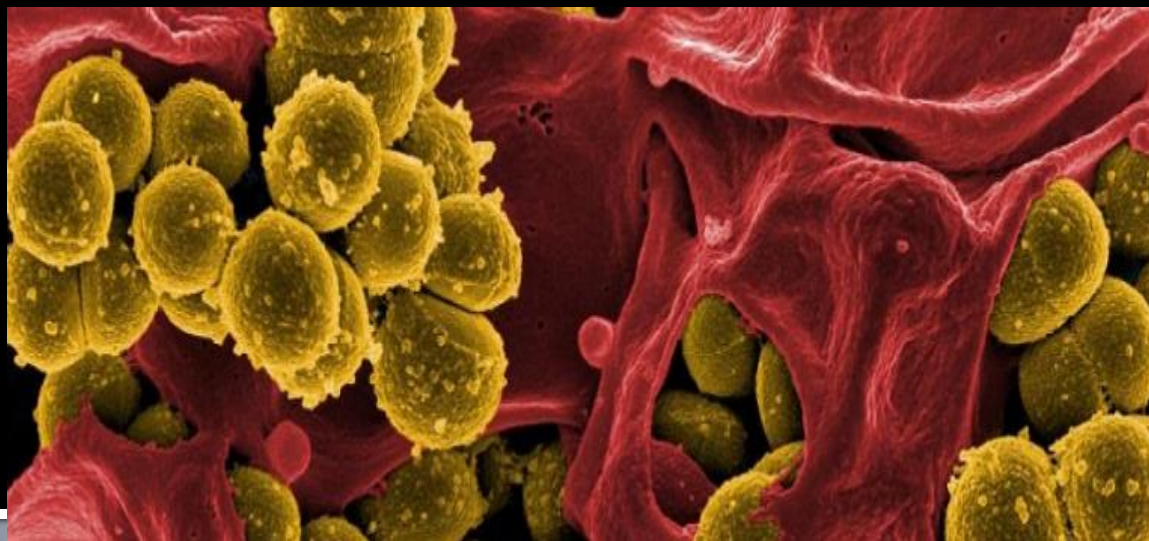


# СТРАТЕГИЈА НА ТРЕТМАН НА ВОСПАЛИТЕЛНИТЕ ЗАБОЛУВАЊА НА СРЦЕТО



Е.Србиновска Костовска, FESC, FEACVI, FACC

# Воспалителни болести и кардиоваскуларниот систем

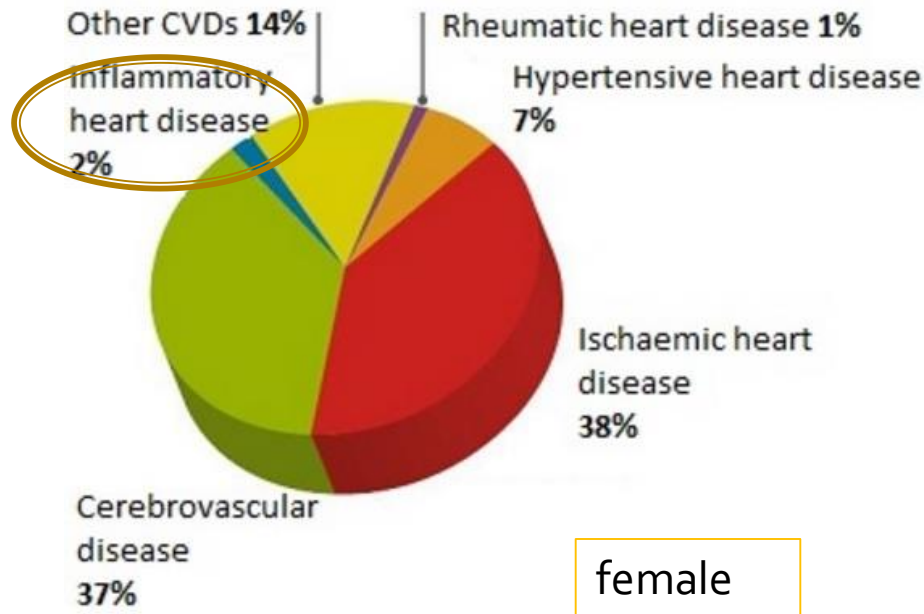
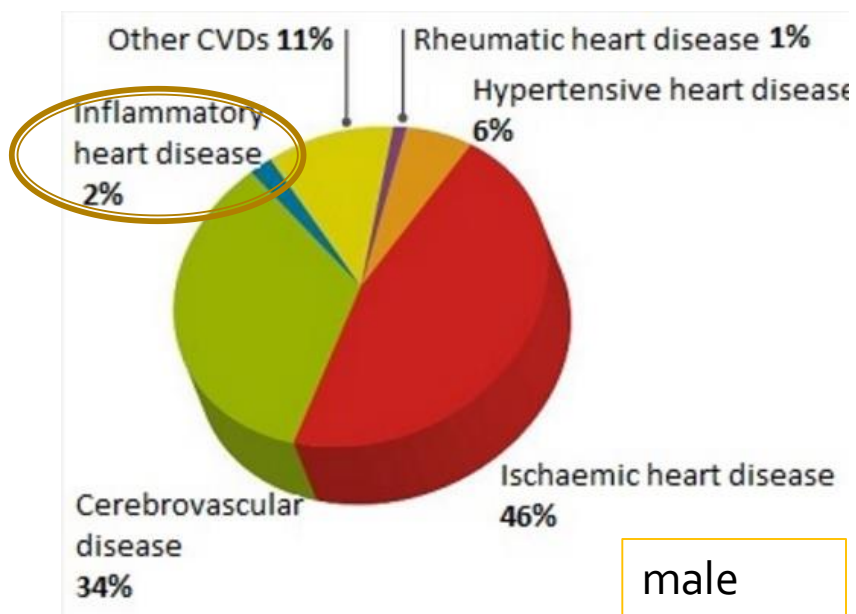
- Воспалителни болести на срцето
  - Перикардитис
    - миоперикардитис
  - Миокардитис
  - Инфективен ендокардитис

- Предиспонирачки состојби за инфекција
  - Срцева слабост од било која причина
  - Валвуларни болести на срцето
  - Пулмонална хипертензија

