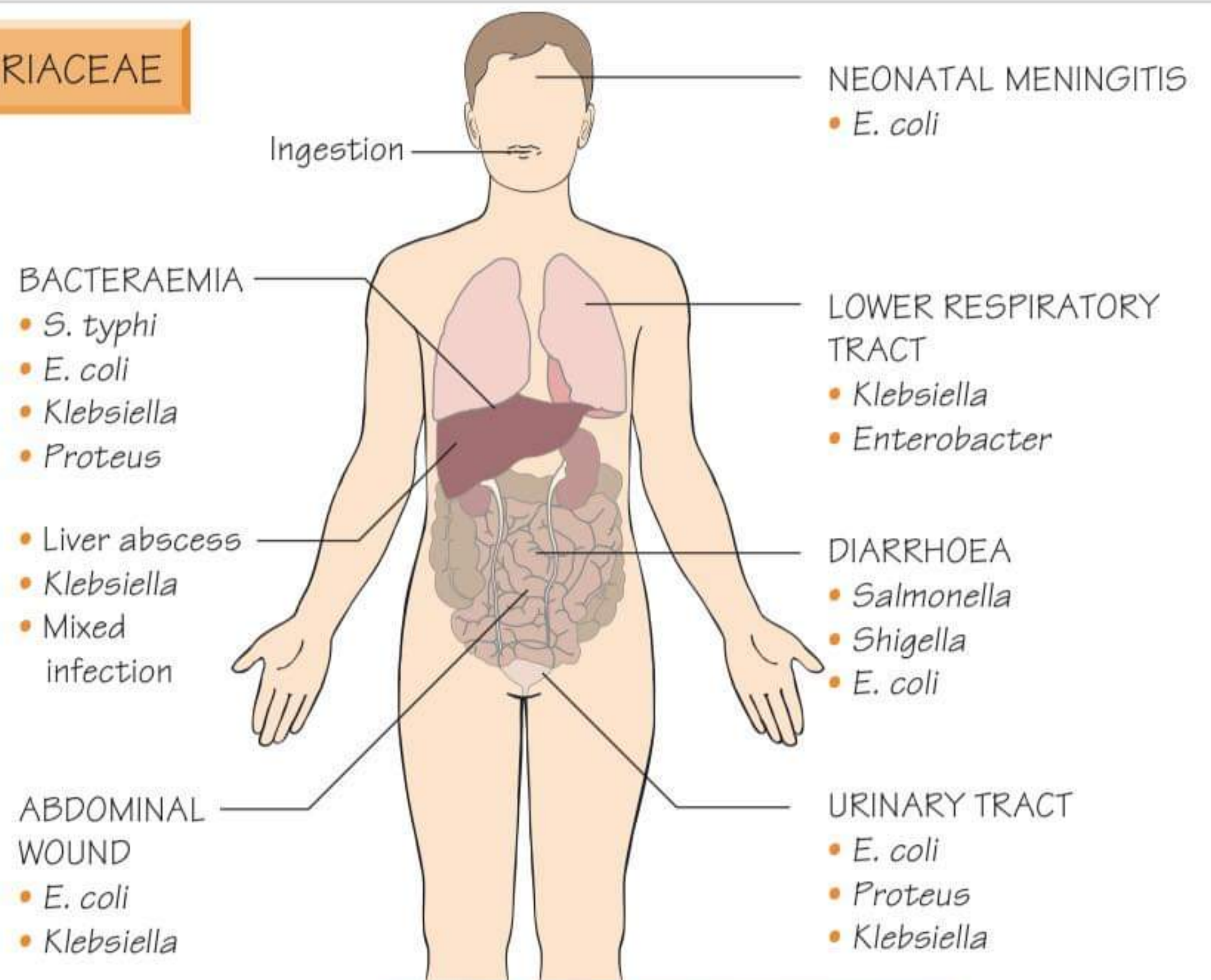
- Tetracycline & aminoglycoside



E.coli PATHOGENESIS



INFECTION BY ENTEROBACTERIACEAE



SALMONELLA INFECTIONS

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GASTROENTERITIS

Diarrhoea
FeverPeyer's patches
• Inflammation
• Ulceration

4-5%

← Bacteraemia →

ENTERIC FEVER

Peyer's patches
Lymphatic drainage
BloodstreamFever
PUO

100%

↓
RecirculationGallbladder
Peyer's patches
Ulcerationvarying
GI symptomsUsual, spontaneous
Long-term carriage rare

