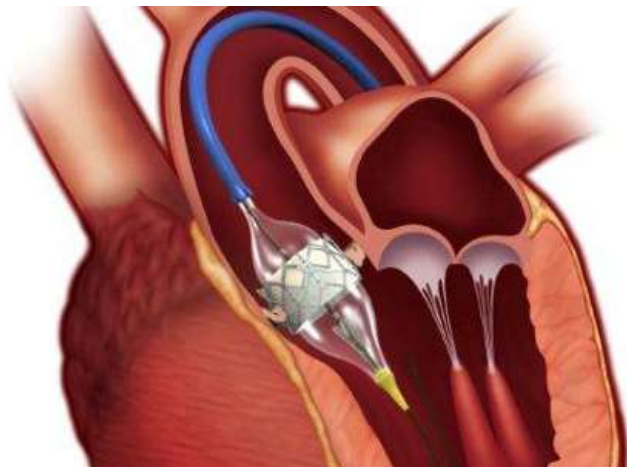
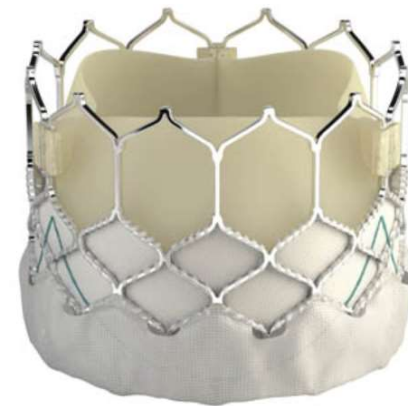
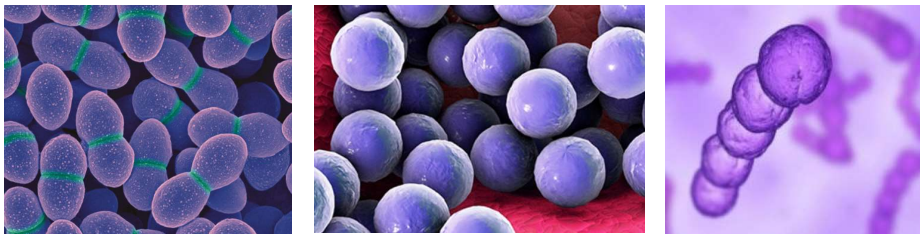


# Perkutaner Aortenklappenersatz

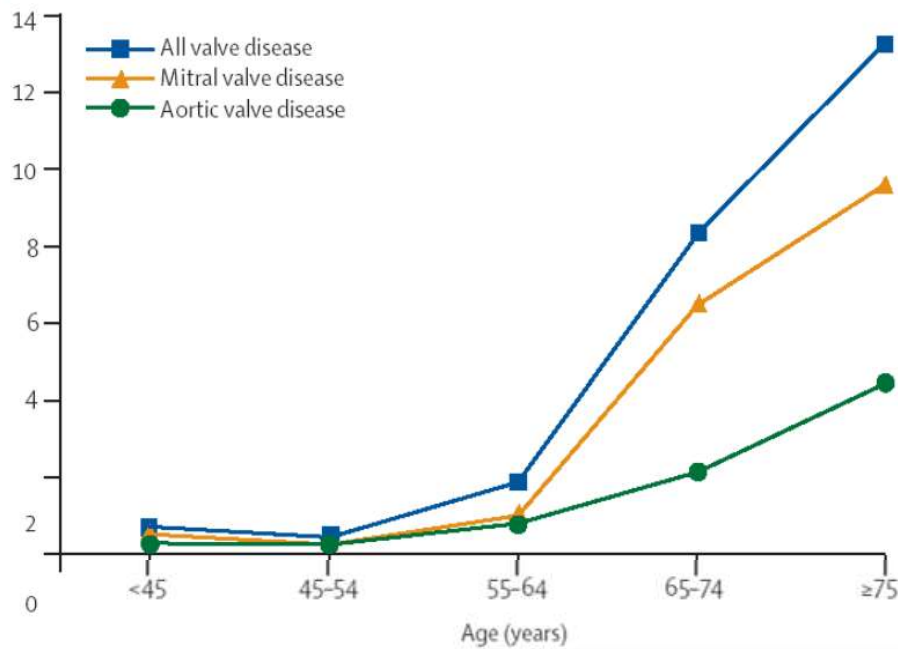
## TAVI: eine neue Operation

(TAVI: Transcatheter Aortic Valve Implantation)

