UNIL | Université de Lausanne

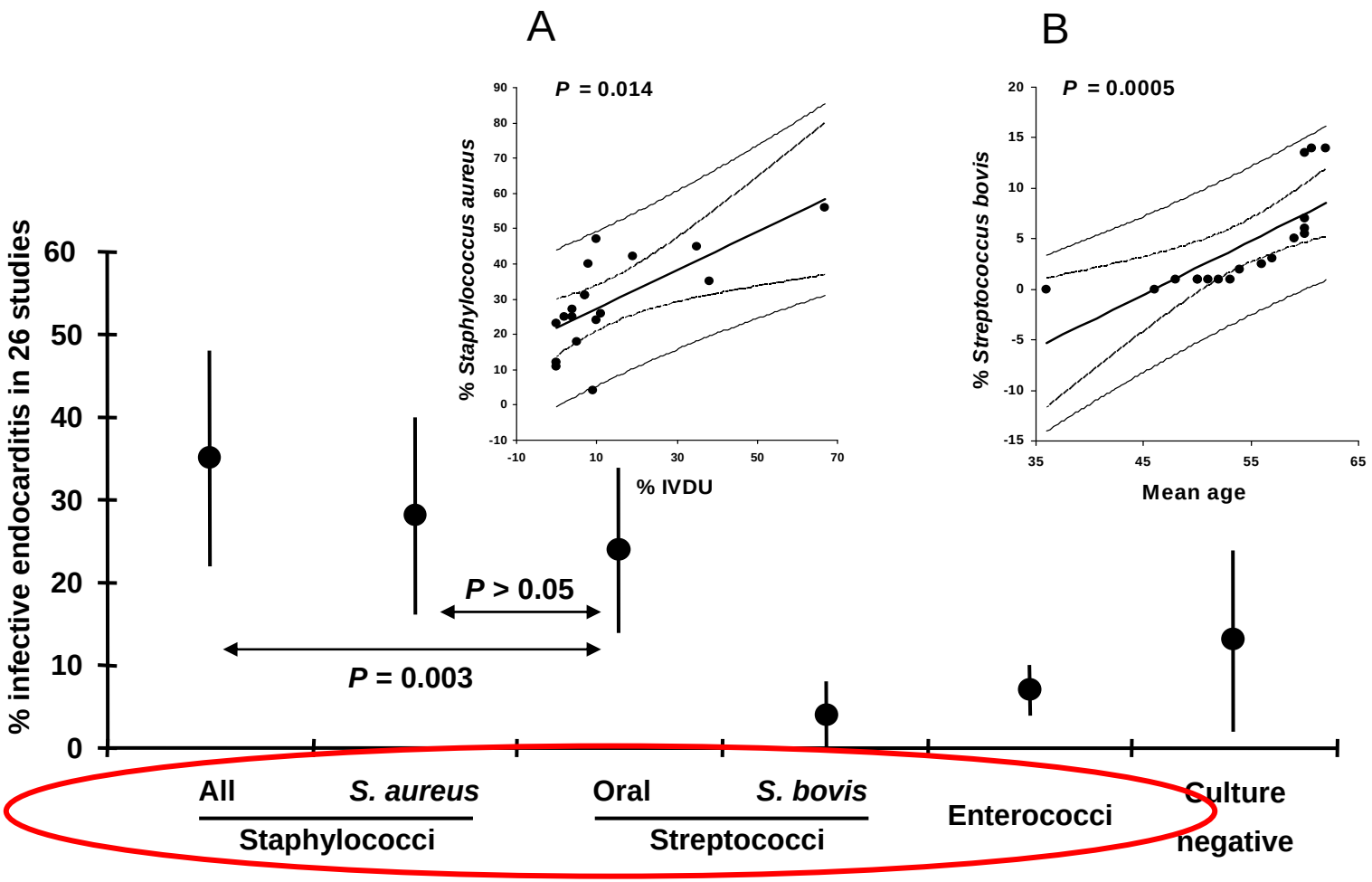
Endocardite infectieuse

1. Raccourcir le traitement: jusqu'où ?

2. Proposer un traitement ambulatoire:
   à partir de quand ?

UNIL | Université de Lausanne

Endocardite infectieuse



Lancet 2004; 363:139

UNIL | Université de Lausanne

Que traitons nous ?

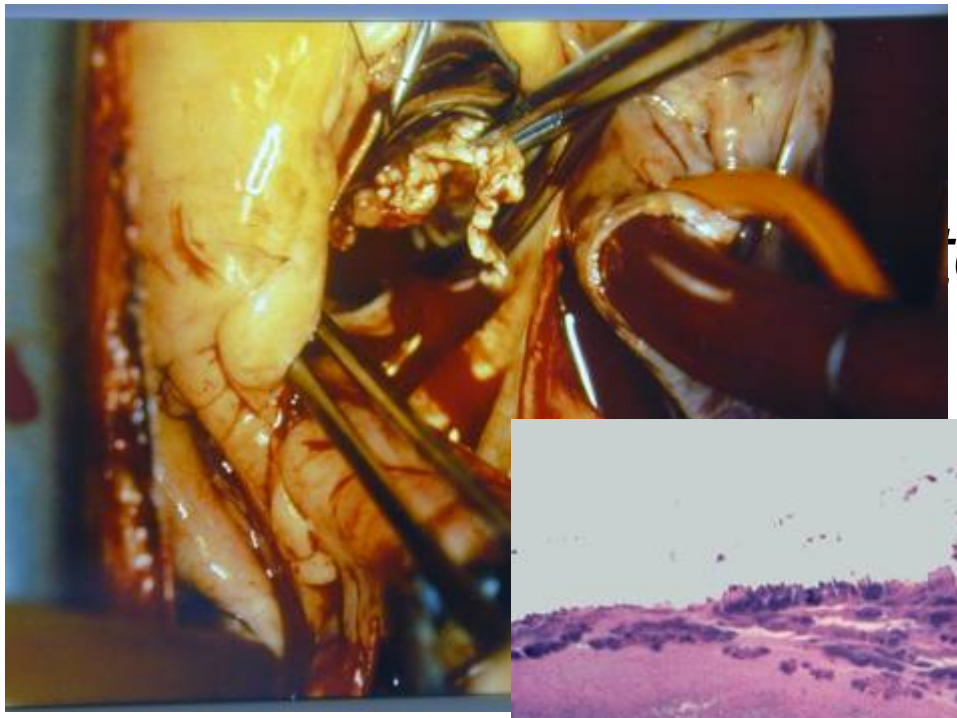
Infection

- Primary-site valve infection
- Secondary-site peripheral abscesses, mycotic aneurisms…

…SEPTIC EMBOLI !!!

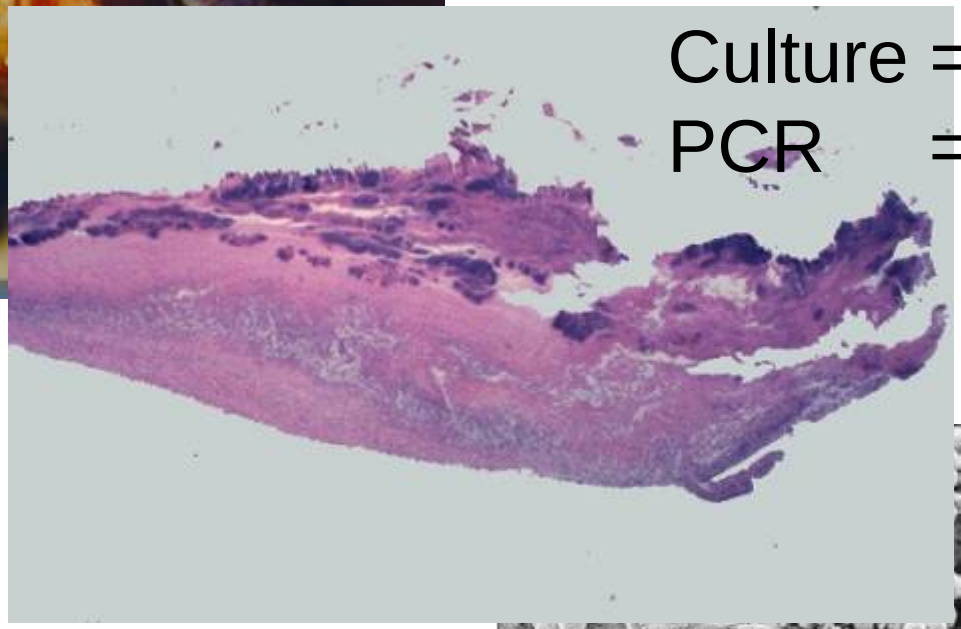
Non-infectious complications

- Valve destruction with hemodymanic repercussions
- Congestive heart failure - time of surgery
- Consequences of septic emboli: stroke

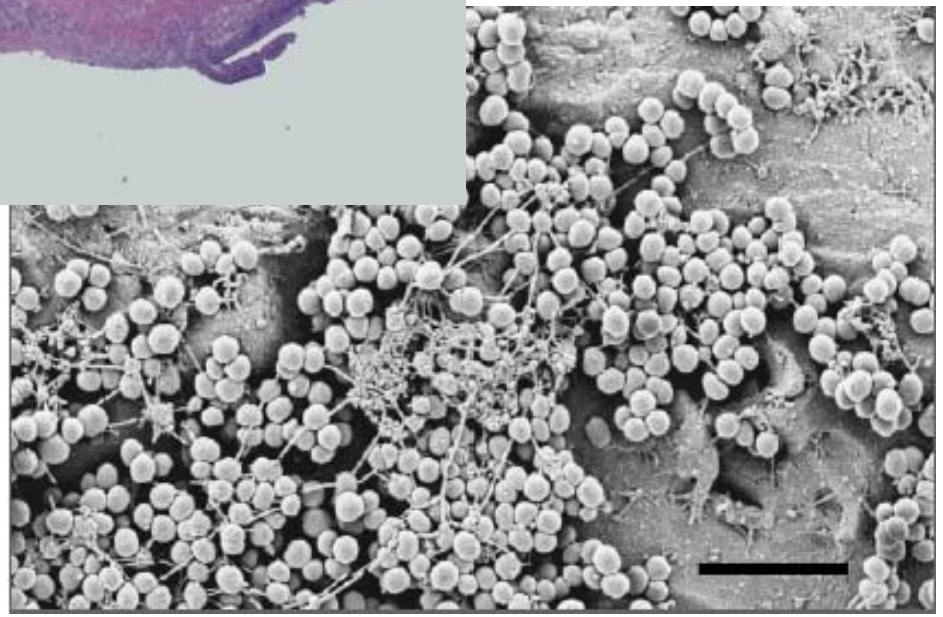


UNIL | Université de Lausanne

tons nous ?



