

# ENDOCARDITA BACTERIANA



# Definitie

- Endocardita bacteriana (EB) reprezinta infectia la nivelul inimii.
- Ea se cantoneaza in general la valve sau la locurile de shunt, cu exceptia DSA, care extrem de rar poate dezvolta endocardita.

- Prevalenta: 1:1000 internari
- Patogenie: 2 factori
  - Endoteliul alterat
    - prin afectare cardiaca congenitala sau dobandita
  - Bacteriemie
    - prin infectie cu localizare diversa
- Vegetatia se formeaza in locul cu presiune scazuta:
  - fata atriala a VM,
  - in CAP
  - pe fata ventriculara a valvei AO

# Etiologie

- 60 - 90%
  - Streptococ viridans,
  - Enterococ,
  - Staf. Aureu
- Fungi
- HACEK – nn, imunodeprimati
  - (HI, Actinobacillus, Cardiobacterium, Eickenela, Kingella)
- Streptococi alfa hemolitic – S. Viridans – stoma
- Culturi negative (clinic si echocardio +)

# Tablou clinic

## ➤ Anamneza:

- MCC cunoscuta
- Bicuspidie AO necunoscuta
- Proceduri dentare
- Interventii chirurgicale pe cord

## ➤ Debut:

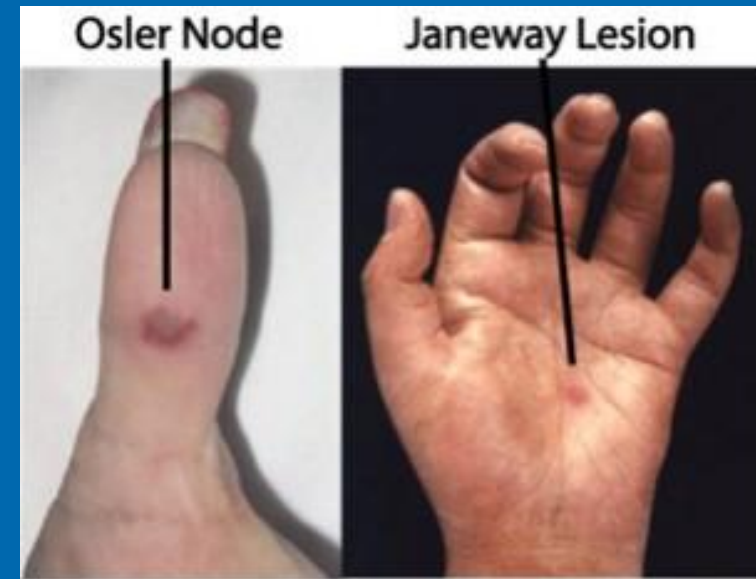
- insidios,
- subfebrilitate,
- astenie,
- inapetenta,
- paloare,
- artralгии,
- scadere ponderala

# Examen obiectiv

- Febra mare 38-39 grade C
- **Suflu cardiac intens, nou sau vechi-accentuat**
- Splenomegalie
- Manifestari cutanate
- Embolii:
  - Pulmonare,
  - Cerebrale (hemipareza, convulsii)
  - Renale (hematurie si IR)
  - Spoturi Roth retiniene (hemoragii)
- Cariii si focare dentare
- Semne de IC

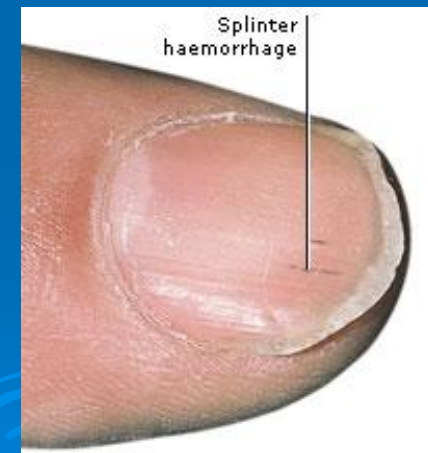
➤ **Manifestari cutanate:**

- Petesii
- Noduli Osler la degete
- Leziuni Janeway – pe palme si plante
- Hemoragii Splinter – unghii