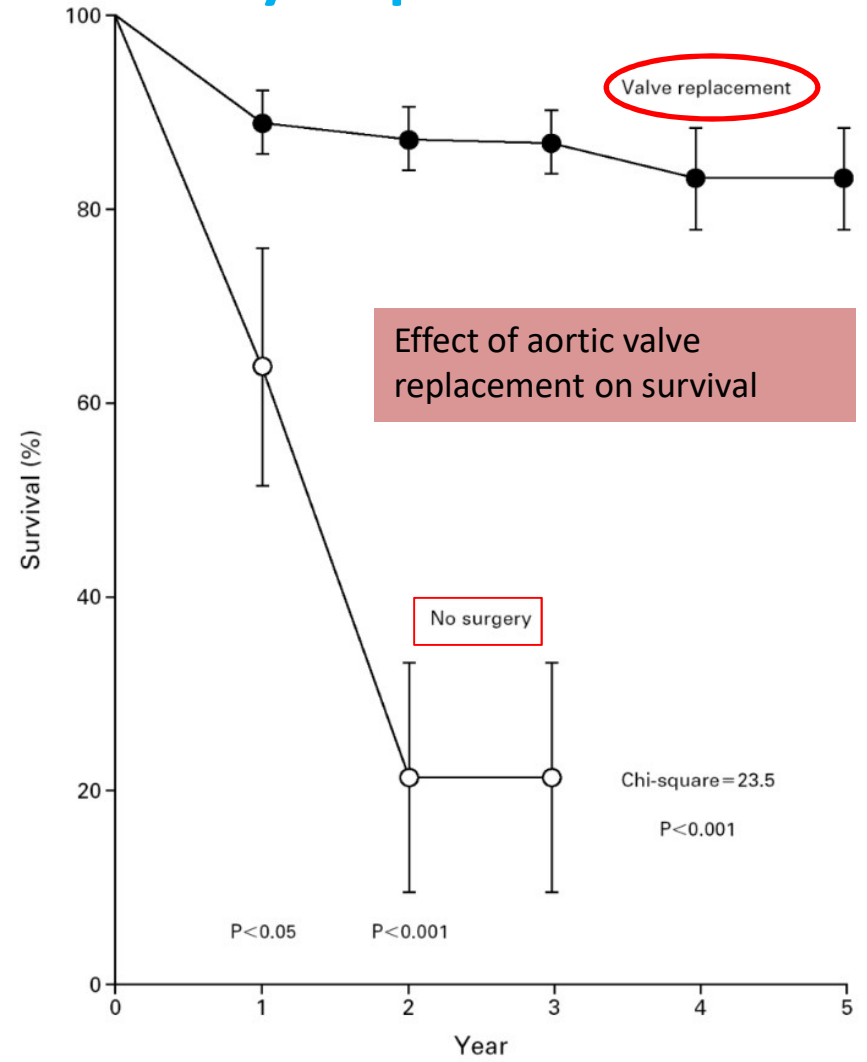


PD Dr. med. Anna Conen, MSc  
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# Prevalence and prognosis of symptomatic aortic stenosis