Culture = négative
PCR = positive



Critère définitif:
- évolution clinique

UNIL | Université de Lausanne

Quid Therapy ?

Founding Document:

Infective Endocarditis:
Diagnosis, Antimicrobial Therapy and Management of Complications:
A Statement of Healthcare Professionals from the Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease, Council on Cardiovascular Disease in the Young, and the Councils on Clinical Cardiology, Stroke, and Cardiovascular Surgery and Anesthesia, American Heart Association:
Endorsed by the Infectious Disease Society of America.

Baddour et al. Circulation 2005; 111:394-434

UNIL | Université de Lausanne

Evidence-based Criteria

Class I: conditions for which there is evidence, general agreement, or both for efficacy

Class II: conditions for which there is conflicting evidence…

Class III: conditions for which there is evidence, general agreement, or both for non-efficacy

Level A: derived from multiple randomized trials

Level B: derived from a single randomized trial or nonrandomized trials

Level C: consensus opinion of experts

UNIL | Université de Lausanne

Penicillin-S viridans Strep or S. bovis

Regimen	Duration	Recommendation
Penicillin G	4 W	I A
Ceftriaxone	4 W	I A
+ Gentamicin	2 W	I B
Vancomycin	4 W	I B

Class I: evidence, general agreement, or both for efficacy
Level B: single randomized trial or nonrandomized trials

Baddour et al. Circulation 2005; 111:394-434

UNIL | Université de Lausanne

Penicillin-S viridans Strep or S. bovis

Regimen	Duration	Recommendation
Penicillin G	4 W	I A
Ceftriaxone	4 W	I A
+ Gentamicin	2 W	I B
Vancomycin	4 W	I B

Ethical problems to shorten therapy:

1. a 2 weeks beta-lactam regimen may fail
2. a < 2 weeks combination with gentamicin may also fail (?)

Baddour et al. Circulation 2005; 111:394-434

UNIL | Université de Lausanne

Quid Staphylococcus: Native Valves

Regimen	Duration	Recommendation
<u>MSSA</u>		
Nafcillin/oxacillin	4-6 W	I A
Plus genta	3-5D	I C *
<u>MRSA</u>		
Vancomycin	6 W	I B **

* Korzeniowksi et al. Ann Intern Med 1982; 97:496
30 patients randomized, no advantage of Genta but more toxicity !

**Toxic +++ ….. Quid rifampin ???

Baddour et al. Circulation 2005; 111:394-434

UNIL | Université de Lausanne

Enterococcus spp: Recommendations for Endocarditis Therapy

Table 3: Antibiotic treatment of endocarditis due to *Enterococcus* spp.

•**Antibiotic** [(a)]	•**Dosage and Route**	•**Duration (weeks)**	•**Level of Evidence**	•**Comments**
•Beta-lactam and gentamicin susceptible strain (for resistant isolates see [(b,c,d)])				
•Penicillin G •with gentamicin	•6 x 3-5 million U/day IV •3 x 1mg/kg/day IV or IM	•4-6 •4-6	•I-A	•6-weeks therapy recommended for patients with >3 months symptoms.
•Ampicillin or amoxicillin •with gentamicin	•6 x 2 g/day IV •3 x 1mg/kg/day IV or IM	•4-6 •4-6	•I-A	•Studies suggest that gentamicin 1x/day might be adequate.
•Vancomycin •with gentamicin	•2 x 15 mg/kg/day IV •3 x 1mg/kg/day IV or IM	•6 •6	•I-B	

Baddour et al. Circulation 2005; 111:394-434

Recommendations for prevention and treatment of infective endocarditis European Society of Cardiology, 2008, in preparation

UNIL | Université de Lausanne

Enterococcus spp: Recommendations for Endocarditis Therapy

Footnotes

(a) Monitor serum levels of aminoglycosides, renal function, and audiogram weekly.

(b) In case of high-level resistant to gentamicin (MIC >1000 mg/l): is susceptible to streptomycin, replace gentamicin with streptomycin 15 mg/kg/24h in 2 equally divided doses (I-A). Otherwise, use more prolonged course of beta-lactam therapy. Combining ampicillin with ceftriaxone was recently suggested against gentamicin-resistant *E. faecalis* (37) (IIa-B).

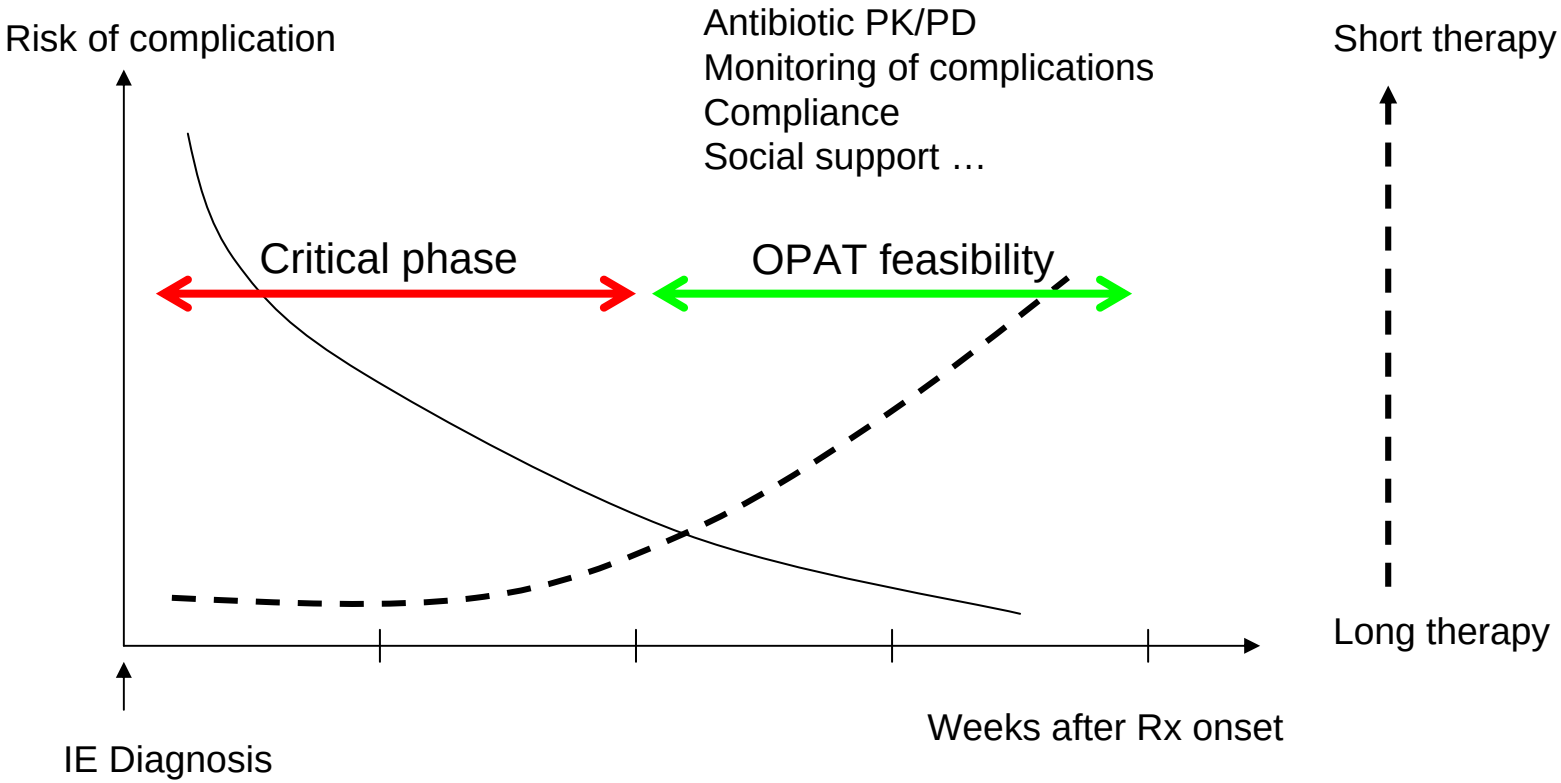
(c) In case of beta-lactam resistance: (i) if due to beta-lactamase production, replace ampicillin with ampicillin-sulbactam or amoxicillin with amoxicillin-clavulanate (I-C); (ii) if due to PBP5 alteration, use vancomycin-based regimens.

(d) In case of multi-resistance to aminoglycosides, beta-lactams and vancomycin: some suggested alternatives are (i) linezolid 2x600 mg/24h IV or orally for >8 weeks (IIa-C)(control haematological toxicity), (ii) quinupristin-dafopristin 3x7.5 mg/kg/24h for >8 weeks (IIa-C), (iii) beta-lactam combinations including imipenem plus ampicillin or ceftriaxone plus ampicillin for >8 weeks (IIb-C).