Инфламација и атеросклероза



# Дистрибуција на смртност од кардиоваскуларни болести



May 29, 2017 -



# ПЕРИКАРДИТИС



# ПЕРИКАРДИТИС – КЛИНИЧКА ПРЕЗЕНТАЦИЈА

- Перикардитис:
  - Акутен,
  - субакутен,
  - Хроничен, и
  - Рекурентен

Перикардитисот е одговорен за  
*0,1% од целокупната*  
*хоспитализација* и за *5% од*  
приемите во Ургентните  
амбуланти заради **градна болка**

- Ефузивен перикардитис
- Тампонада
- Констриктивен перикардитис
- Перикардијални маси

# ПЕРИКАРДИТИС

**Aetiology of pericardial diseases. The pericardium may be affected by all categories of diseases, including infectious, autoimmune, neoplastic, iatrogenic, traumatic, and metabolic**

## A. Infectious causes:

**Viral (common):** Enteroviruses (coxsackieviruses, echoviruses), herpesviruses (EBV, CMV, HHV-6), adenoviruses, parvovirus B19 (possible overlap with aetiological viral agents of myocarditis).

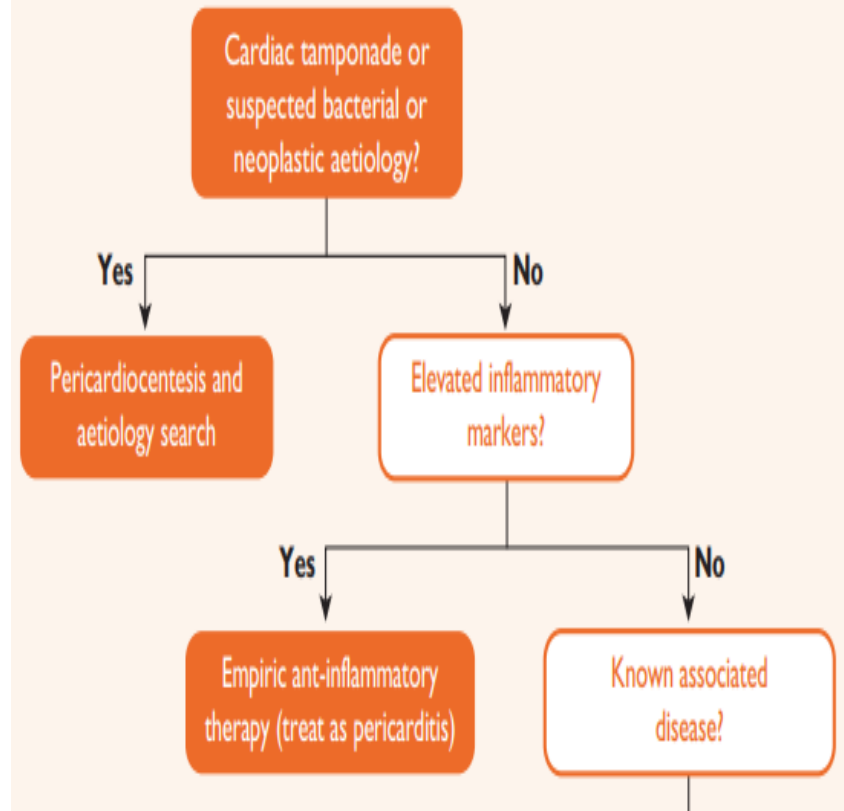
**Bacterial:** *Mycobacterium tuberculosis* (common, other bacterial rare), *Coxiella burnetii*, *Borrelia burgdorferi*, rarely: *Pneumococcus* spp, *Meningococcus* spp, *Gonococcus* spp, *Streptococcus* spp, *Staphylococcus* spp, *Haemophilus* spp, *Chlamydia* spp, *Mycoplasma* spp, *Legionella* spp, *Leptospira* spp, *Listeria* spp, *Providencia stuartii*.

**Fungal (very rare):** *Histoplasma* spp (more likely in immunocompetent patients), *Aspergillus* spp, *Blastomyces* spp, *Candida* spp (more likely in immunocompromised host).