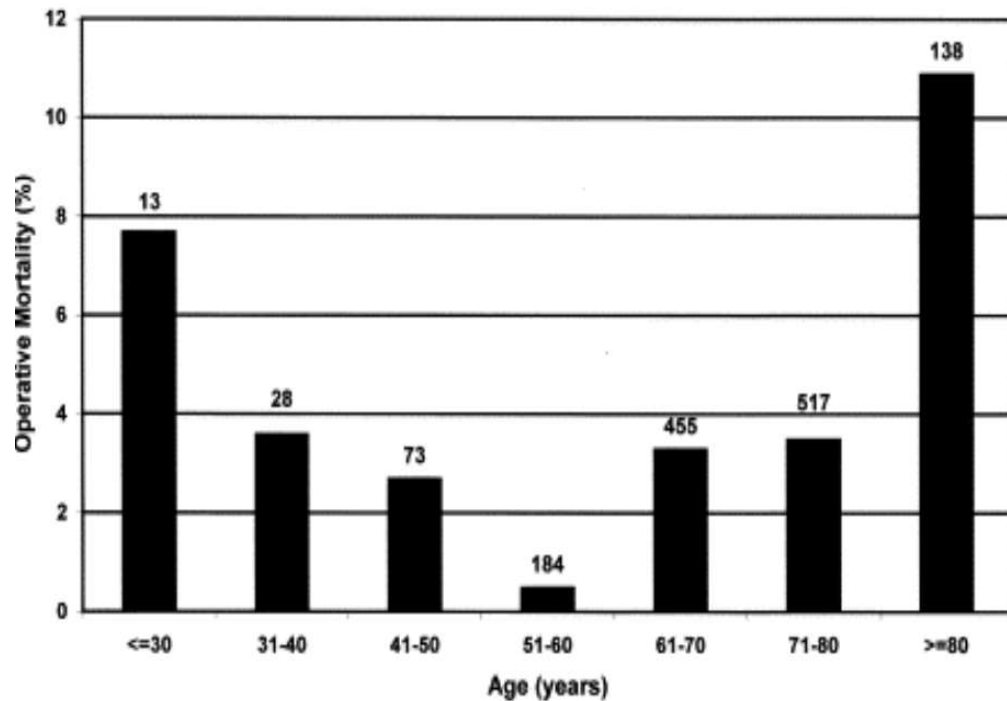
Valvulopathy in 11'911 US American adults  
 18-44 years old 0.7%  
**>75 years old 13.3%**



No. AT RISK	0	1	2	3	4	5
Valve replacement	125	87	51	35	9	0
No surgery	19	8	2	1	0	0