Recommendations for prevention and treatment of infective endocarditis European Society of Cardiology, 2008, in preparation

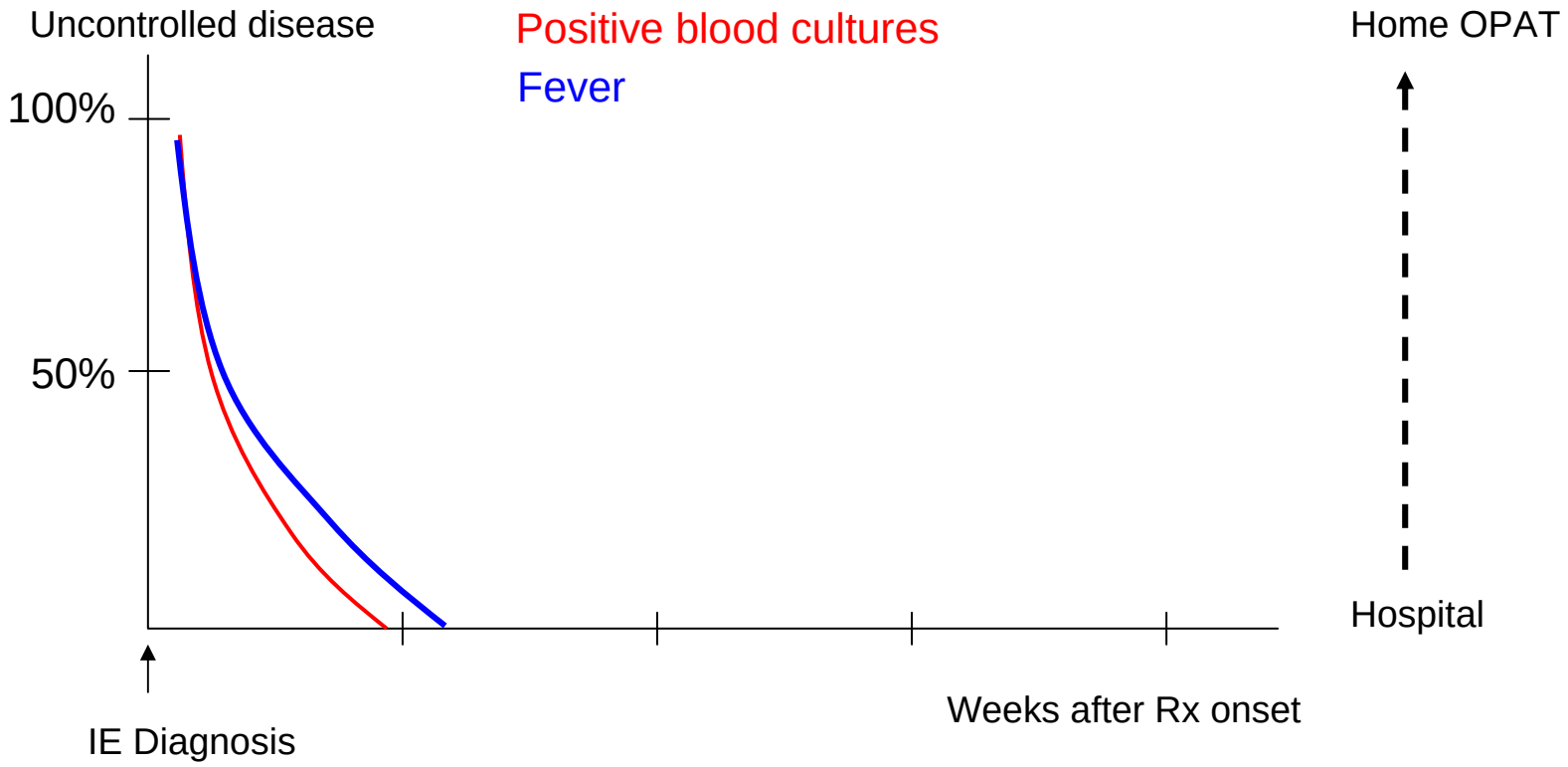
UNIL | Université de Lausanne

The Dynamics of Decision Making



UNIL | Université de Lausanne

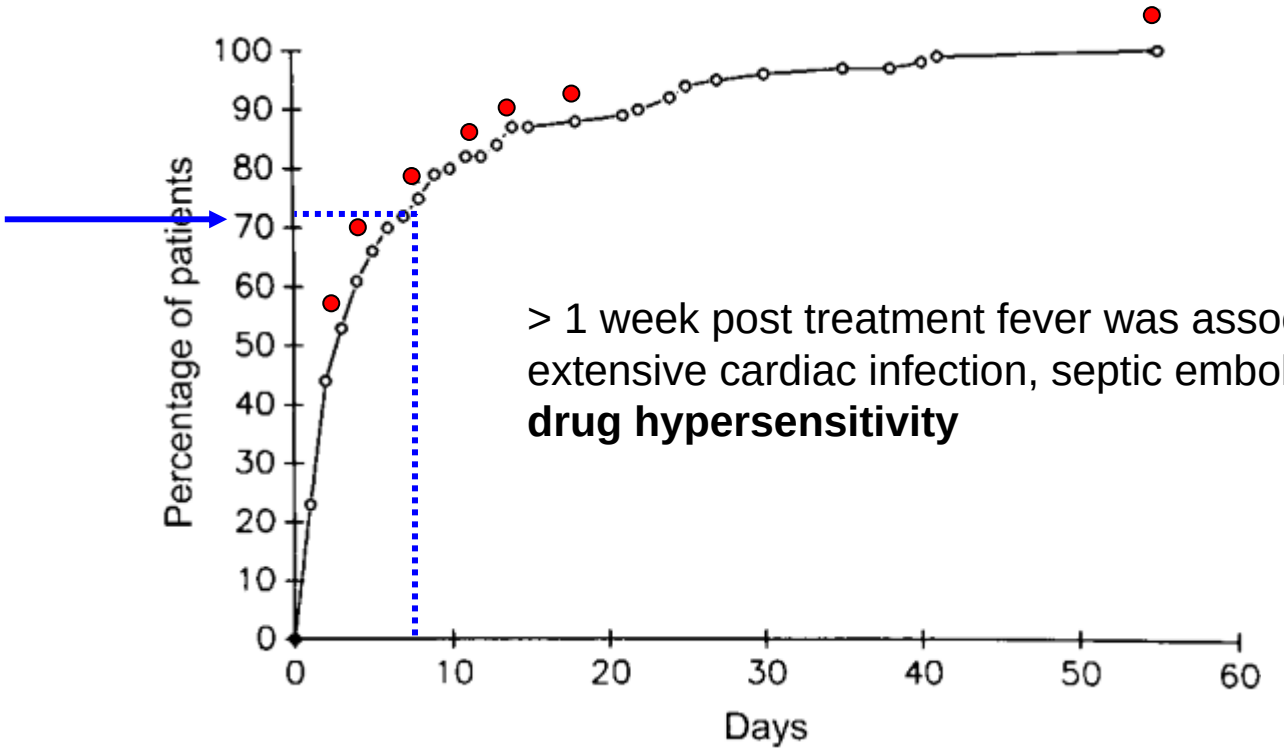
Outcome and Complications



UNIL | Université de Lausanne

Outcome and Complications

Cumulative Frequency of Defervescence in 123 Patients with IE



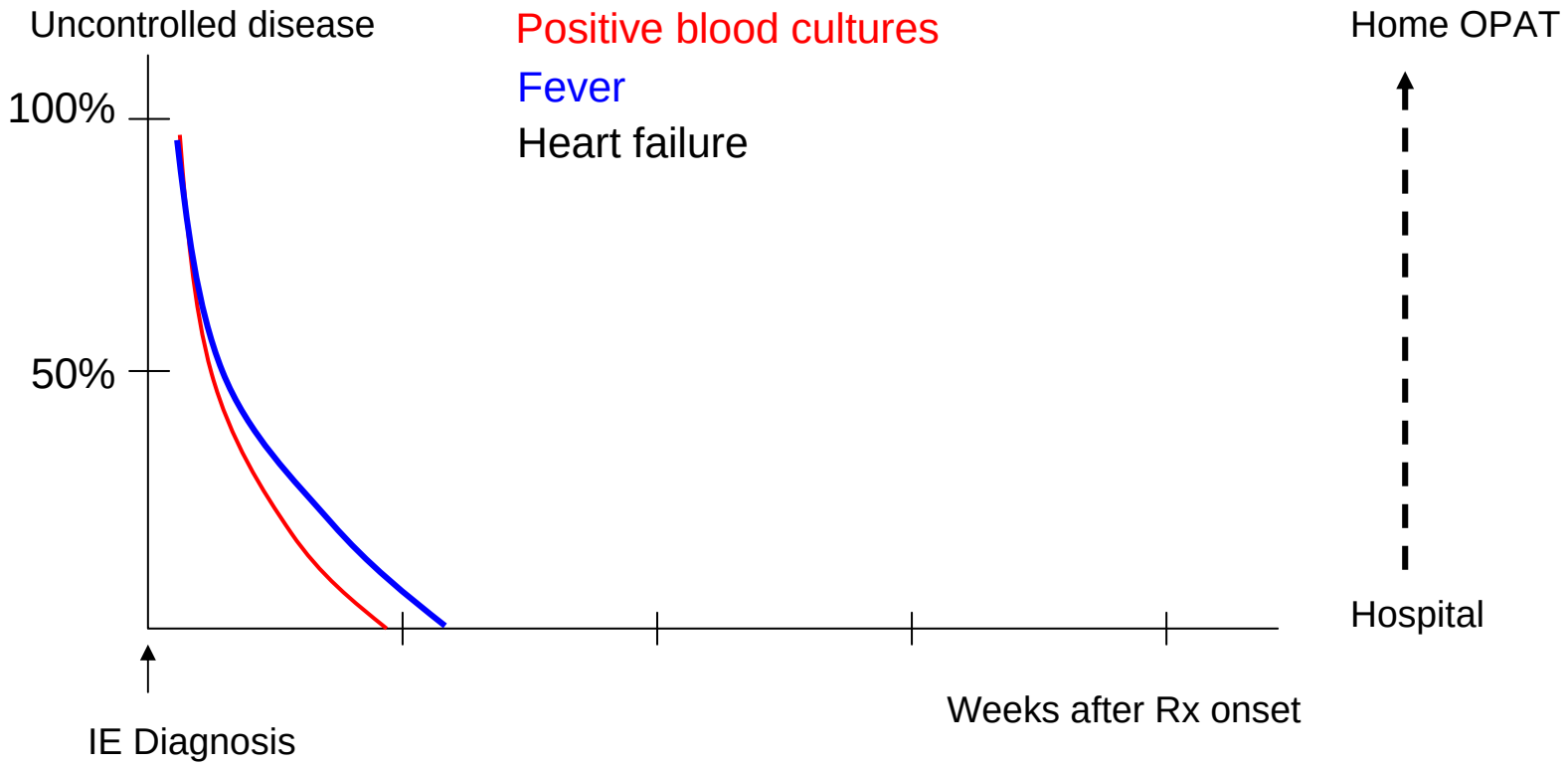
> 1 week post treatment fever was associated with extensive cardiac infection, septic emboli and…
drug hypersensitivity