**Parasitic (very rare):** *Echinococcus* spp, *Toxoplasma* spp

## B. Non-infectious causes:

Географска зависност



# ПЕРИКАРДИТИС

## Commonly prescribed anti-inflammatory therapy for acute pericarditis

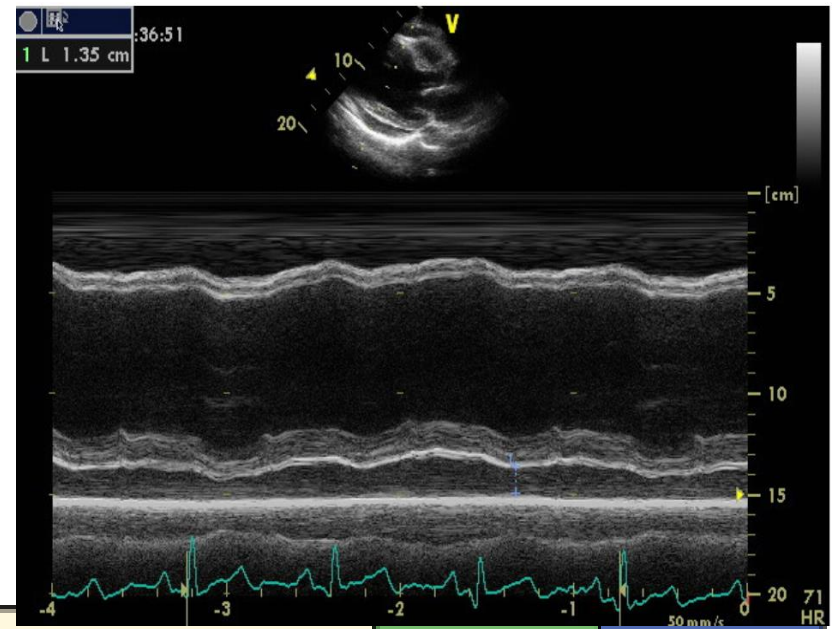
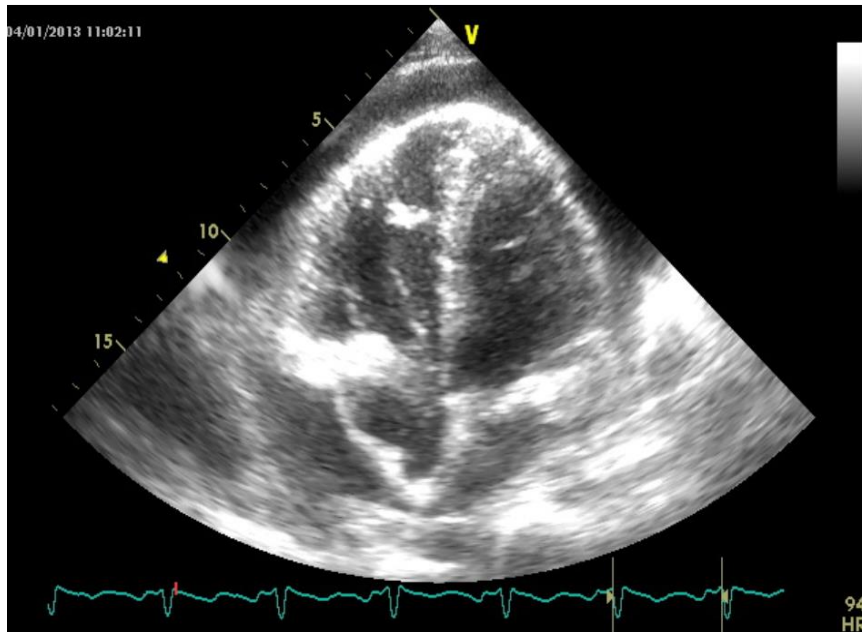
Drug	Usual dosing*	Tx duration*	Tapering*
Aspirin	750–1000 mg every 8h	1–2 weeks	Decrease doses by 250–500 mg every 1–2 weeks
Ibuprofen	600 mg every 8h	1–2 weeks	Decrease doses by 200–400 mg every 1–2 weeks
Colchicine	0.5 mg once (<70 kg) or 0.5 mg b.i.d. (≥70 kg)	3 months	Not mandatory, alternatively 0.5 mg every other day (< 70 kg) or 0.5 mg once (≥70 kg) in the last weeks

## 7 Commonly prescribed anti-inflammatory therapies for recurrent pericarditis (for further details see Web Tables 1A and 1B)

Drug	Usual initial dose*	Tx duration*	Tapering*
Aspirin	500–1000 mg every 6–8 hours (range 1.5–4 g/day)	weeks-months	Decrease doses by 250–500 mg every 1–2 weeks*
Ibuprofen	600 mg every 8 hours (range 1200–2400 mg)	weeks-months	Decrease doses by 200–400 mg every 1–2 weeks*
Indomethacin	25–50 mg every 8 hours; start at lower end of dosing range and titrate upward to avoid headache and dizziness.	weeks-months	Decrease doses by 25 mg every 1–2 weeks*
Colchicine	0.5 mg twice or 0.5 mg daily for patients <70 kg or intolerant to higher doses.	At least 6 months	Not necessary, alternatively 0.5 mg every other day (<70 kg) or 0.5 mg once (≥70 kg) in the last weeks

АНТИБИОТИК- КОГА?

# ПЕРИКАРДИТИС



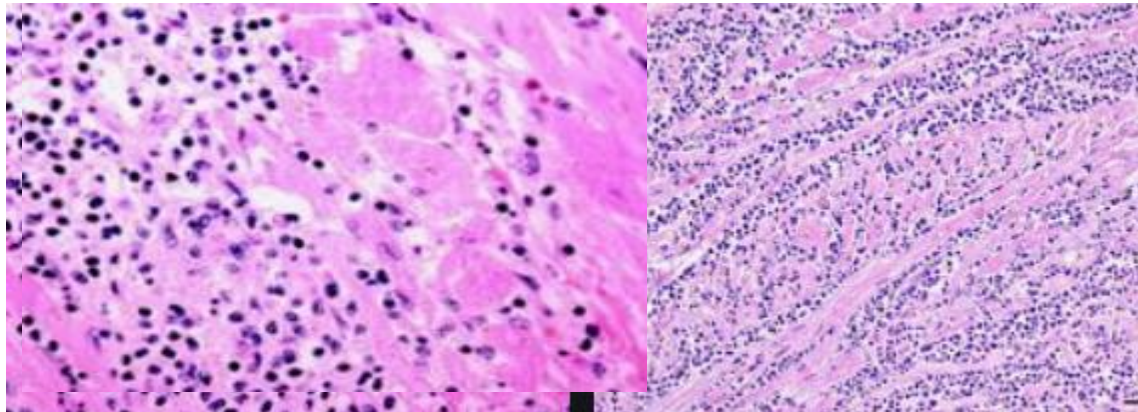
Evaluation of response to anti-inflammatory therapy is recommended after 1 week

I

B



# МИОКАРДИТИС



# МИОКАРДИТИС

**Table 1** Causes of myocarditis

## Infectious causes

RNA viruses: picornaviruses (coxsackie A + B, echovirus, poliovirus, hepatitis virus), orthomyxovirus (influenza), paramyxoviruses (respiratory syncytial virus, mumps), togaviruses (rubella), flaviviruses (dengue fever, yellow fever)

DNA viruses: adenovirus (A 1, 2, 3, and 5), erythrovirus [1 (B19V) and 2], herpesviruses (human herpes virus 6 A/B, cytomegalievirus, Epstein-Barr virus, varicella-zoster virus), retrovirus (HIV)

Bacteria: chlamydia (*C. pneumonia/psittacosis*) haemophilus influenza, legionella, pneumophilia, brucella clostridium, francisella tularensis, neisseria meningitis, mycobacterium (tuberculosis), salmonella, staphylococcus, streptococcus A, *S. pneumonia*, tularemia, tetanus, syphilis, *Vibrio cholera*

Spirocheta: *Borrelia recurrentis*, leptospira, *Treponema pallidum*

Reckettisia: *Coxiella burnetii*, *R. rickettsii/prowazekii*

Fungi: actinomyces, aspergillus, candida, cryptococcus, histoplasma, nocardia

Protozoa: *Entamoeba histolytica*, leishmania, *Plasmodium falciparum*, *Trypanosoma cruzi*, *Trypanosoma brucei*, *Toxoplasma gondii*