# Mortality in patients with surgical aortic valve replacement

1400 patients

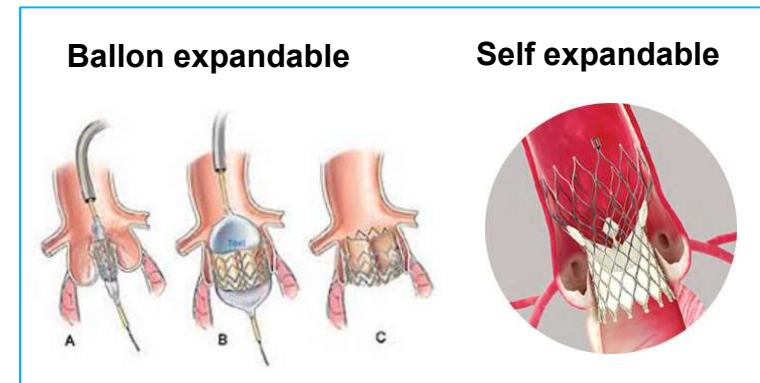
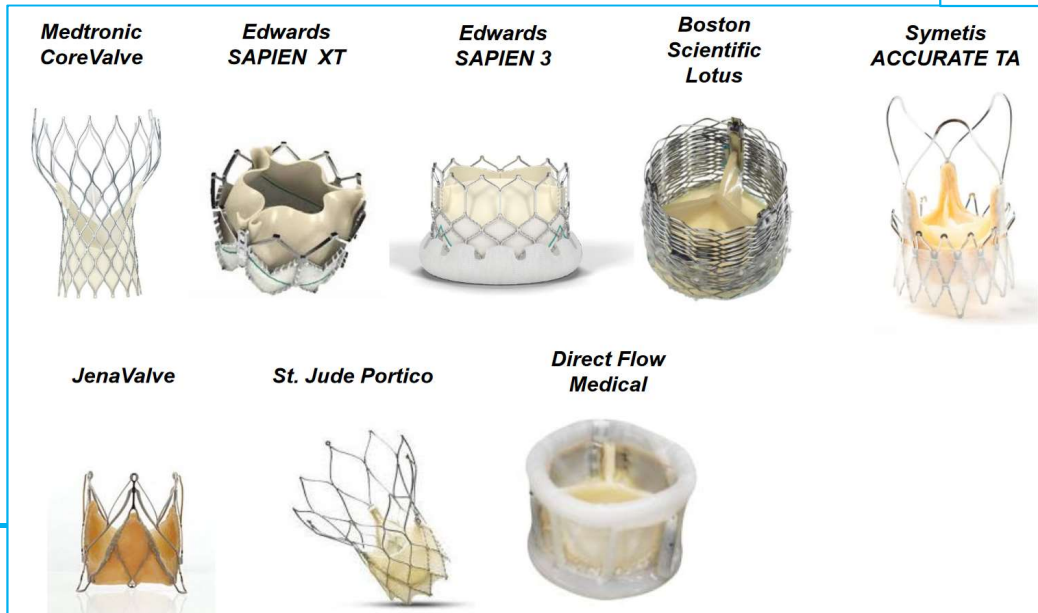
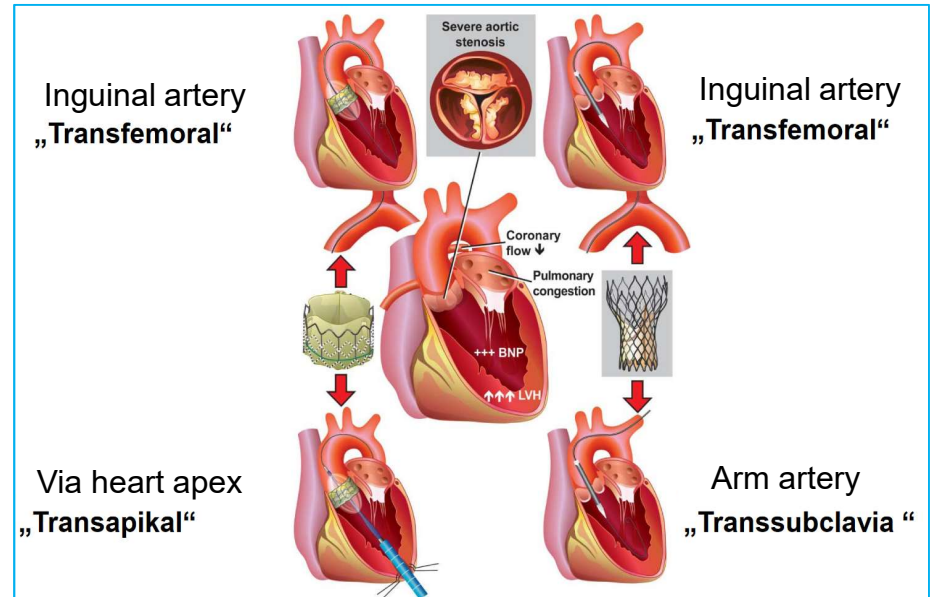


Overall 30-day mortality: 3.8%

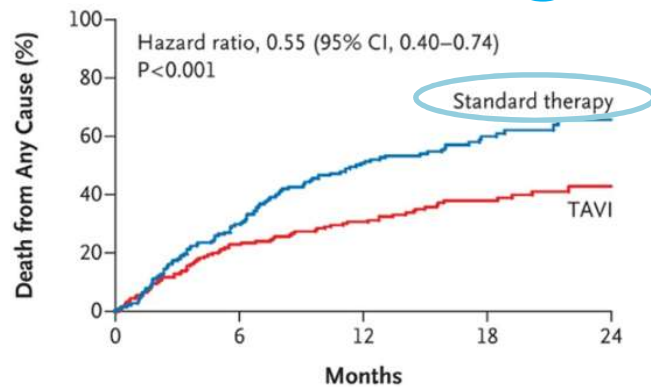
**Increased mortality risk:**

- Age >80 years: OR 3.7 (1.85–7.55)
- Pre-operated patients: OR 6.4 (1.67–24.73)
- Combined surgery: OR 4.7 (1.91–11.45)
- Emergency operation: OR 6.2 (2.41–16.04)