- Patients who died without becoming afebrile

Lederman et al. Medicine 1992; 71:52
Andews and von Reyn 2001; 33:203

UNIL | Université de Lausanne

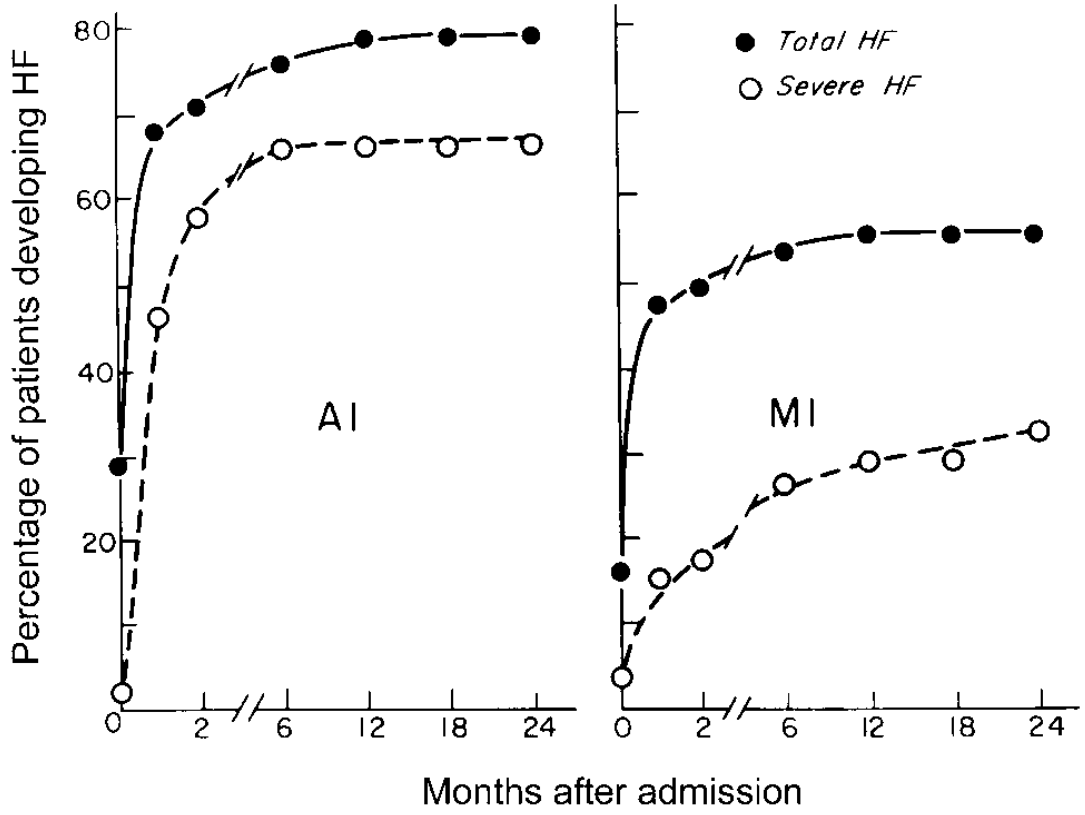
Outcome and Complications



UNIL | Université de Lausanne

Outcome and Complications

Heart failure, the leading cause of complication and death in IE: timing of onset in 155 episodes

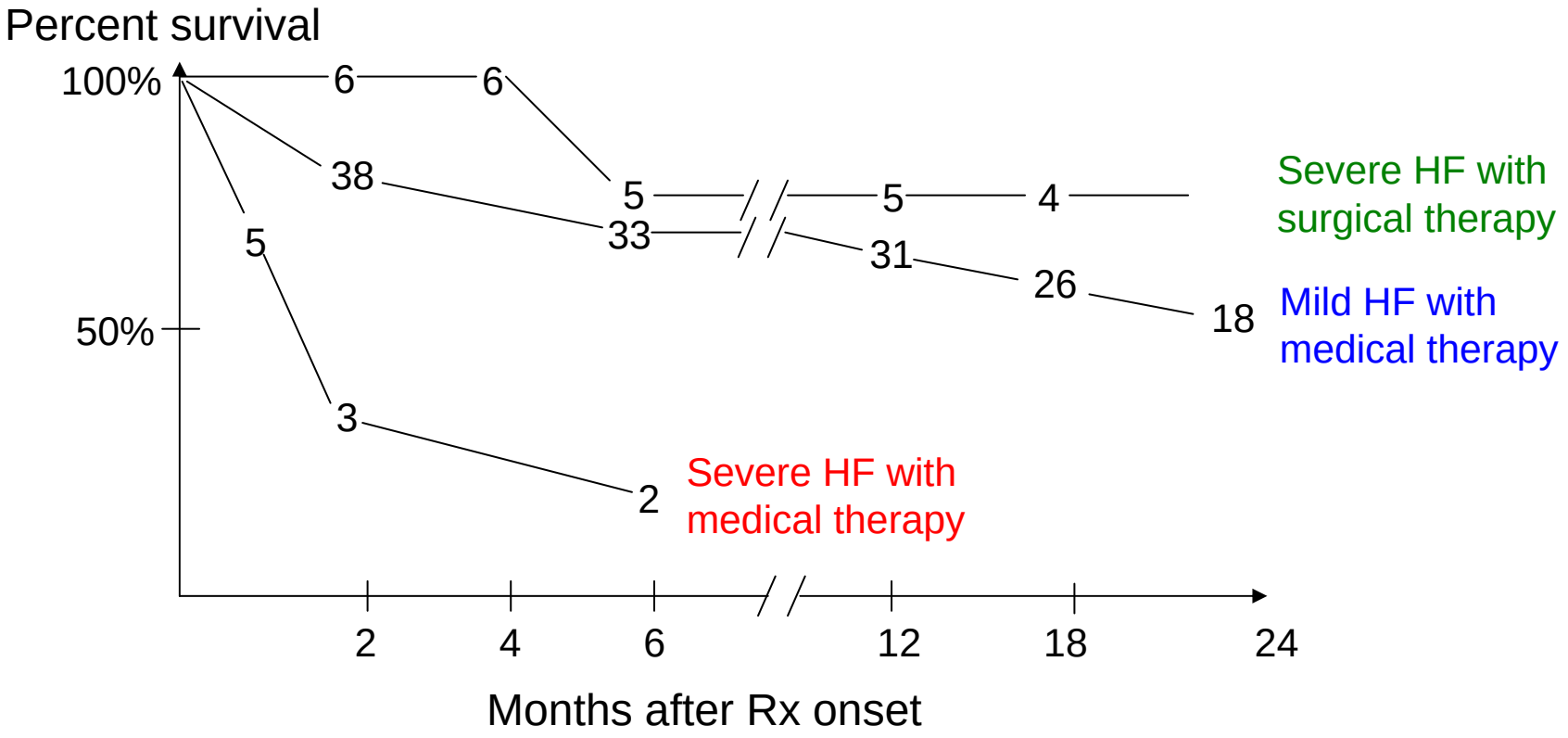


Mills et al. Chest 1974; 66:151
Andews and von Reyn 2001; 33:203

UNIL | Université de Lausanne

Outcome and Complications

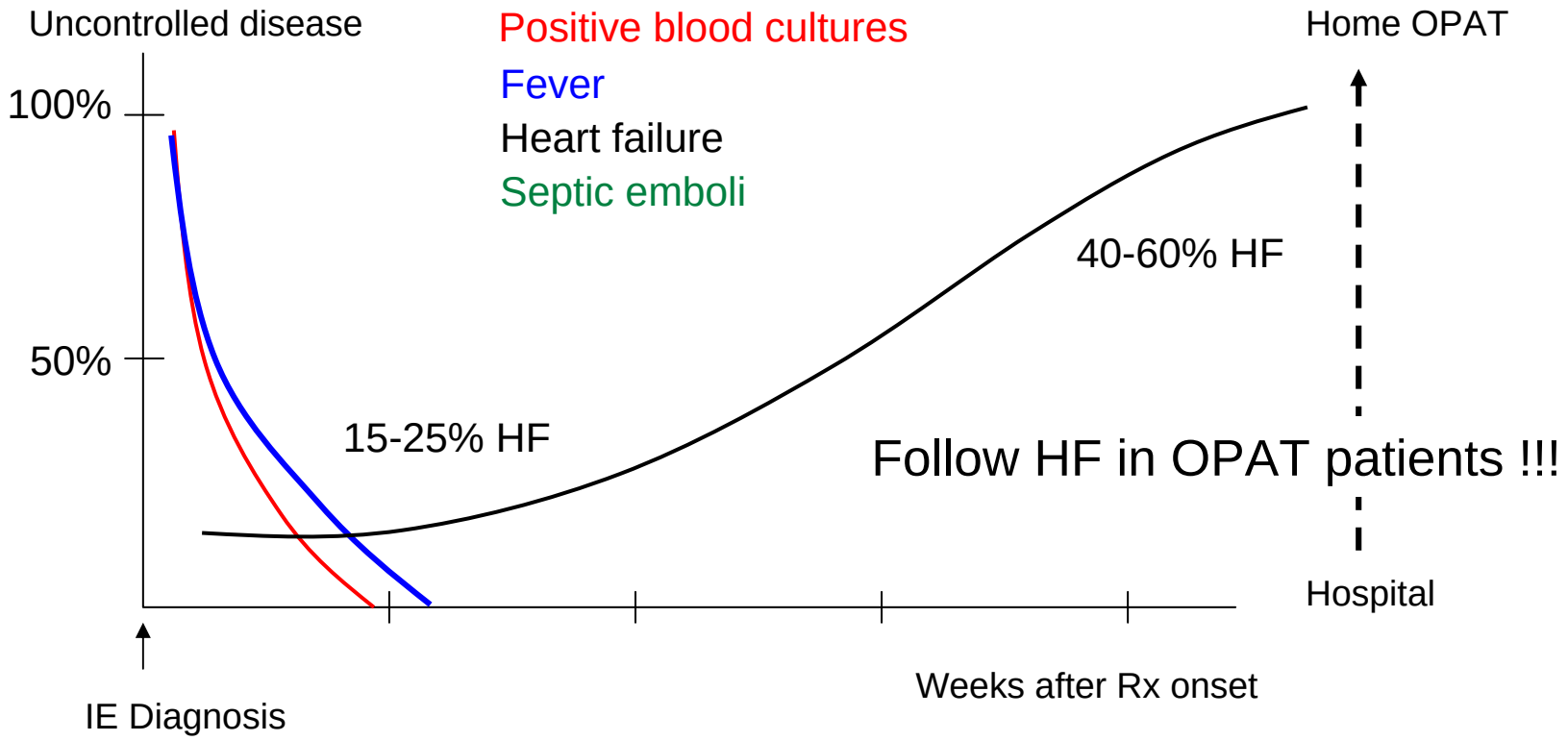
Survival of patients with heart failure and mitral insufficiency