Helminthic: ascaris, *Echinococcus granulosus*, *Schistosoma*, *Trichinella spiralis*, *Wuchereria bancrofti*

## Non-infectious causes

Autoimmune diseases: dermatomyositis, inflammatory bowel disease, rheumatoid arthritis, sjögren syndrome, systemic lupus erythematoses, Wegener's granulomatosis, giant cell myocarditis

Drugs: aminophyllin, amphetamine, anthracyclin, catecholamines, chloramphenicol, cocaine cyclophosphamid, doxorubicin, 5-fluorouracil, mesylate, methylsergit, phenytoin, trastuzumab, zidovudine

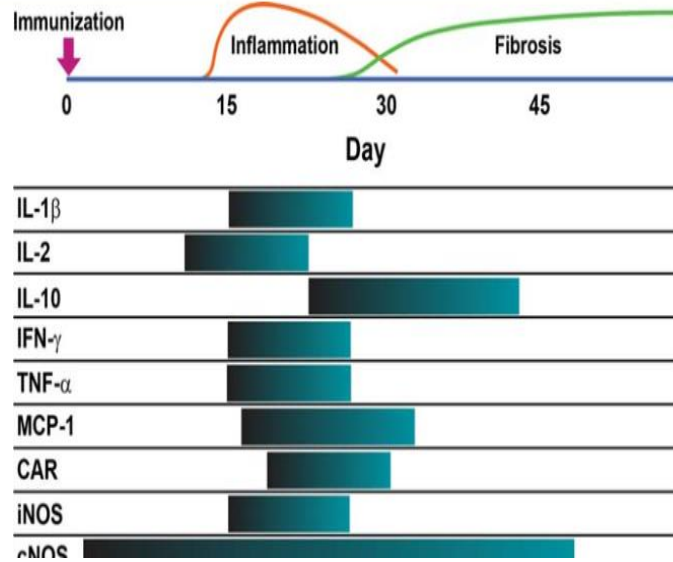
Hypersensitivity reactions (drugs): azitromycin, benzodiazepines, clozapine, cephalosporins, dapsone, dobutamin, lithium, diuretics, thiazide, methyldopa, mexiletine, Streptomycin, sulfonamides, non-steroidal anti-inflammatory drugs, tetanus toxoid, tetracycline, tricyclic antidepressiva

Hypersensitivity reactions (venomes): bee, wasp, black widow spider, scorpion, snakes

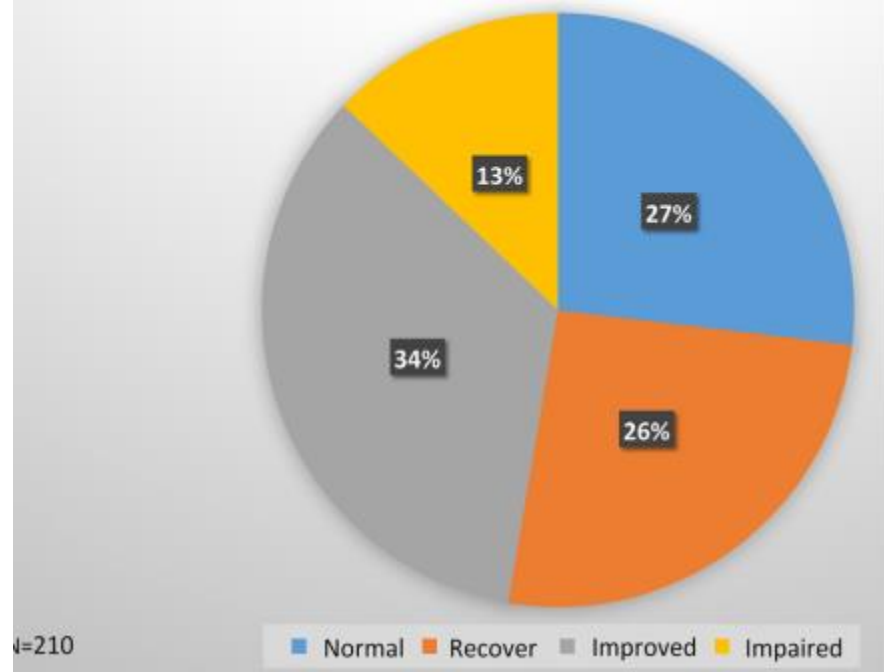
Systemic diseases: Churg-Strauss syndrome, collagen diseases, sarcoidosis, Kawasaki disease, scleroderma