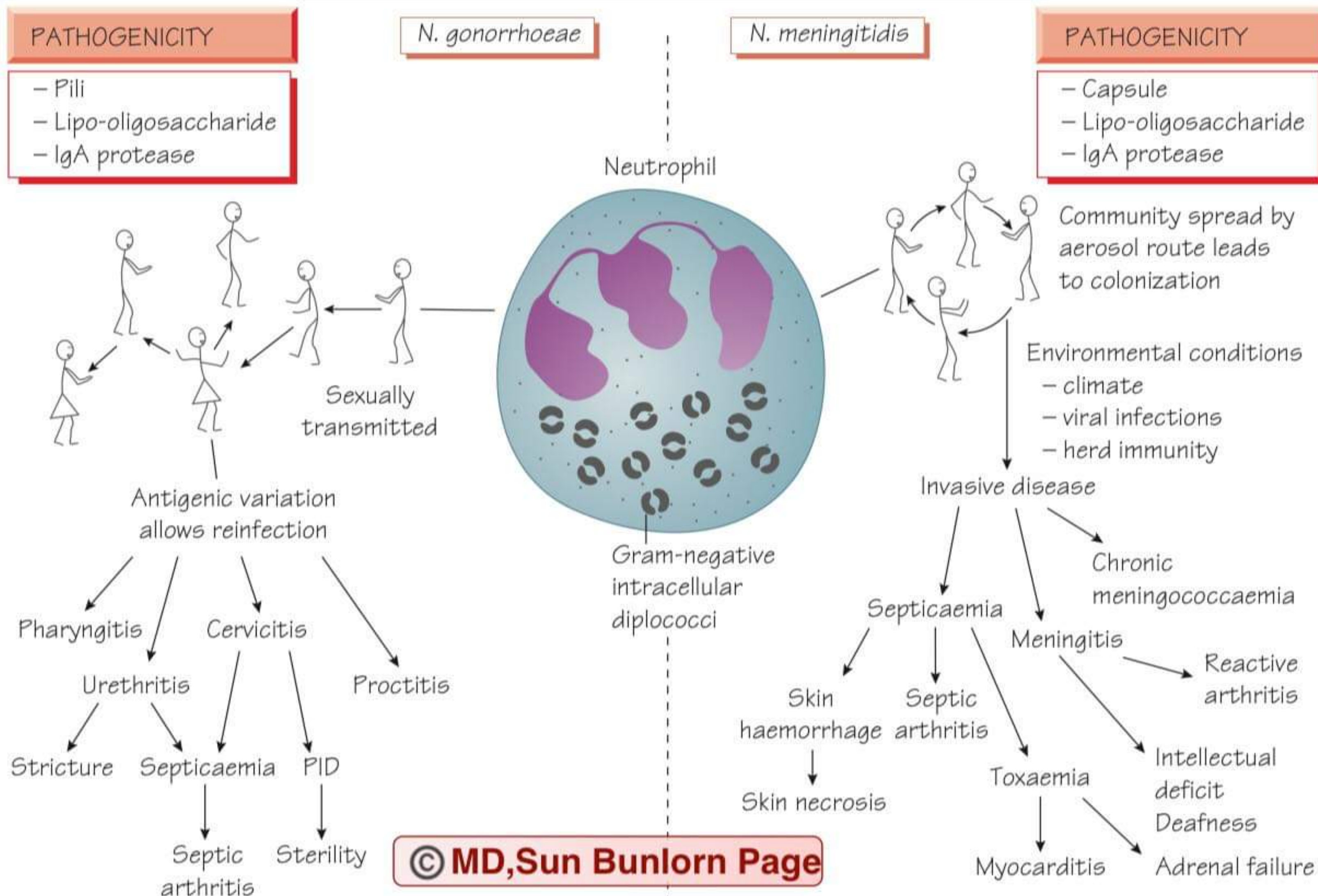
← Recovery →

10% mortality
5% long-term carriage (↑ with age)Symptomatic
Ciprofloxacin
Treat bacteraemia