Mills et al. Chest 1974; 66:151
Andews and von Reyn 2001; 33:203

UNIL | Université de Lausanne

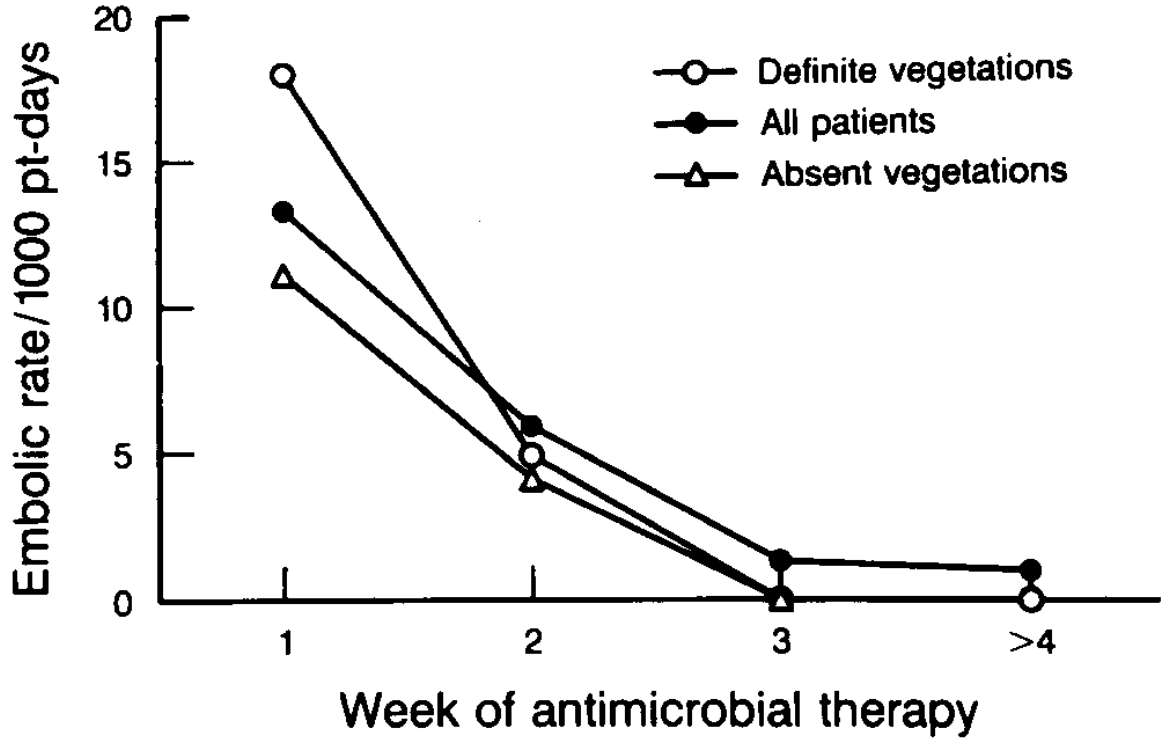
Outcome and Complications



UNIL | Université de Lausanne

Outcome and Complications

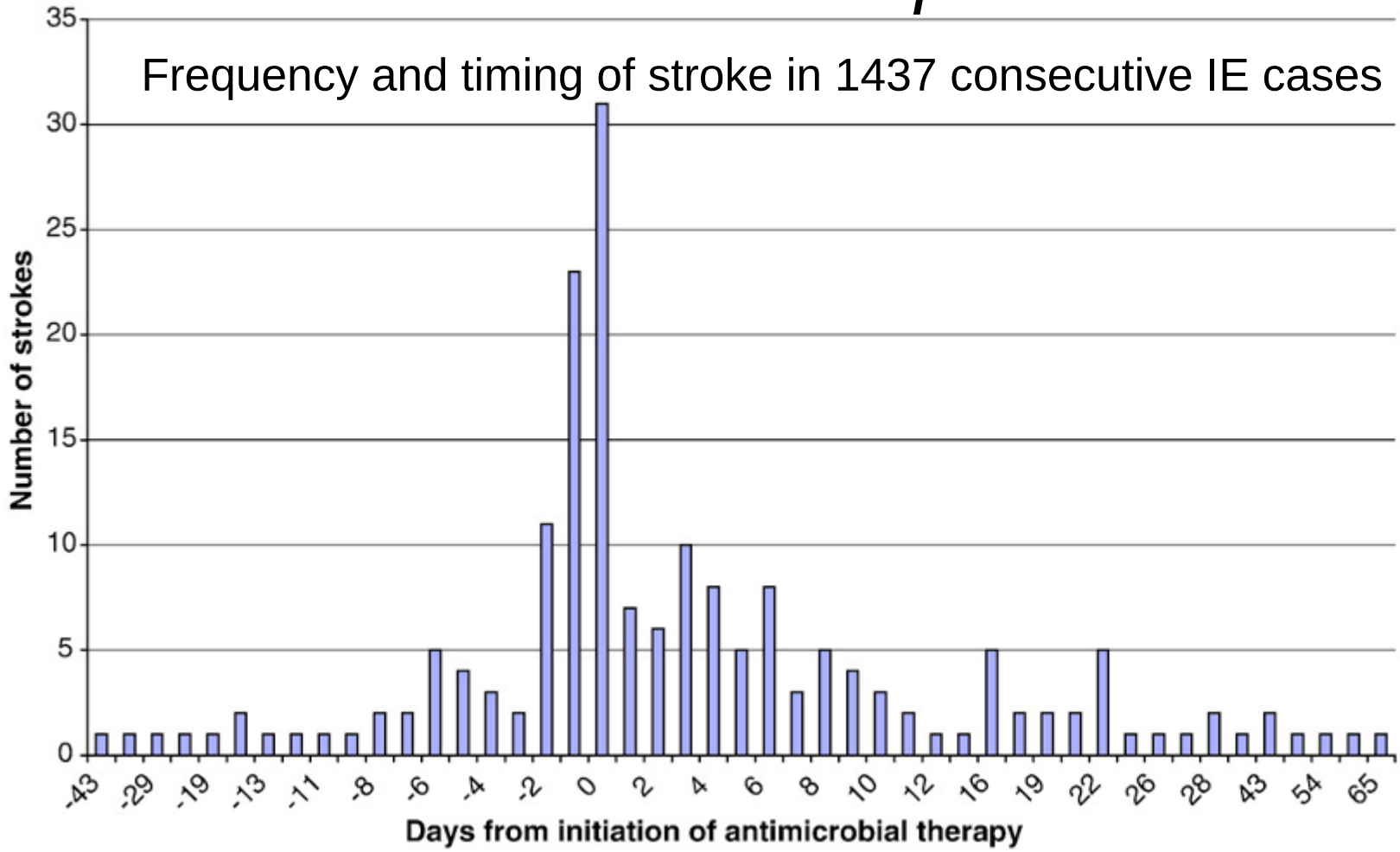
Timing and incidence of embolic events in patients with IE



Steckelberg et al. Ann Intern Med 1991; 114:635

UNIL | Université de Lausanne

Outcome and Complications



Dickerman et al. Am. Heart J. 2007;154:1086-94

UNIL | Université de Lausanne

Outcome and Complications

Effect of Vegetation Size on Embolism Stratified by Type of Microorganism and Valve Infected (in 217 episodes of left-sided IE; incidence was 13%)

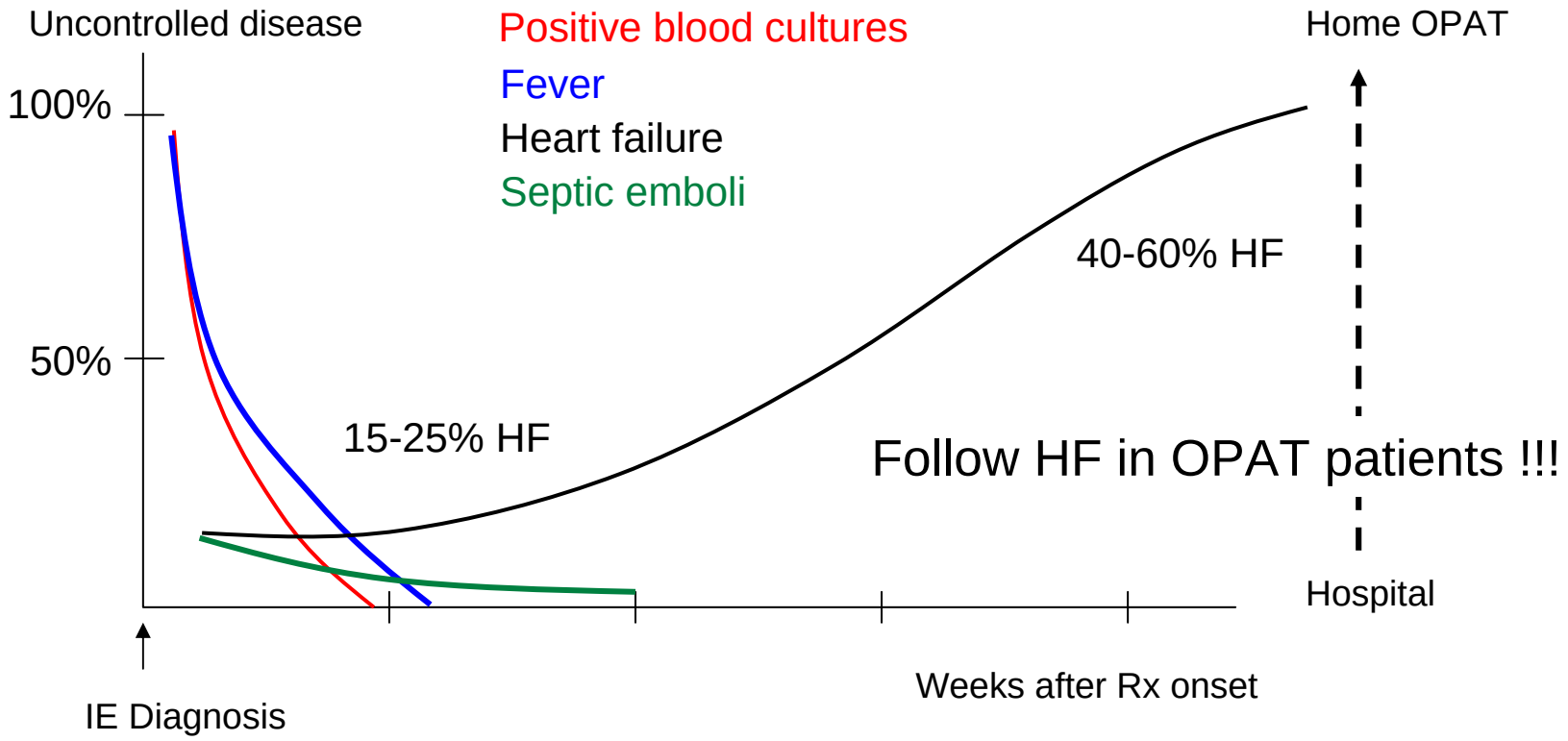
	Risk	RR (95% CI)	p Value
Streptococcus			
<10 mm	0.0 (10)	Undefined	1.0
≥10 mm	7.5 (40)	1	
Staphylococcus			
<10 mm	0.0 (16)	Undefined	0.0
≥10 mm	23.7 (38)	1	
Aortic position			
<10 mm	6.9 (29)	0.64 (0.14–2.99)	0.7
≥10 mm	10.7 (56)	1	
Mitral position			
<10 mm	0.0 (16)	Undefined	0.0
≥10 mm	23.5 (68)	1	