Others: heart stroke, hypothermia, transplant rejection, radiation injury

# МИОКАРДИТИС

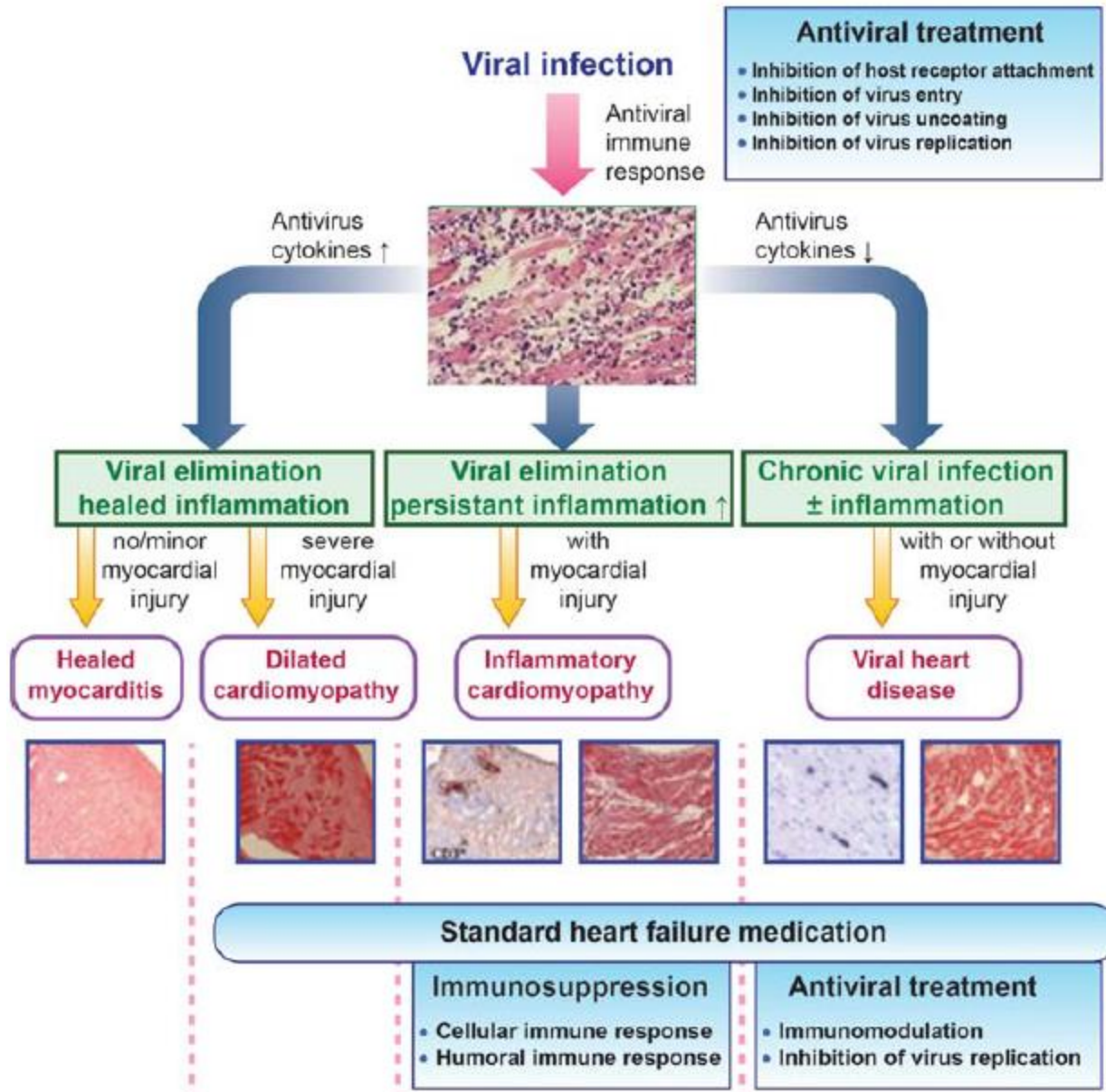


European Heart Journal (2011) **32**, 2616–2625

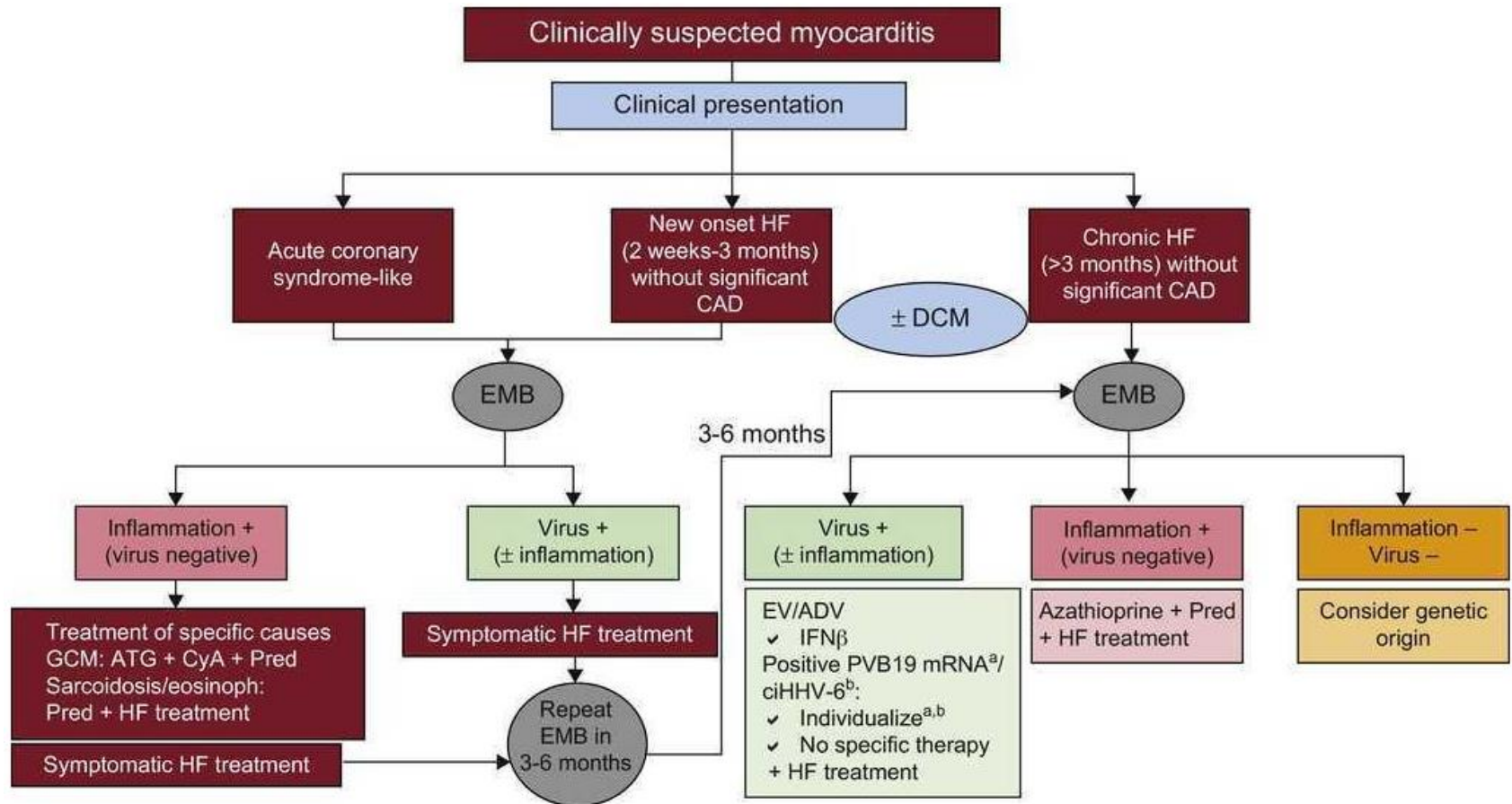


- позитивен тропонин и ЕКГ промени
- биопсија на миокард
- следење 2 годни

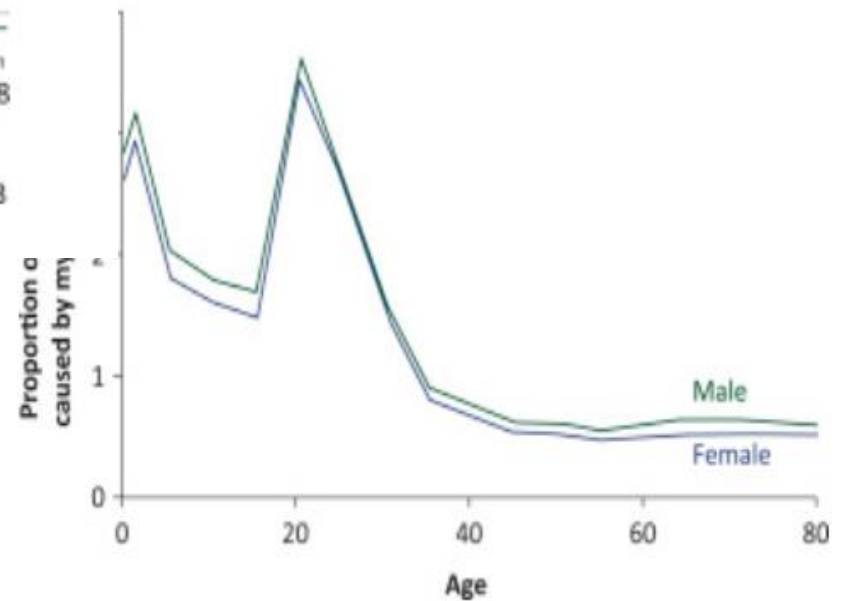
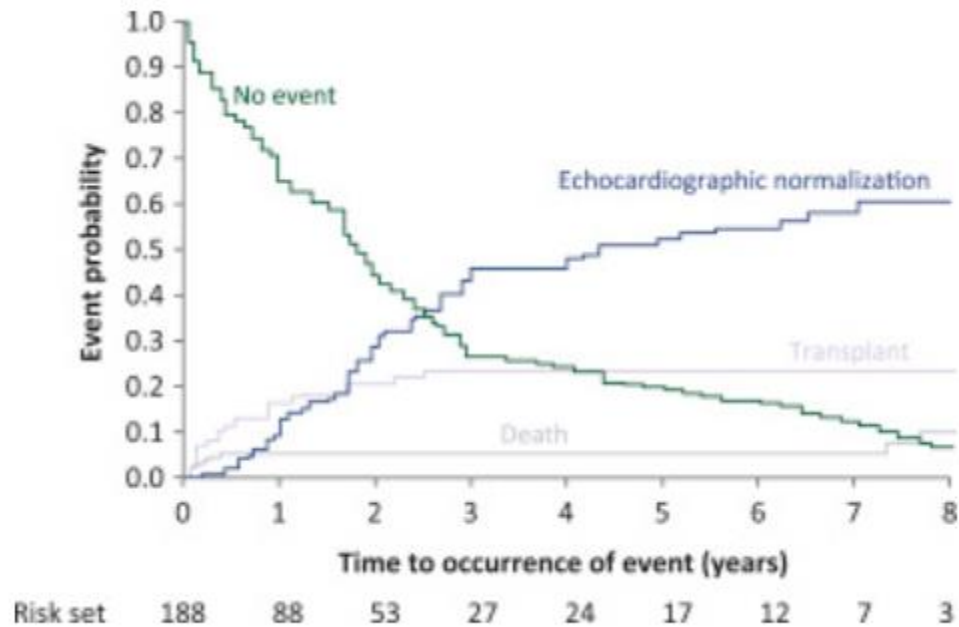
# Pathogenesis Viral and Inflammatory Cardiomyopathy



# МИОКАРДИТИС



# МИОКАРДИТИС



<https://doi.org/10.1016/j.jgheart.2014.01.007>

# ИНФЕКТИВЕН ЕНДОКАРДИТИС



Вегетација на Ао во зум позиција

# Инфективен ендокардитис

- Долга хоспитализација
- Висок морталитет
- Висок процент на компликации
  - Неуролошки
  - Зафаќање на миокард и перикард
  - Пореметувања на ритам
  - Далечни инфективни метастази
  - Акутна ренална слабост,.....
- Релапс/реинфекции



# Инфективен ендокардитис

## Cardiac conditions at highest risk of infective endocarditis for which prophylaxis should be considered when a high-risk procedure is performed

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>
<p>Antibiotic prophylaxis should be considered for patients at highest risk for IE:</p> <p>(1) Patients with any prosthetic valve, including a transcatheter valve, or those in whom any prosthetic material was used for cardiac valve repair.