← Treatment →

Ciprofloxacin

Resistance
↑ Worldwide
Need sensitivity testing

***N. gonorrhoeae*****Diagnosis**

- Gram stain
- Culture from urethra, rectum, throat, blood

Treatment

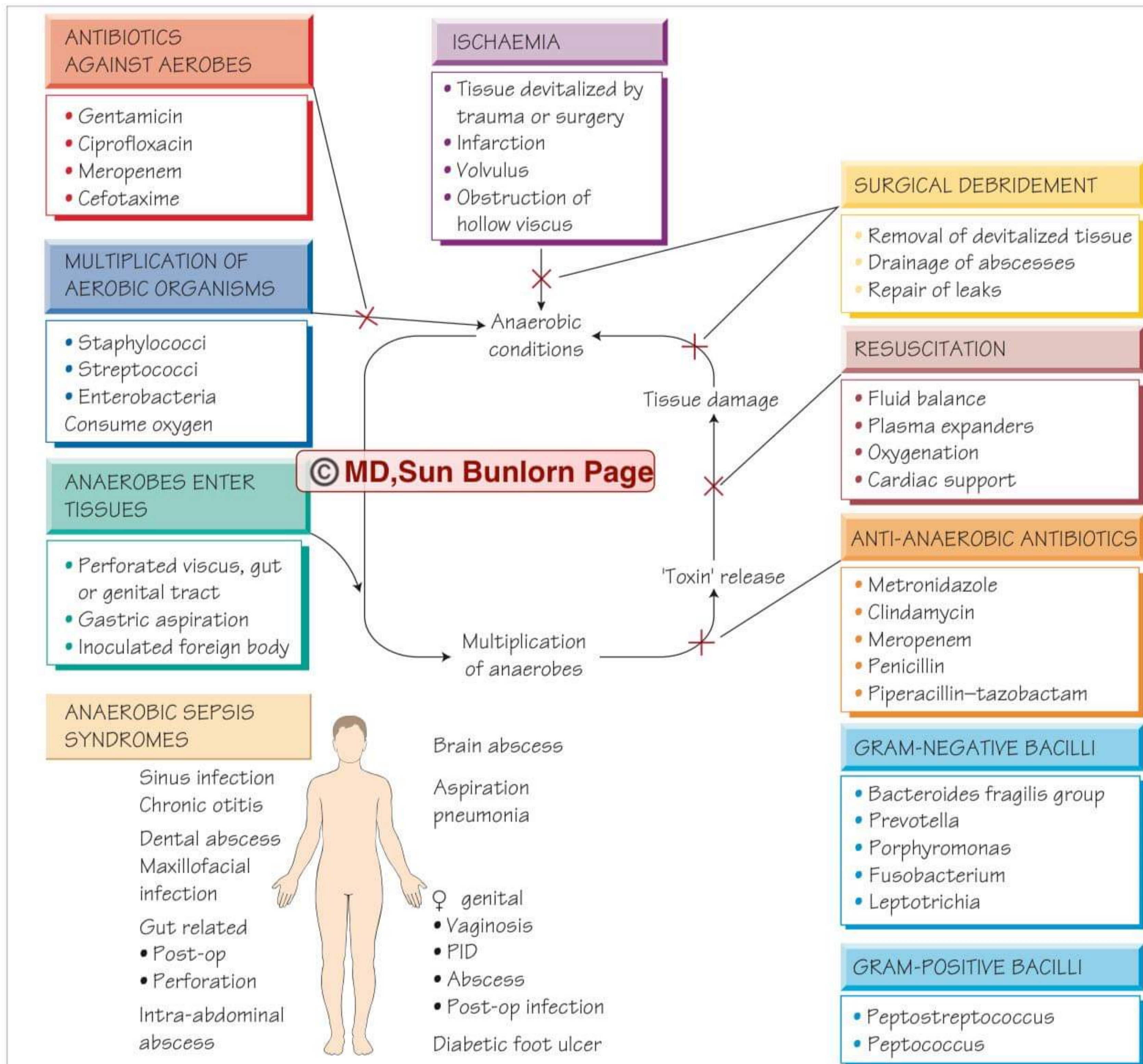
- penicillin
- ceftriaxone
- quinolones
- spectinomycin

N. meningitidis**Diagnosis**

- Culture blood (aspirate from rash/CSF)
- NAAT (blood/CSF)
- Antigen detection (CSF)