Risk data are presented as the percentage (n) of patients.

Vilacosta et al. J Am Coll Cardiol 2002; 39:1489

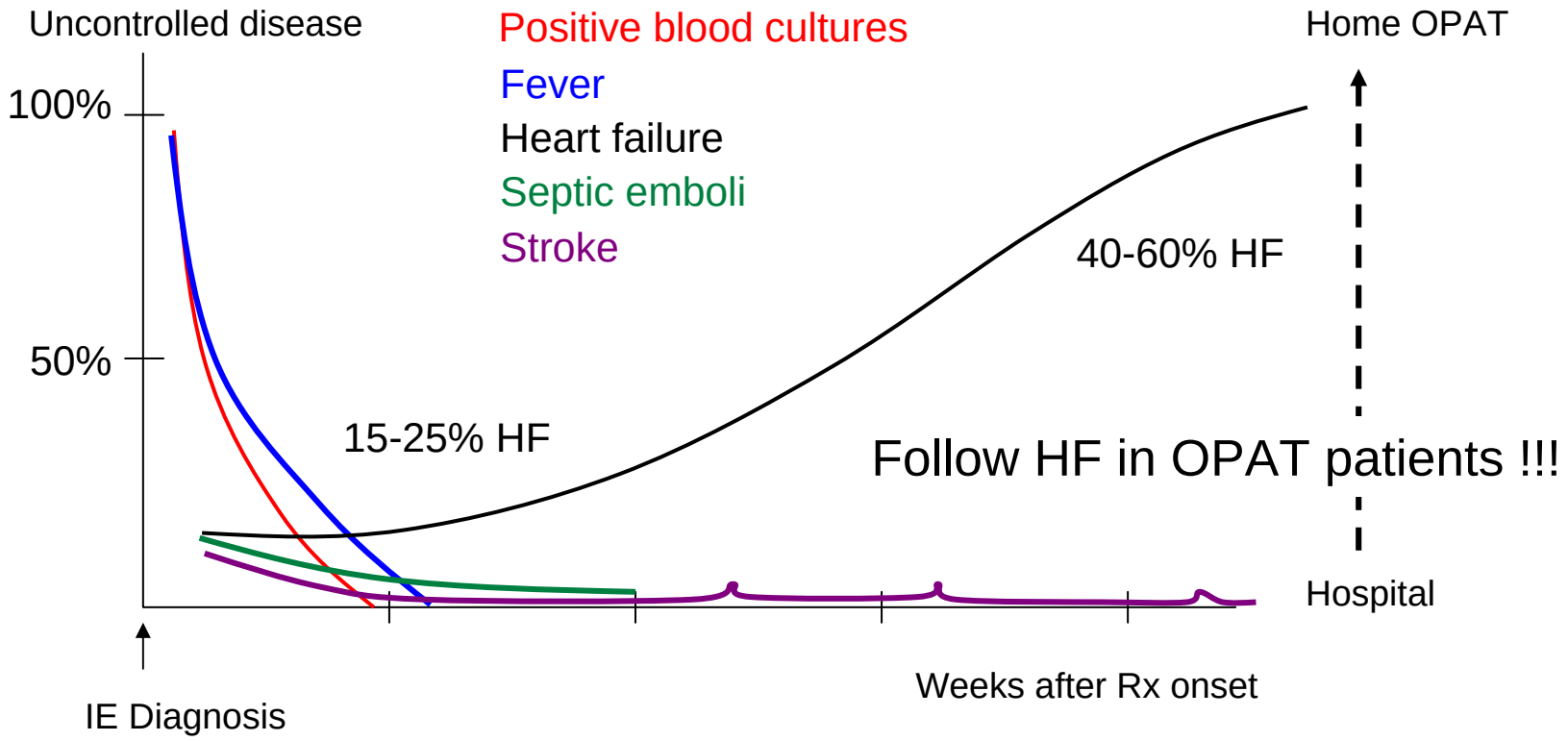
UNIL | Université de Lausanne

Outcome and Complications



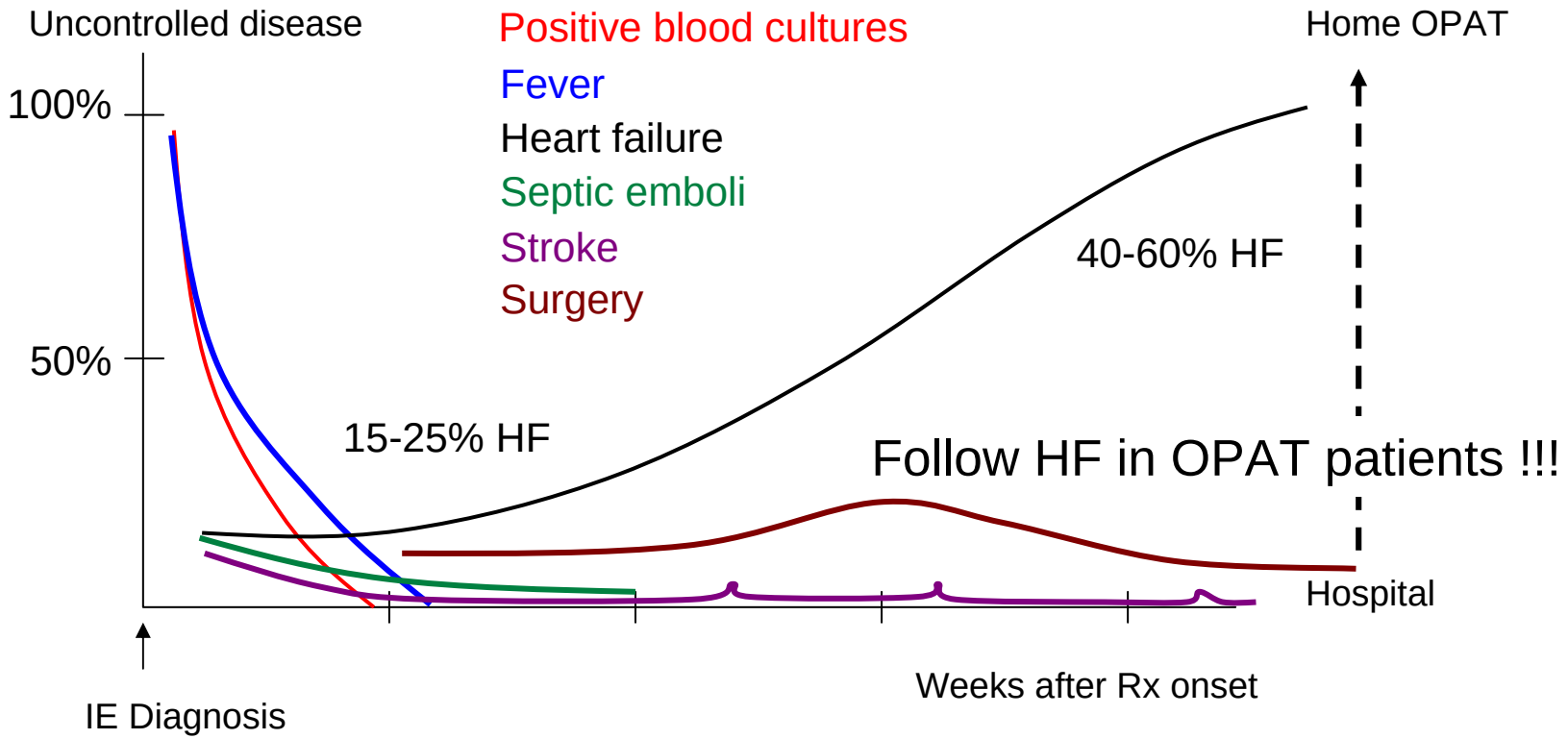
UNIL | Université de Lausanne

Outcome and Complications



UNIL | Université de Lausanne

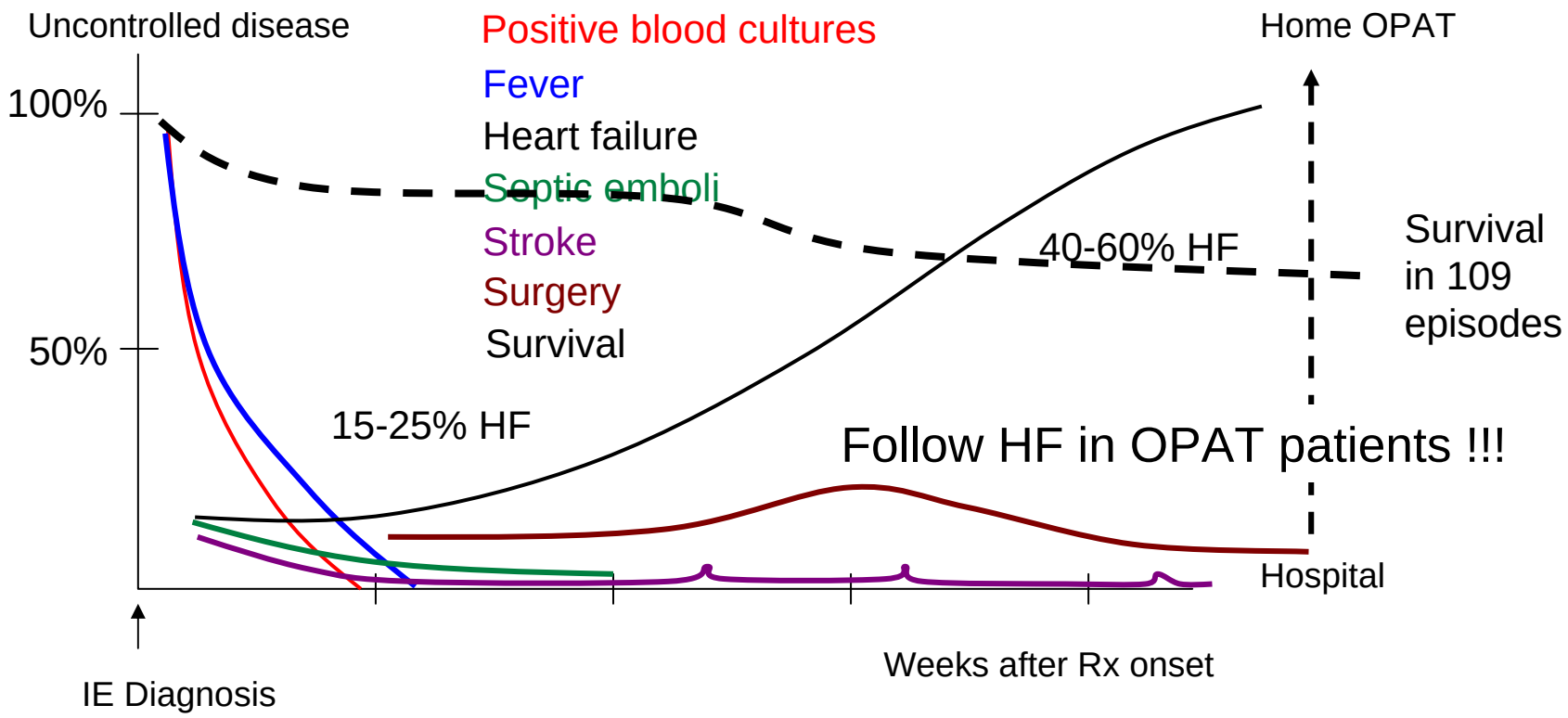
Outcome and Complications



Akowuah et al. Heart 2003;89:269

UNIL | Université de Lausanne

Outcome and Complications



Benn et al.J Int Med 1997; 242:15

Akowuah et al. Heart 2003;89:269

UNIL | Université de Lausanne

Quid OPAT and IE ?

Patient Selection Criteria for OPAT in IE

Andrews amd von Reyn, CID 2001; 33:203-9

Phase of Rx	Guidelines for use