# Alain Cribier: first TAVI 2002



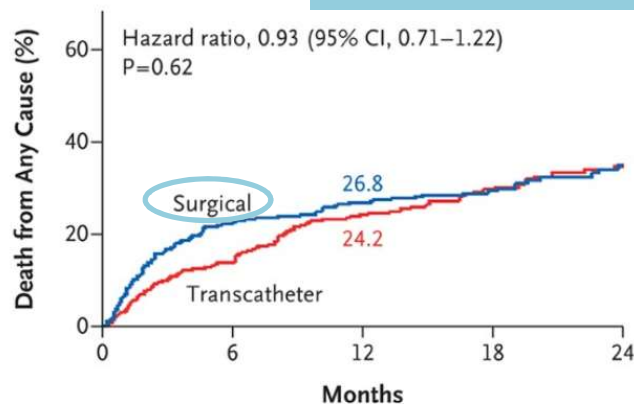
# Mortality TAVI vs. standard treatment and vs. surgical valve replacement



No. at Risk	0	6	12	18	24
TAVI	179	138	122	67	26
Standard therapy	179	121	83	41	12

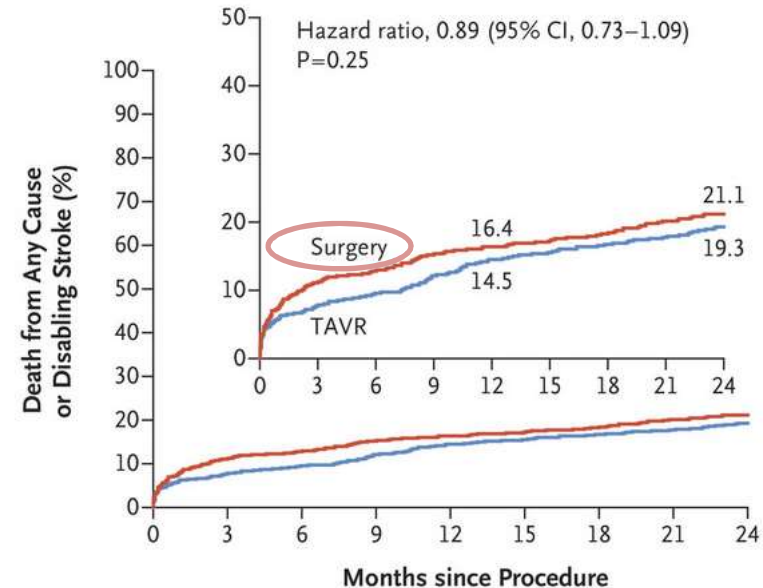
Death from Any Cause, All Patients

High-risk patients



No. at Risk	0	6	12	18	24
Transcatheter	348	298	260	147	67
Surgical	351	252	236	139	65