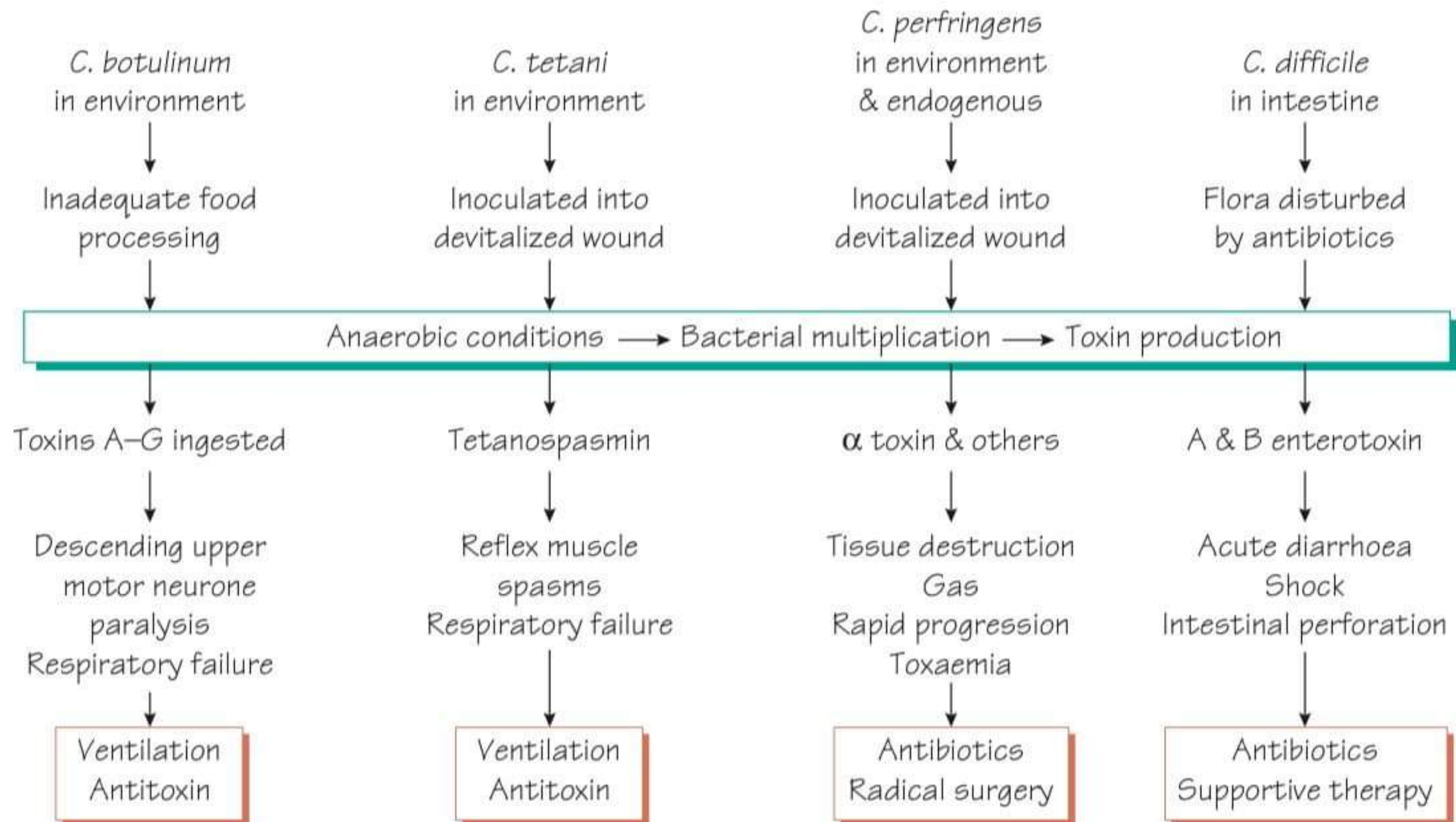
Treatment

- Urgent high-dose i.v. antibiotic
- penicillin
- cefotaxime/ceftriaxone



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Clostridium



Environmental pathogens: *Pseudomonas*, *Burkholderia* and *Legionella*

Pseudomonas aeruginosa

Diagnosis

– Culture

Treatment

- β -lactams
- Quinolones
- Aminoglycosides

Infections

Pneumonia
Bacteraemia
Otitis externa
Ocular infections
UTI

Pathogenicity

Exotoxin A
Pili
Capsule
Alginate

Stenotrophomonas and *Acinetobacter*

- Free living in environment
- Multiresistant
- Immunocompromised patient
- Previous antibiotic therapy
- Ventilator/nebulizer
- i.v. devices/prostheses