**Semne nespecifice la sugar:**

- IC
- neurologice
- infectii-septicemie





**Subconjunctival haemorrhages**  
(2-5%)



**'Varying' murmurs**  
(90% new or changed murmur)

**Conduction disorder**  
(10-20%)

**Cardiac failure**  
(40-50%)

**Haematuria**  
(60-70%)

**Osler's nodes**  
(5%)

**Petechial rash**  
(40-50%, may be transient)



**Loss of pulses**

**Cerebral emboli**  
(15%)

**Roth's spots in fundi**  
(rare, < 5%)

**Petechial haemorrhages on mucous membranes and fundi**  
(20-30%)

**Poor dentition**

**Splenomegaly**  
(30-40%, long-standing endocarditis only)

**Systemic emboli**  
(7%)  
Nail-fold infarct



**Digital clubbing**  
(10%, long-standing endocarditis only)

**Splinter haemorrhages**  
(10%)



medicscientist



# Laborator

- Hemoculturi +
  - 90% (fara ATB anterior)
- Hemoculturi +
  - 50 – 60 % (cu ATB anterior)
- Anemie
- Leucocitoza cu neutrofilie
- Probe inflamatorii +
- Hematurie

# Echocardiografie

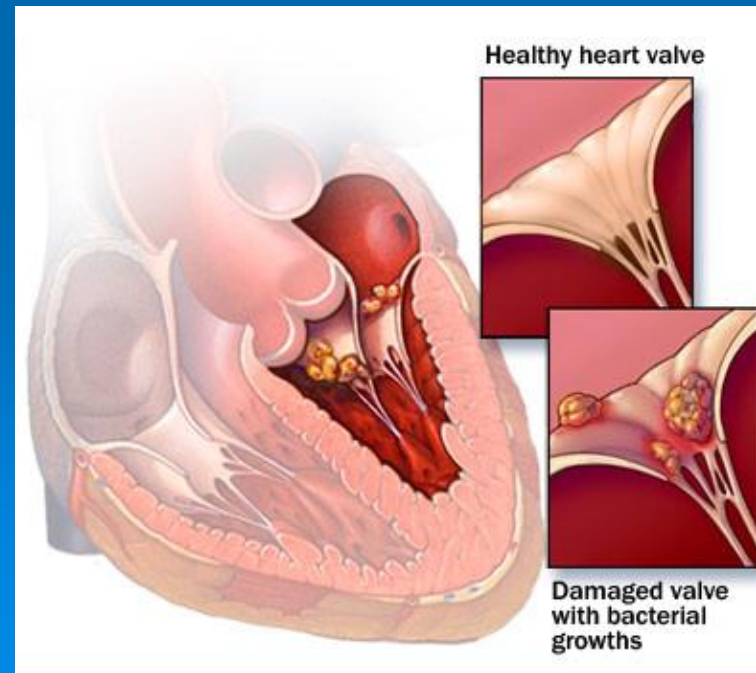
## ➤ Criterii majore Duke

- **Masa intracardiaca** oscilata pe valve/proteze, in calea jetului de regurgitare
- **Abcese**
- **Dehiscenta** unei valve protetice
- **Regurgitari** valvulare noi