A Intention-to-Treat Population

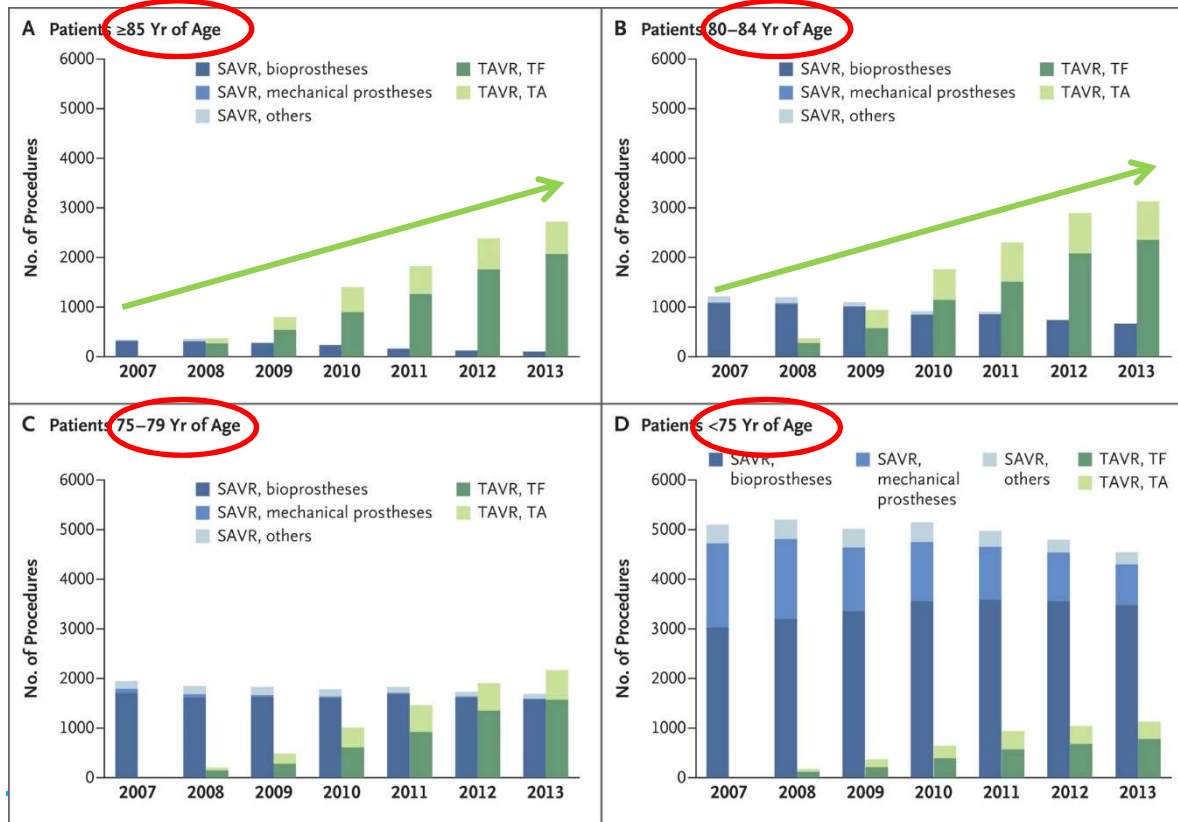


No. at Risk	0	3	6	9	12	15	18	21	24
TAVR	1011	918	901	870	842	825	811	801	774
Surgery	1021	838	812	783	770	747	735	717	695

Intermediate-risk patients

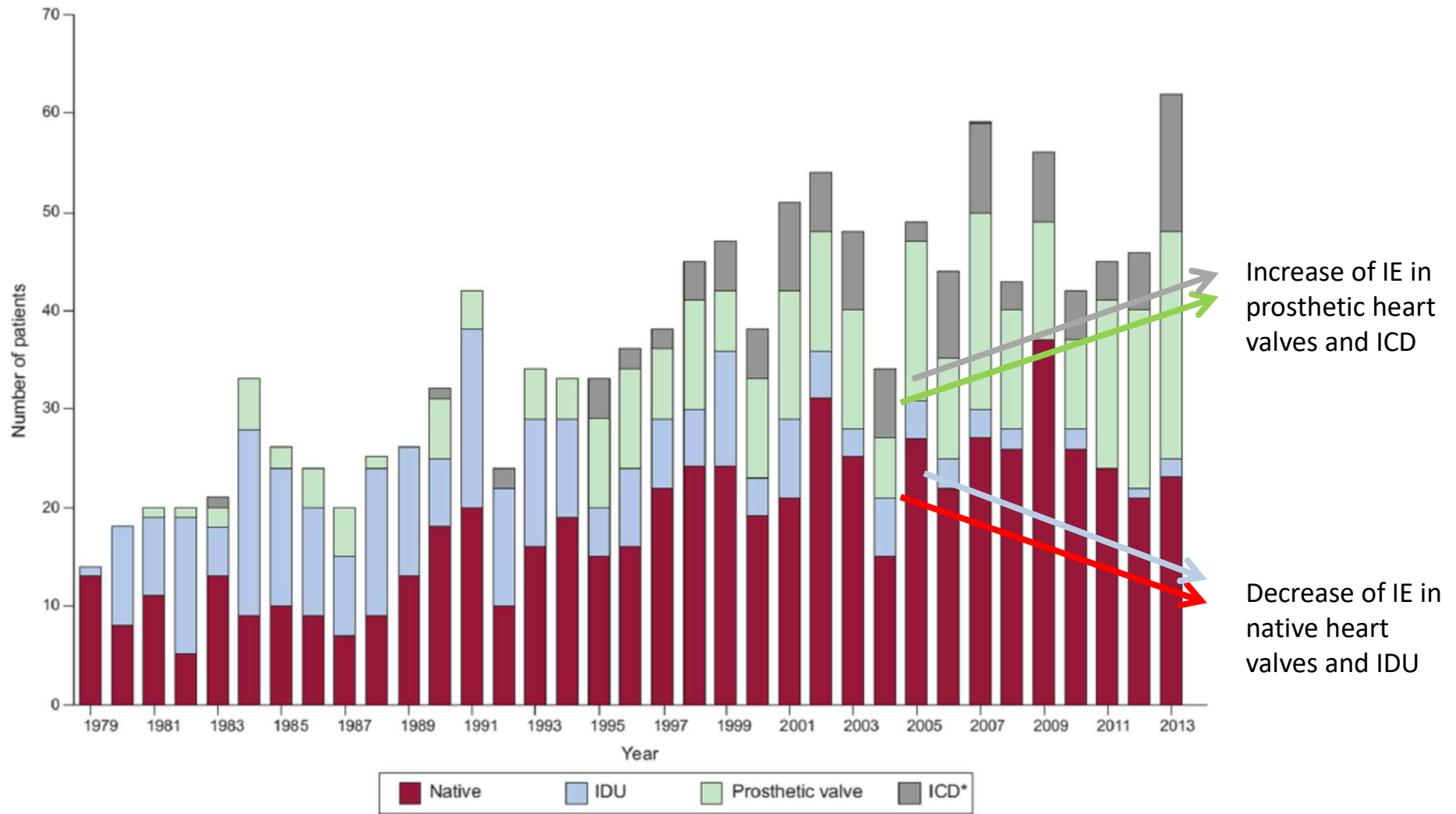
# Effect of Availability of Transcatheter Aortic-Valve Replacement on Clinical Practice