Transmission



Ventilator

Contaminated
eye fluids

Other patients

Transmission Colonization of water supply

Colonization
of air-
conditioning
system

Inhalation

Legionella pneumophila

Risk factors

- Age
- Chest disease
- Smoking
- Alcohol

Diagnosis

- Isolation
- Urinary antigen
- Serology

Treatment

- Macrolide
- Rifampicin

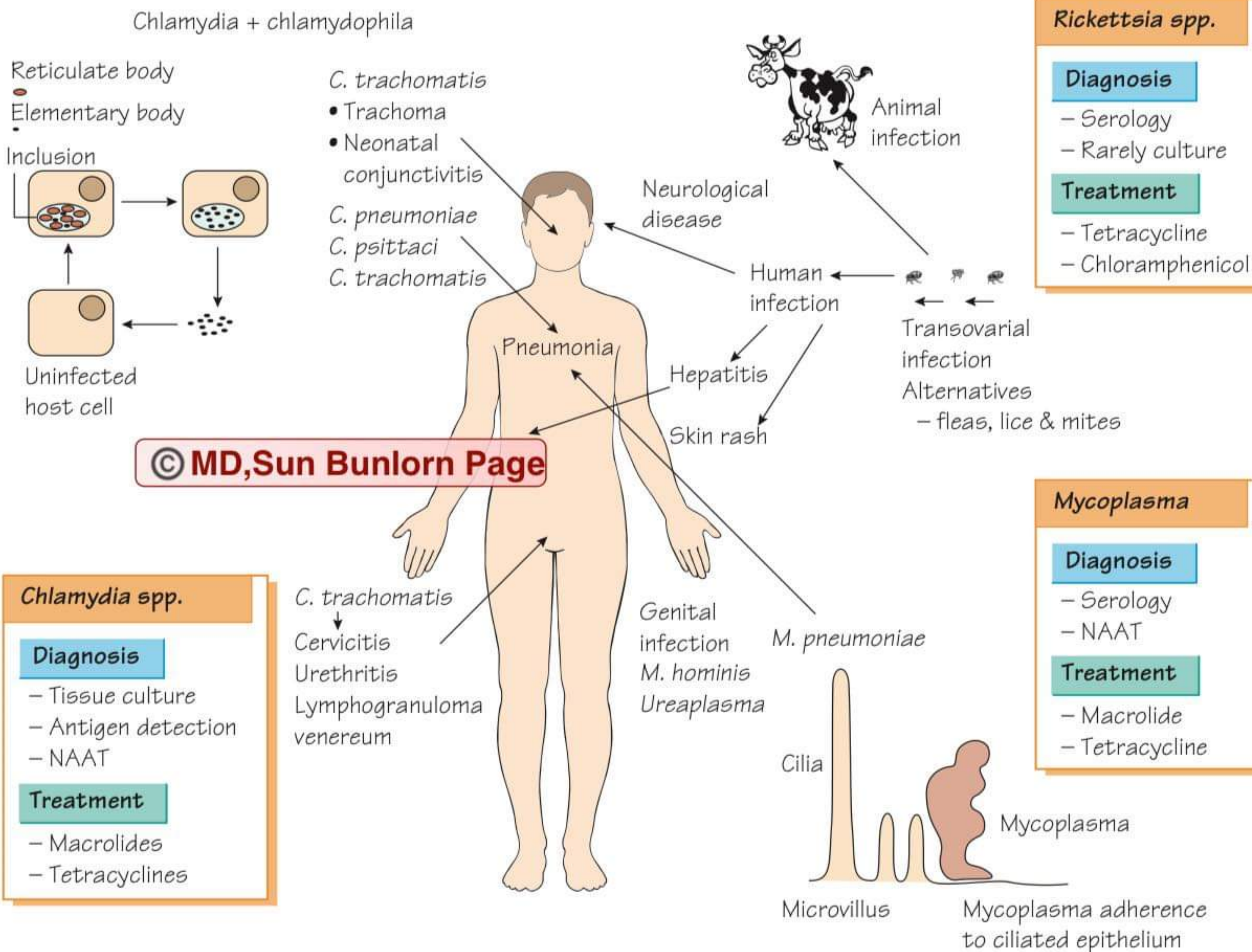
Pathogenicity

- Exoprotease
- Macrophage infectivity potentiator

Infections

Pneumonia
(high mortality)
Mild self-limiting
respiratory
infection
(Pontiac fever)

ITU



SYPHILIS

- 1^o – Painless ulcer (chancre)
- 2^o – Rash, lymphadenopathy
- 3^o – Aortic aneurysm
Tabes dorsalis
General paralysis