</p> <p>(2) Patients with a previous episode of IE.</p> <p>(3) Patients with CHD:</p> <p>(a) Any type of cyanotic CHD.</p> <p>(b) Any type of CHD repaired with a prosthetic material, whether placed surgically or by percutaneous techniques, up to 6 months after the procedure or lifelong if residual shunt or valvular regurgitation remains.</p>	<b>IIa</b>	<b>C</b>
Antibiotic prophylaxis is not recommended in other forms of valvular or CHD.	<b>III</b>	<b>C</b>

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>
<b>B. Respiratory tract procedures<sup>c</sup></b>		
<ul style="list-style-type: none"> <li>Antibiotic prophylaxis is not recommended for respiratory tract procedures, including bronchoscopy or laryngoscopy, or transnasal or endotracheal intubation</li> </ul>	<b>III</b>	<b>C</b>
<b>C. Gastrointestinal or urogenital procedures or TOE<sup>c</sup></b>		
<ul style="list-style-type: none"> <li>Antibiotic prophylaxis is not recommended for gastroscopy, colonoscopy, cystoscopy, vaginal or caesarean delivery or TOE</li> </ul>	<b>III</b>	<b>C</b>
<b>D. Skin and soft tissue procedures<sup>c</sup></b>		
<ul style="list-style-type: none"> <li>Antibiotic prophylaxis is not recommended for any procedure</li> </ul>	<b>III</b>	<b>C</b>