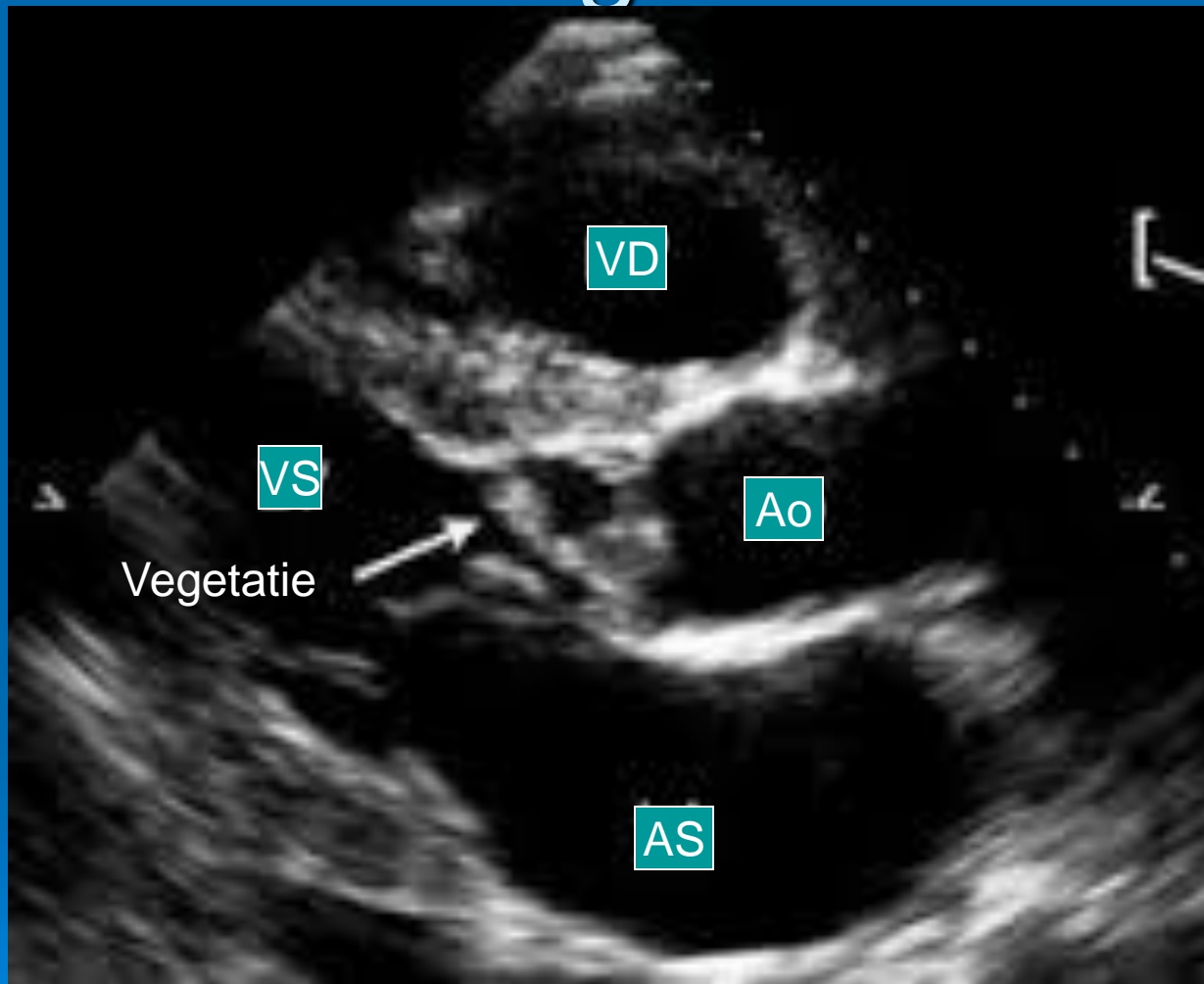
## ➤ Transesofagiana(TEE) la nevoie

## ➤ Cazuri High Risk sau chirurgicale:

- Vegetatii mari peste 1 cm
- Regurgitari valvulare severe
- Abcese
- Pseudoanevrisme
- Perforatii valvulare
- IC decompensata