Diagnosis

– Serological

Treatment

- Penicillin
- Cefotaxime in pregnancy

RELAPSING FEVER

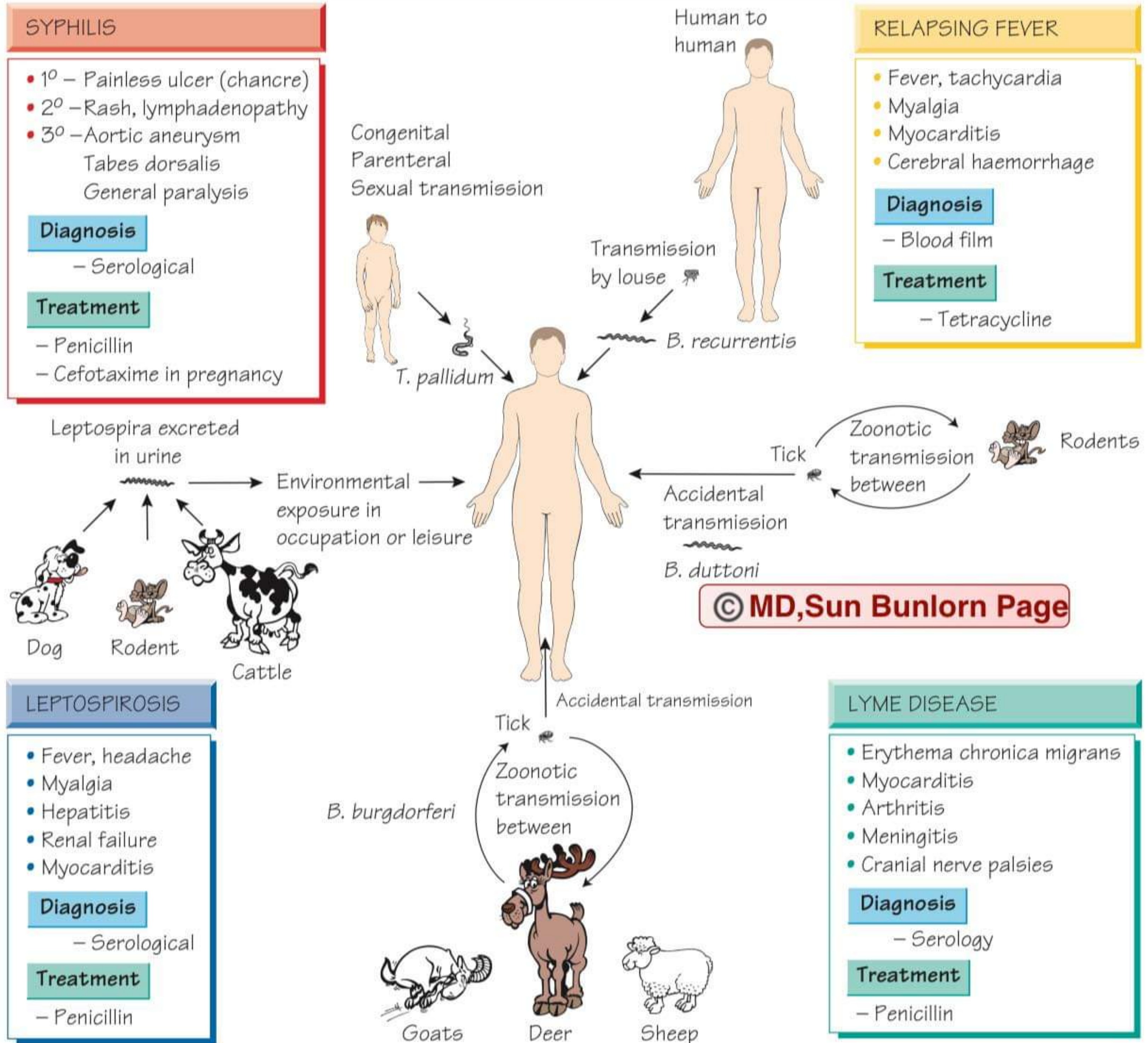
- Fever, tachycardia
- Myalgia
- Myocarditis
- Cerebral haemorrhage

Diagnosis

– Blood film

Treatment

– Tetracycline



LEPTOSPIROSIS

- Fever, headache
- Myalgia
- Hepatitis
- Renal failure
- Myocarditis

Diagnosis

– Serological

Treatment

– Penicillin

LYME DISEASE

- Erythema chronica migrans
- Myocarditis
- Arthritis
- Meningitis
- Cranial nerve palsies

Diagnosis

– Serology

Treatment

– Penicillin