ИЕ 30% е заради  
здравствени  
професионалци

# Инфективен ендокардитис

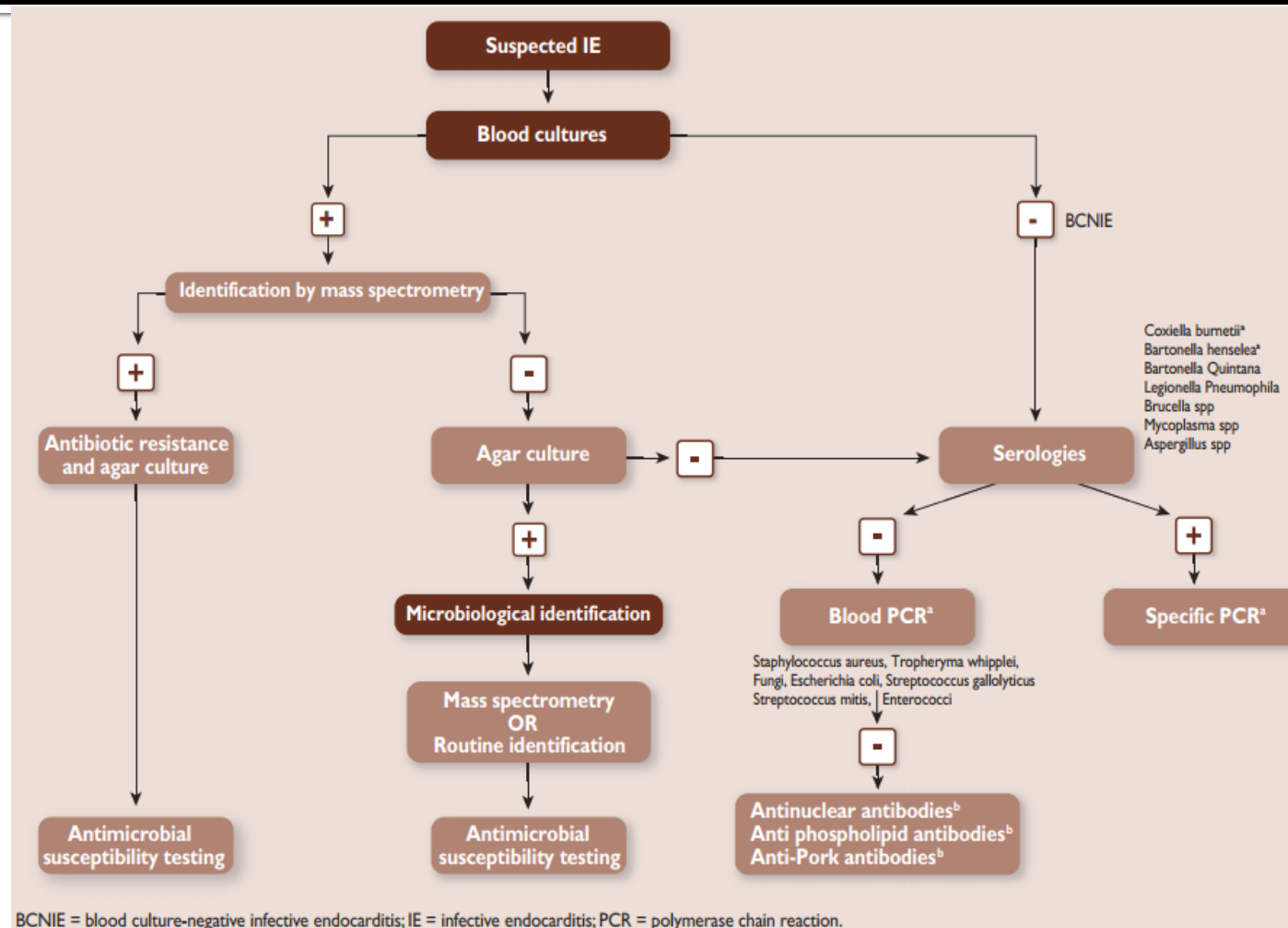
**Table 12** Investigation of rare causes of blood culture negative infective endocarditis

Pathogen	Diagnostic procedures
<i>Brucella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Coxiella burnetii</i>	Serology (IgG phase I >1:800), tissue culture, immunohistology, and PCR of surgical material.
<i>Bartonella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Tropheryma whipplei</i>	Histology and PCR of surgical material.
<i>Mycoplasma spp.</i>	Serology, culture, immunohistology, and PCR of surgical material.
<i>Legionella spp.</i>	Blood cultures, serology, culture, immunohistology, and PCR of surgical material.
<i>Fungi</i>	Blood cultures, serology, PCR of surgical material.

Негативни хемокултури-  
31% од ИЕ

- Претходна антибиотска терапија
- Фунгални инфекции
- Користење на специјални подлоги
- Користење на спесифични дијагностички процедури

# Инфективен ендокардитис



BCNIE = blood culture-negative infective endocarditis; IE = infective endocarditis; PCR = polymerase chain reaction.

<sup>a</sup>Qualified microbiological laboratory

<sup>b</sup>Immunological laboratory

# Инфективен ендокардитис

## Antibiotic treatment of infective endocarditis due to oral streptococci

Antibiotic	Dosage and route	Duration (weeks)	Class <sup>b</sup>	Le
<b>Strains penicillin-susceptible (MIC ≤ 0.125 mg/L) oral and digestive streptococci</b>				
<b>Standard treatment: 4-week duration</b>				
Penicillin G or Amoxicillin <sup>e</sup> or Ceftriaxone <sup>f</sup>	12–18 million U/day i.v. either in 4–6 doses or continuously	4	I	
	100–200 mg/kg/day i.v. in 4–6 doses	4	I	
	2 g/day i.v. or i.m. in 1 dose	4	I	
	<b>Paediatric doses:<sup>g</sup></b> Penicillin G 200,000 U/kg/day i.v. in 4–6 divided doses Amoxicillin 300 mg/kg/day i.v. in 4–6 equally divided doses Ceftriaxone 100 mg/kg/day i.v. or i.m. in 1 dose			
<b>Standard treatment: 2-week duration</b>				
Penicillin G or Amoxicillin <sup>e</sup> or Ceftriaxone <sup>f</sup>	12–18 million U/day i.v. either in 4–6 doses or continuously	2	I	
	100–200 mg/kg/day i.v. in 4–6 doses	2	I	
	2 g/day i.v. or i.m. in 1 dose	2	I	
<b>combined with</b> Gentamicin <sup>h</sup> or Netilmicin	3 mg/kg/day i.v. or i.m. in 1 dose	2	I	
	4–5 mg/kg/day i.v. in 1 dose	2	I	