Critical phase (weeks 0-2)	Complications occur during this phase Preferred inpatient Rx during this phase OK if (i) oral strepto, (ii) patient stable, (iii) no complication
Continuation phase weeks (2-4(6))	OK if medically stable NOT if heart failure, other cardiac anomalies, neurologic signs, acute IE, prosthetic valve, *S. aureus* or other virulent bacteria
Essential for OPAT	Educate patient and staff Regular post discharge evaluation (nurses 1x day, MD 1-2x week) Prefer physician-directed program, Not home-infusion model

UNIL | Université de Lausanne

Quid OPAT ?

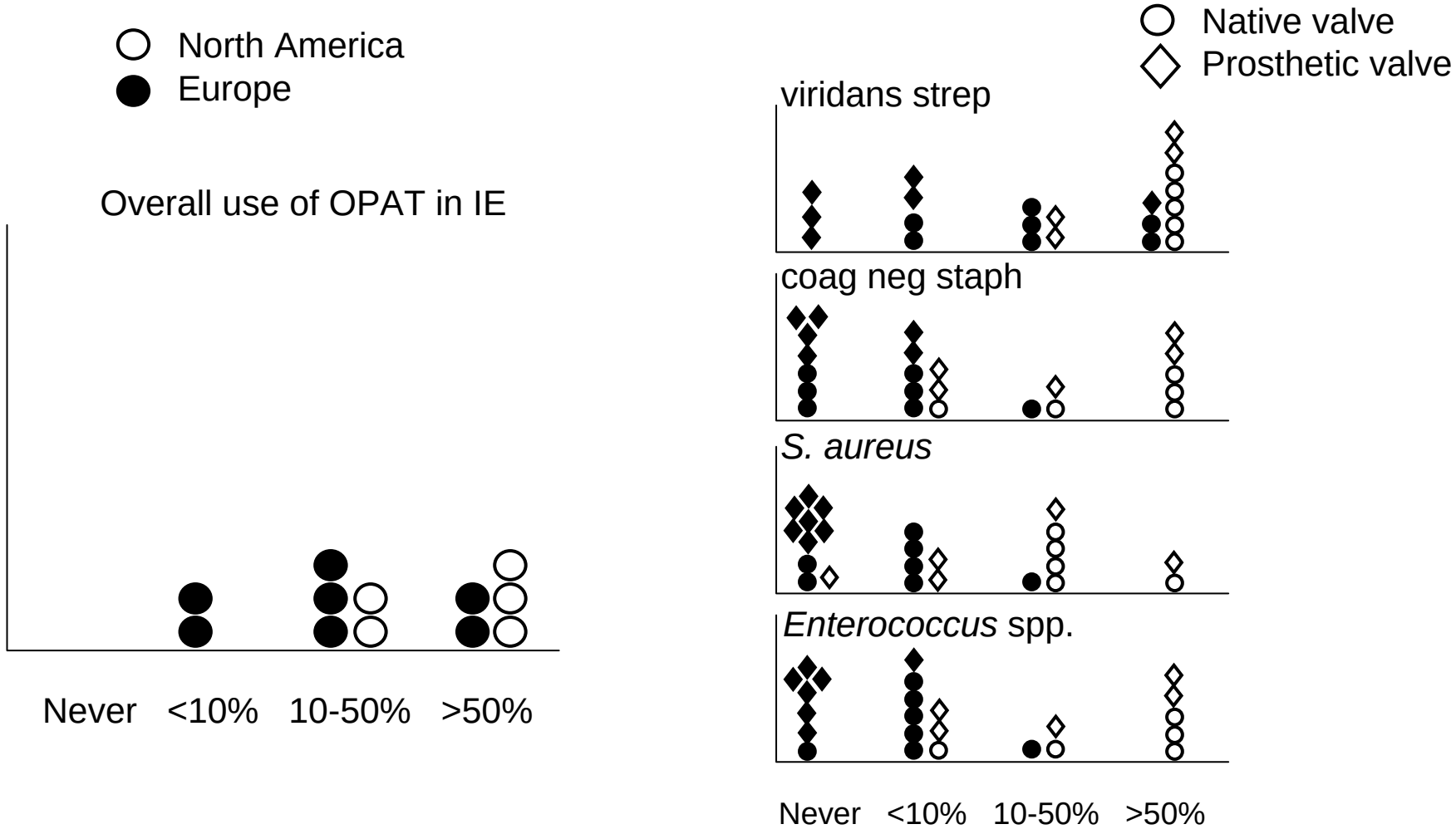
Practice Guidelines for Outpatient Parenteral Antibiotic Therapy
Tice et al. CID 2004;38:1651-72

- Started in USA during the 70s
- > 250,000 patients / year
- Restricted to low-risk phase of treatment