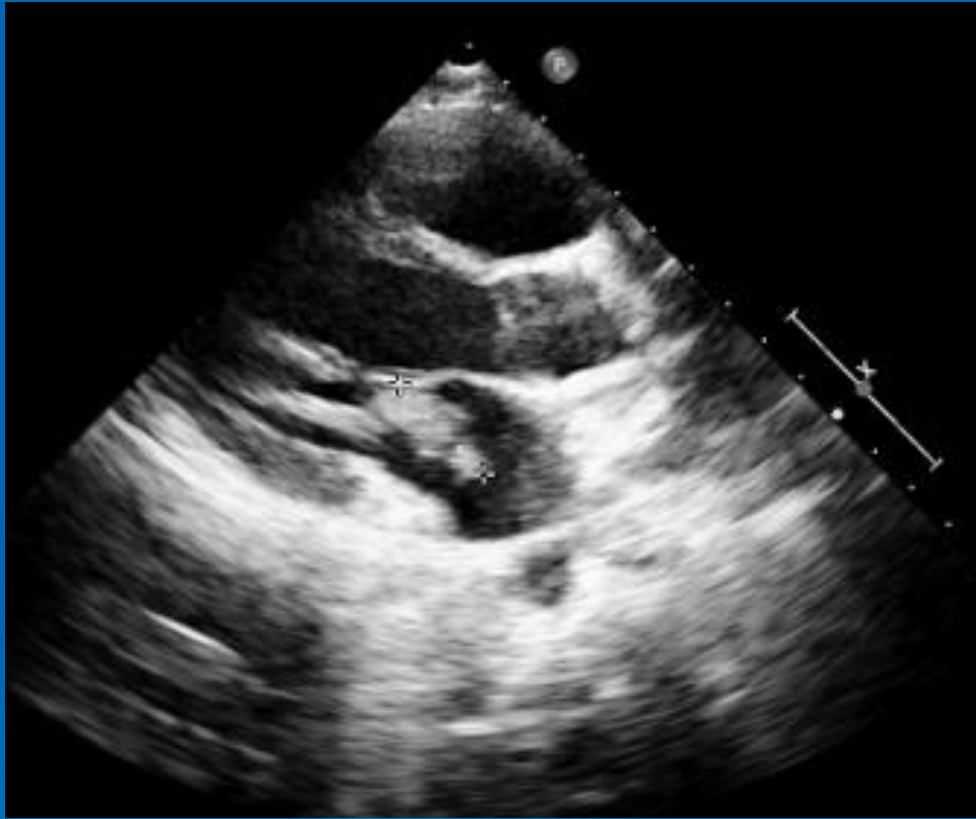


# Echocardiografie – PAL



Vegetatie pe Valva Ao

# Echocardiografie - PAL



Vegetatie pe Valva mitrala



Mici vegetatii pe Valva mitrala

# Diagnostic

## Criteriile Duke modificate propuse de AHA

### ➤ EB definita – sigura

#### Criterii patogenice

Microorganisme depistate in culturi sau vegetatii embolizate

Vegetatii sau abcese confirmate histologic ca EB activa

#### Criterii clinice

2 criterii majore

1 criteriu major + 3 minore

5 criterii minore

### ➤ EB posibila

1 criteriu major + 1 criteriu minor

3 criterii minore

### ➤ EB infirmata

Diagnostic alternativ al EB

Rezolutia EB dupa 4 zile de tratament antibiotic

Neevidentierea EB la chirurgie sau necropsie, dupa 4 zile ATB

Nu intruneste deloc criteriile de EB

# Criterii majore

## Culturi pozitive pt EB

Microorganisme tipice + in 2 hemoculturi separate:

Streptococ viridans,  
Streptococcus Bovis,  
HACEK grup,  
Staf. Aureus,  
Enterococi

Microorganisme tipice din hemoculturi:

- Cel puțin 2 hemoculturi + la peste 12 h distanta
- 3 – 4 hemoculturi separate, din care prima si ultima la cel puțin 1 h distanta