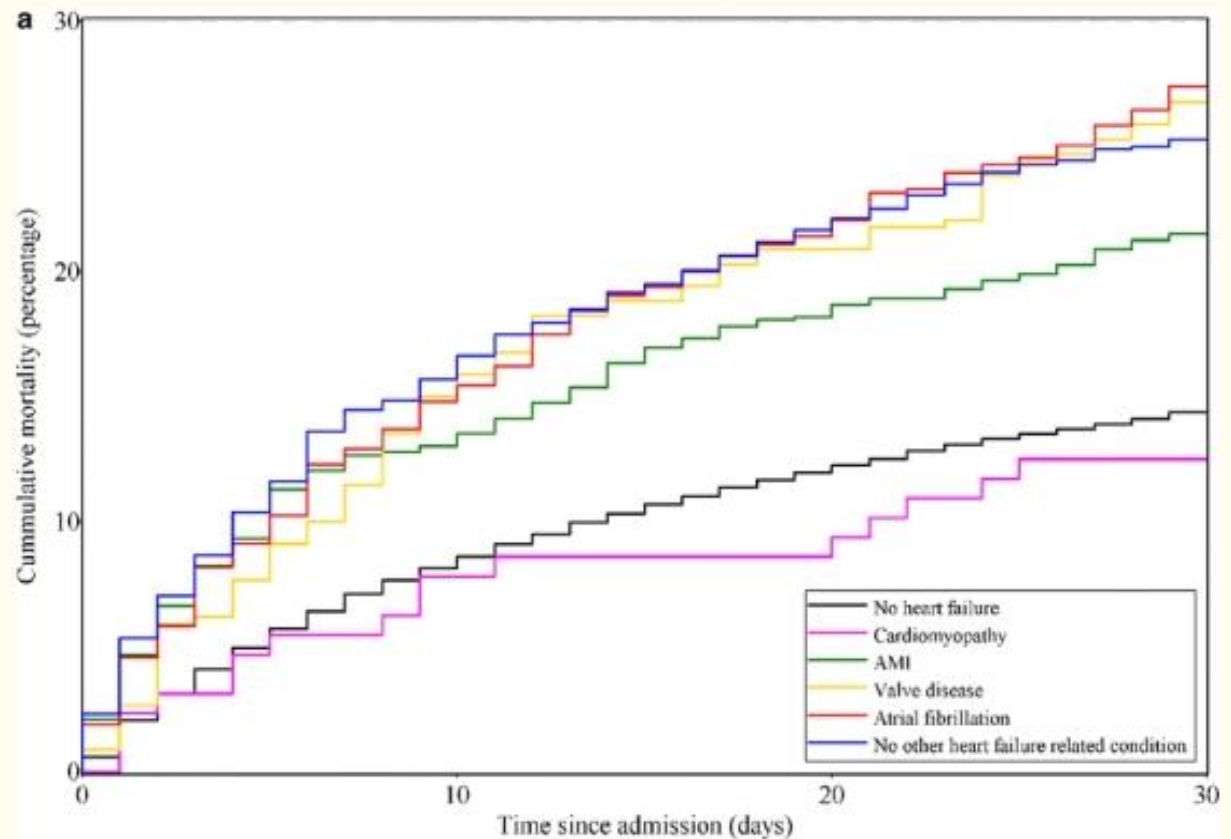
□ специфични  
антибиотски  
препораки за различни  
бактерии

# Инфективен ендокардитис

- Што после 4-6 неделен третман со антибиотска интравенска терапија?
  - При позната бактерија од хемокултура – избор на антибиотик пер-ос, до нормализирање на инфламаторните параметри (CRP, procalcitonin)
  - При непозната бактерија – избор на антибиотик од широк спектар
    - што покрива стрептокок и стафилокок,
    - следење на воспалителни параметри,
    - позитивен ефект од лекувањето

# Предиспонирачки состојби за инфекција

- ❑ Срцева слабост од било која причина
- ❑ Валвуларни болести на срцето
- ❑ Пулмонална хипертензија



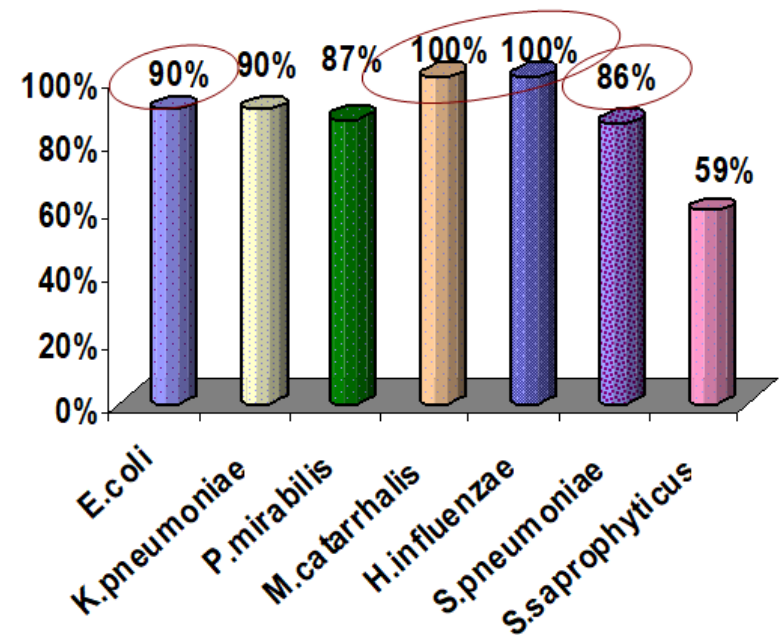
# Каков антибиотик ни треба?

- АБ што дава помала резистенција
- Помалку нефро и хепатотоксичност,
- Добра подносливост,
- .....

цефалоспорини

## Резистентност на Haemophilus influenzae

Ampicillin	42-50%
Amoxicillin/clavulanate	42,5%
Cefuroxime	21%
Clarithromycin	99,9%
Cefprozil	85,3%



Осетливост кон  
Cefixime (Pancef)