- Inpatient does not prevent …,
- OPAT does not increase complications

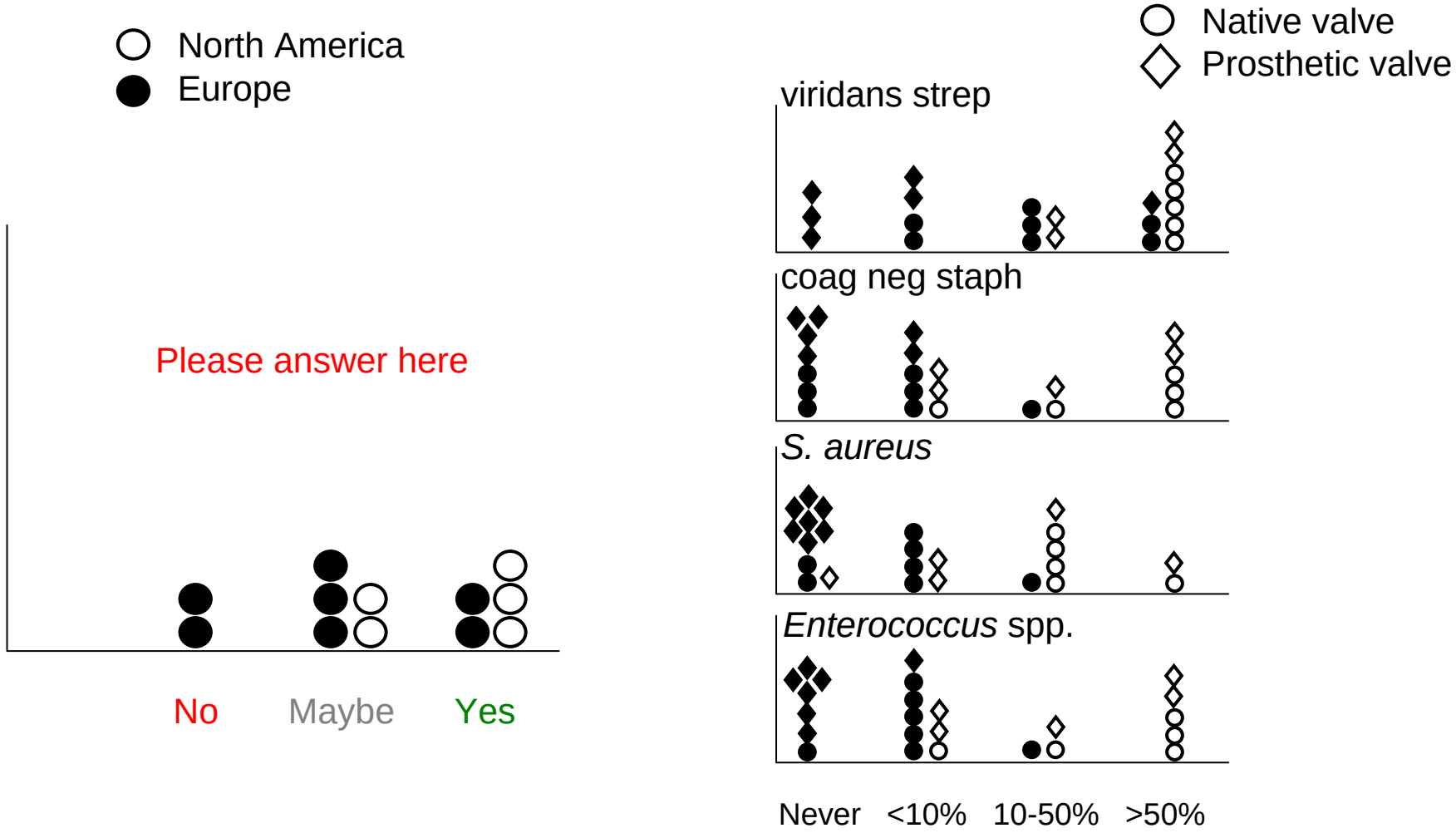
UNIL | Université de Lausanne

Quid OPAT Informal Survey ?



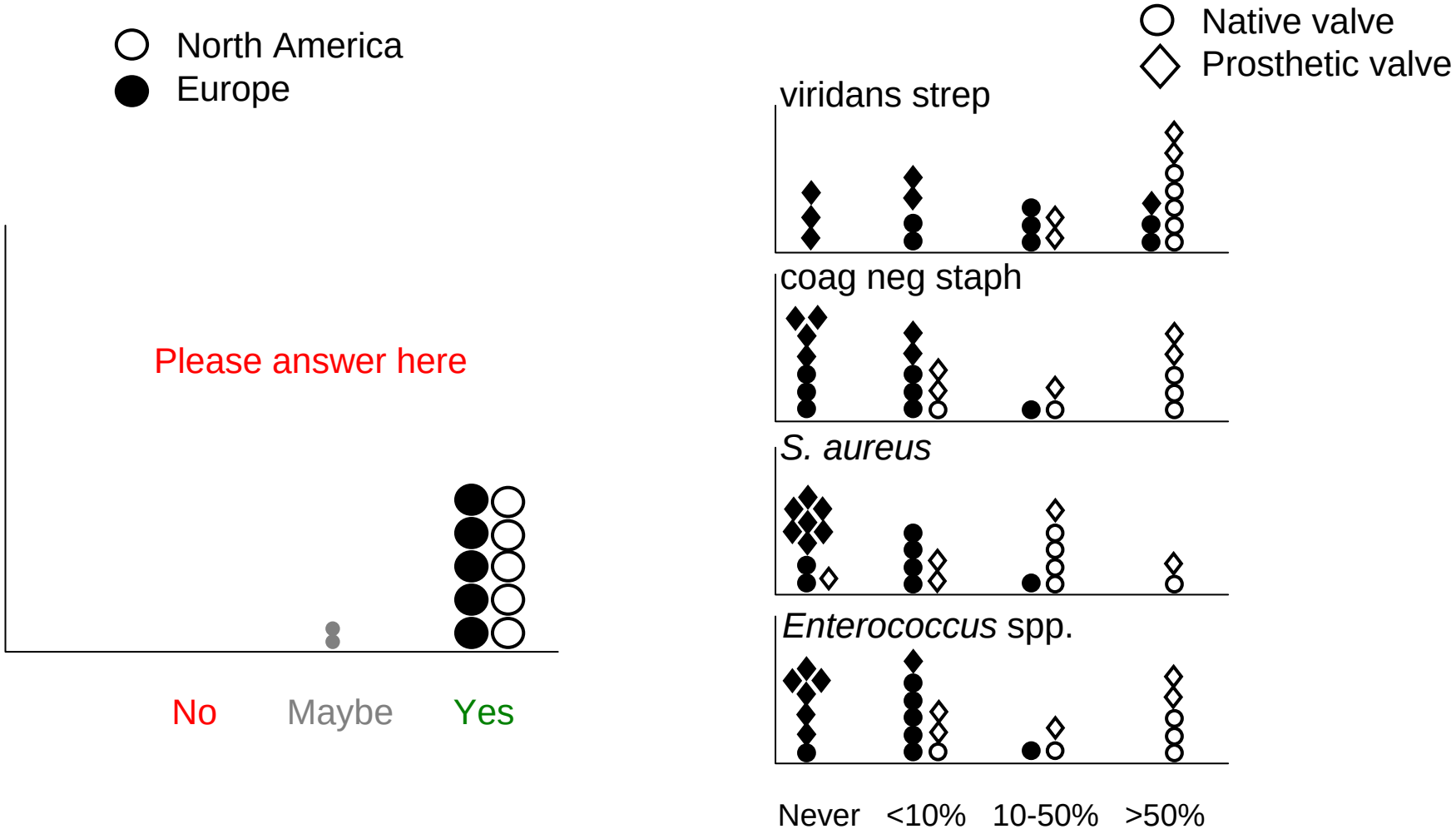
UNIL | Université de Lausanne

Would you recommend OPAT for yourself ?



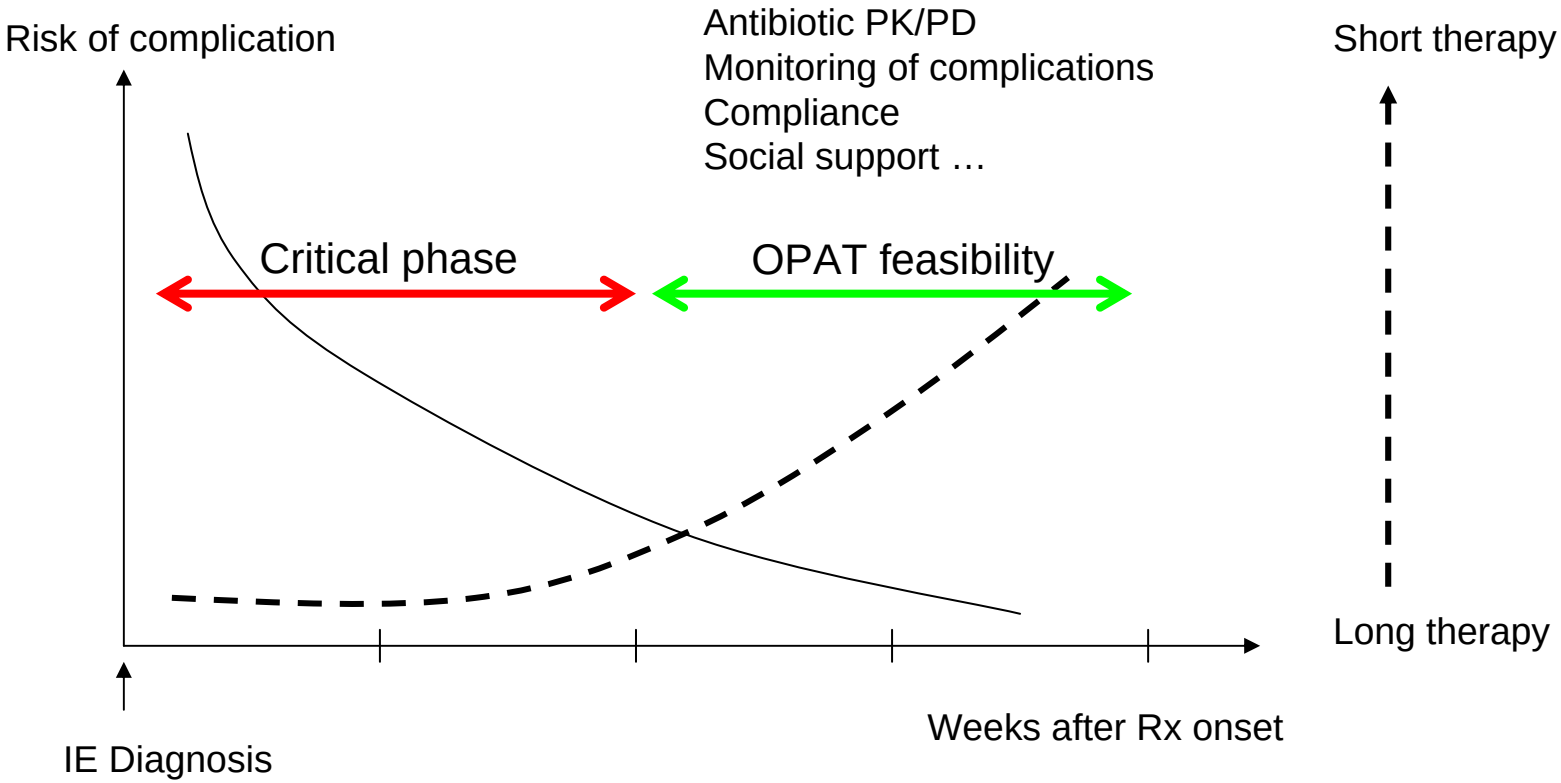
UNIL | Université de Lausanne

Would you recommend OPAT for yourself ?



UNIL | Université de Lausanne

The Dynamics of Decision Making



UNIL | Université de Lausanne

What is your Opinion ?

Question 1

Do you think that OPAT for IE patients is appropriate ?

Question 2

Would you advice more (controlled) studies to assess OPAT safety and efficacy in IE patients ?