Hemocultura pozitiva pt Coxiella Burnetti

- sau Ac IgG cu titru peste 1:800



# Criterii majore

## Evidenta implicarii endocardice

Echocardiografie + pt EB (TTE, TEE)

**Vegetatie** - masa cardiaca mobila pe valva sau structura cardiaca, in regiunea jetului regurgitanat, sau pe materiale implantate

**Abcese**

**Dehiscenta** partiala a protezei valvulare, nou aparuta

**Regurgitare** valvulara nou aparuta



# Criterii minore

**Factori predispozanti** cardiaci preexistenti, injectii iv

**Febra** peste 38 C

**Fenomene vasculare:**

- emboli arteriali,
- infarcte pulmonare septice,
- anevrisme micotice,

**Hemoragii:** intracraniana, conjunctivala, leziuni Janeway

**Imunologic:**

- glomerulonefrita,
- noduli Osler,
- spoturi Roth,
- FR

**Microbiologic:**

- culturi pozitive sau evidentiarea unei infectii acute cu organisme care nu indeplinesc un criteriu major de EB

# Hemocultura

Toti pacientii cu febra neexplicata si suflu cardiac, MCC sau EB anterioara necesita hemocultura.

- 3 hemoculturi se recolteaza intr-o zi (90% + in primele 2)
- Daca nu creste nimic a doua zi, se mai recolteaza inca 2 (5 hemoculturi in 2 zile = suficient)
- Nu e necesar un moment particular al febrei pentru recoltare.
- Volumul de sange recoltat:
  - 1 – 3 ml la sugari si copii mici
  - 5 – 7 ml la copii mari
- Incubatie aeroba e suficienta.

# Tratament empiric initial

- Pana la rezultat hemocultura.
- In caz de hemoculturi negative.

Antibiotic	Dosage & route	Duration	Comments
<b>Native valves</b>			
<b>Ampicillin-Sulbactam</b>	12 g/day i.v. in 4 doses	4-6 weeks	Patients with blood-culture negative should be treated in consultation with an infectious disease specialist
<b>or</b>			
<b>Amoxicillin-Clavulanate</b>	12 g/day i.v. in 4 doses	4-6 weeks	
<b>with</b>			
<b>Gentamicin</b>	3 mg/kg/day i.v. or i.m. in 2 or 3 doses	4-6 weeks	
<b>Vancomycin</b>	30 mg/kg/day i.v. in 2 doses	4-6 weeks	For patients unable to tolerate $\beta$ -lactams
<b>with</b>			
<b>Gentamicin</b>	3 mg/kg/day i.v. or i.m. in 2 or 3 doses	4-6 weeks	
<b>with</b>			
<b>Ciprofloxacin</b>	1000 mg/day orally in 2 doses or 800 mg/day i.v. in 2 doses	4-6 weeks	Ciprofloxacin is not uniformly active on <i>Bartonella</i> spp.. Addition of Doxycycline is an option if <i>Bartonella</i> spp. is likely
<b>Prosthetic valves (early &lt; 12 months post surgery)</b>			
<b>Vancomycin</b>	30 mg/kg/day i.v. in 2 doses	6 weeks	If no clinical response, surgery and perhaps extension of the antibiotic spectrum to gram-negative pathogens must be considered
<b>with</b>			
<b>Gentamicin</b>	3 mg/kg/day i.v. or i.m. in 2 or 3 doses	2 weeks	
<b>with</b>			
<b>Rifampin</b>	1200 mg/day i.v. or orally in 2 doses		
<b>Prosthetic valves (late &gt; 12 months post surgery)</b>			
<b>Same as Native valves</b>			