- TAVI data from Germany: 2007-2013
  - 32'581 TAVI patients
  - 55'992 surgical aortic valve replacement patients



Characteristic	TAVI	Surgical AVR
Log Euro SCORE, %	22.4	6.3
Age, years	81.0	70.2
NYHA III/IV, %	41.2	23.2
Coronary heart disease, %	46.3	17.5
CABG (bypass surgery), %	12.9	3.6
Earlier heart surgery, %	18.4	7.3
Arterial vascular disease, %	12.0	4.6
COPD, %	15.4	11.0
Chronic renal failure, %	4.8	1.2
Diabetes mellitus, %	33.2	25.6

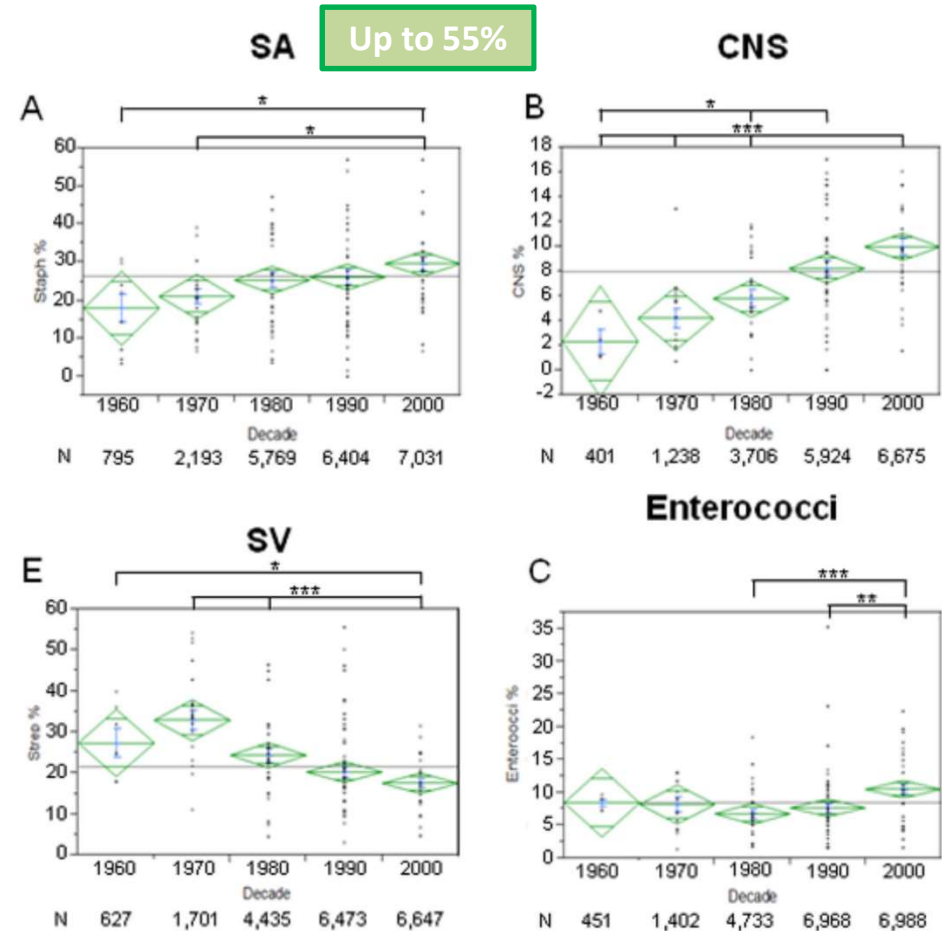
# Endocarditis – time trend in a tertiary care center in Spain