# Tratament tintit (germene)

## Endocardita **STREPTOCOCICA**

Antibiotic	Dosage & route	Duration
Penicilline susceptible (MIC < 0.125 mg/L) oral & group <i>D strepto</i>		
Standard treatment		
Penicilline G or	12-18 millions U/day in IV in 6 doses	4 weeks
Amoxicilline or	100-200 mg/kg/day in 4-6 doses	4 weeks
Ceftriaxone	2 g/day i.v or i.m. in 1 dose  <i>Paediatric doses</i> – Penicillin G 200,000 U/kg/day i.v. in 4-6 divided doses – Amoxicilline 300 mg/kg/day i.v. in 4-6 equally divided doses – Ceftriaxone 100 mg/kg/day i.v. or i.m. in one dose	4 weeks



Antibiotic	Dosage & route	Duration
<b>Penicilline susceptible (MIC &lt; 0.125 mg/L) oral &amp; group <i>D strepto</i></b>		
<b>Two-week treatment</b>		
<b>Penicilline G or</b>	12-18 millions U/day in IV in 6 doses	2 weeks
<b>Amoxicilline or</b>	100-200 mg/kg/day in 4-6 doses	2 weeks
<b>Ceftriaxone with</b>	2 g/day i.v or i.m. in 1 dose	2 weeks
<b>Gentamycin or Netilmicin</b>	3 mg/kg/day i.v. or i.m. in 1 dose	2 weeks
	4-5 mg/day  <i>Pediatric doses:</i> – Penicillin, Amoxicillin and Ceftriaxone as above – Gentamycin 3 mg/kg/day i.v. or i.m. in one dose or 3 equally divided doses	2 weeks
<b>In-beta-lactam allergic patients</b>		
<b>Vancomycin</b>	30 mg/kg/day i.v. in 2 doses  <i>Paediatric doses:</i> – 40 mg/kg/day i.v. in 2-3 equally divided doses	4 weeks

Antibiotic	Dosage & route	Duration
<b>Strains relatively resistant to Penicillin (MIC 0.125-2 mg/L)</b>		
<b>Standard treatment</b>		
<b>Penicilline G</b> or	24 million U/day in IV in 6 doses	4 weeks
<b>Amoxicilline</b> or	200 mg/kg/day in 4-6 doses	4 weeks
<i>with</i> <b>Gentamycin</b>	3 mg/kg/day i.v. or i.m. in 1 dose	2 weeks
<b>In-beta-lactam allergic patients</b>		
<b>Vancomycin</b> <i>with</i>	30 mg/kg/day i.v. in 2 doses (same for pediatric doses)	4 weeks
<b>Gentamycin</b>	3 mg/kg/day i.v. or i.m. in 1 dose	2 weeks

# Tratament tintit (germene)

## Endocardita **STAFILOCOCICA**

Antibiotic	Dosage & route	Duration
<b>Native valves</b>		
<i>Methicillin susceptible Staphylococci</i>		
(Flu) cloxacillin or	12 g/day i.v. in 4-6 doses	4-6 weeks
Oxacillin <i>with</i> Gentamicin	3 mg/kg/day i.v. or i.m. in 2 or 3 doses  <i>Pediatric doses</i> – Oxacillin or (Flu)cloxacillin 200 mg/kg/day i.v. in 4-6 equally divided doses – Gentamicin 3mg/kg/day i.v. or i.m. in 3 equally divided doses	4-6 weeks  3-5 days
<b>Penicillin-allergic patients or Methicillin-resistant Staphylococci</b>		
Vancomycin <i>with</i>	30 mg/kg/day i.v. in 2 doses	4-6 weeks
Gentamicin	3 mg/kg/day i.v. or i.m. in 2 or 3 doses	3-5 days



# Tratament tintit (germene)

## Endocardita cu ENTEROCOCC

Antibiotic	Dosage & route	Duration
<b>Beta-lactam and Gentamicin susceptible strain</b>		
<b>Amoxicillin</b> <i>with</i> <b>Gentamicin</b>	200 mg/kg/day i.v. in 4-6 doses  3 mg/kg/day i.v. in 2 or 3 doses	4-6 weeks
<b>OR</b>		
<b>Ampicillin</b> <i>with</i> <b>Gentamicin</b>	200 mg/kg/day i.v. in 4-6 doses  3 mg/kg/day i.v. in 2 or 3 doses	4-6 weeks
<b>OR</b>		
<b>Vancomycin <sup>a</sup></b> <i>with</i> <b>Gentamicin</b>	30 mg/kg/day i.v. in 2 doses  3 mg/kg/day i.v. or i.m. in 2 or 3 doses	6 weeks

<sup>a</sup> = for patients unable to tolerate beta-lactams

# Tratament tinit (germene)

**HACEK grup** au devenit rezistenti la Ampicilina

- Ceftriaxona sau Cefalosporina III = 4 sapt  
sau
- Ampicilina + Gentamicina = 4 sapt

**Alti Gram (-): E. Coli, Pseudomonas, Serratia**

- Piperacilin sau Ceftazidim + Genta = 6 sapt

# Tratament tintit (germene)

## FUNGI

- Amfotericina B



# Tratament

- Endocardita pe proteza valvulara – 6 sapt trat.
- Schimbarea chirurgicala a valvei se poate face sub tratament – dupa 2 sapt, daca apare IC, daca nu, dupa stingerea infectiei.

# Prognostic

## Vindecare:

- 80% - 85% totala
- 90% in caz de Streptococ Viridans si Enterococi
- 50% in caz de Stafilococi
- Foarte slaba in caz de fungi

# Preventie

- **Profilaxia EB** se face la **pacientii cu risc inalt**, cand se efectueaza manevre sangerande sau potential infectante.
- **Igiena riguroasa a gurii si a dintilor.**
- **Asanarea focarelor dentare sub protectie ATB.**

## Categorii de risc inalt:

- Proteze valvulare, homograft, bioproteze
- EB anterioara
- MCC:
  - Cianogene, operate sau nu
  - Operate, 6 luni postcorectie chirurgicala
  - Defecte restante postoperator

# Profilaxia EB - recomandari

- **Proceduri dentare cu risc**, care perforeaza mucoasa, manipuleaza gingia sau regiunea periapicala
- **Tract respirator**
  - Amigdalectomie si adenoidectomie
  - Operatii pe mucoasa respiratorie
  - Bronhoscopie rigida
- **Tract gastrointestinal**
  - Sclerozare de varice esofagiene
  - Dilatari esofagiene
  - Colangiografie retrograda
  - Colecistectomie
  - Interventii chirurgicale pe colon
- **Tract genitourinar**
  - Dilatari uretrale



# Recomadari de profilaxie pentru EB, in caz de proceduri dentare cu risc

- Doza unica de antibiotic, administrata cu 30-60 min. inainte de procedura:
- Daca nu e alergic la Penicilina sau Ampicilina:
  - Amoxicilina sau Ampicilina - 50 mg/kg po sau iv, pa maxim 2 g po sau iv (adult)
- Daca e alergic la Penicilina sau Ampicilina:
  - Clindamicina 20 mg/kg po sau iv, pa. maxim 600 mg po/iv (adult)

# Nu se recomandă profilaxia EB

- In caz de:
- Proceduri la nivelul tractului respirator:
  - Bronhoscopie flexibilă, laringoscopie, IOT
- Proceduri la nivelul tractului gastrointestinal:
  - Gastroscopie, colonoscopie, cistoscopie, ecografie transesofagiană
- Proceduri la nivelul pielii.

# Recuperare

- Recuperarea după EB este lungă, deoarece organismul este slăbit.
- Efortul fizic va fi în limita toleranței fizice, la început minim, apoi cu creștere graduală, dar atât cât poate copilul.
- Copilului i se va spune să facă exact cât poate și să se oprească atunci când a obosit.

➤ Va multumesc!