IDU: intravenous drug users ICD: Implantable cardiovascular devices (pacemaker and defibrillators)

# Endocarditis – Epidemiology and microbiology in the 21st century

<b>Incidence</b>	<b>5-15/100'000 population</b>
<b>Patients</b>	<b>Old, polymorbid</b>
<b>Risik factors</b>	<ul style="list-style-type: none"> <li>• <b>Degenerative</b> valvular disease</li> <li>• <b>Implants</b> (CIED, prosthetic heart valves, TAVI)</li> <li>• <b>Intravenous therapies, dialysis</b></li> <li>• <b>Immunosuppression</b></li> </ul> <p>&gt;50% without known risk factor</p>
<b>Mikroorganismen</b>	<ul style="list-style-type: none"> <li>• <b>Staphylococci</b> mainly nosocomial and healthcare-associated (34%)</li> </ul>





# TAVIE - Incidence

- Incidence rates for TAVIE 0.2-3.4% per year
- Largest, international registry 1.1%/py (95% CI 1.1-1.4) (250 TAVIE/20'006 TAVI)
- Similar to IE rates after surgical AVR (1-6%)

	TAVIE	IE after AVR
<b>PARTNER-1</b>		
1 year	0.6%	1%
5 years	2%	2.5%
<b>PARTNER-2</b>		
1 year	0.4%	0.6%
2 years	1.2%	0.7%
<b>Ando 2018</b>		
Overall	2%	1.3%
<b>Kolte 2018</b>		
Overall	1.7%	2.5%

AVR: aortic valve replacement

PARTNER 1: high-risk surgical patients  
 PARTNER 2: intermediate risk patients

# Why enterococci?

- Ineffective prophylaxis ?
- Inguinal colonization in old and polymorbid patients ?
- More instrumentalization ?
- Insufficient disinfection ?
- Postinterventional infections (urogenital infections) ?
- Calcified aortic valve ?

# TAVIE – risk factors (n=250)

Risk factors	TAVIE	No TAVIE	HR (95% CI)
Age	78.9 years	81.8 years	0.97 per 1 year increase (0.94-0.99)
Male sex	62.0%	49.7%	1.69 (1.13-2.52)
Diabetes mellitus	41.7%	30.0%	1.52 (1.02-2.29)
Moderate to severe aortic valve insufficiency	22.4%	14.7%	2.05 (1.28-3.28)

# Catheter lab as risk factor?

- In catheter lab: Instruction/teaching of involved persons, criteria for disinfection, air measurements, room conditions not as stringent as in operation room?

- Single center, retrospective
- n=73 patients with TAVI between 2008-2011
  - n=45 transfemoral (62%), n=28 transapical (38%)
  - Prophylaxis: Cephalosporine 1./2. generation

Infective complications	n=11
Groin *	1 (1.4 %)
UTI	5 (6.8 %)
Bronchopulmonary	3 (4.1 %)
Unknown	2 (2.7 %)

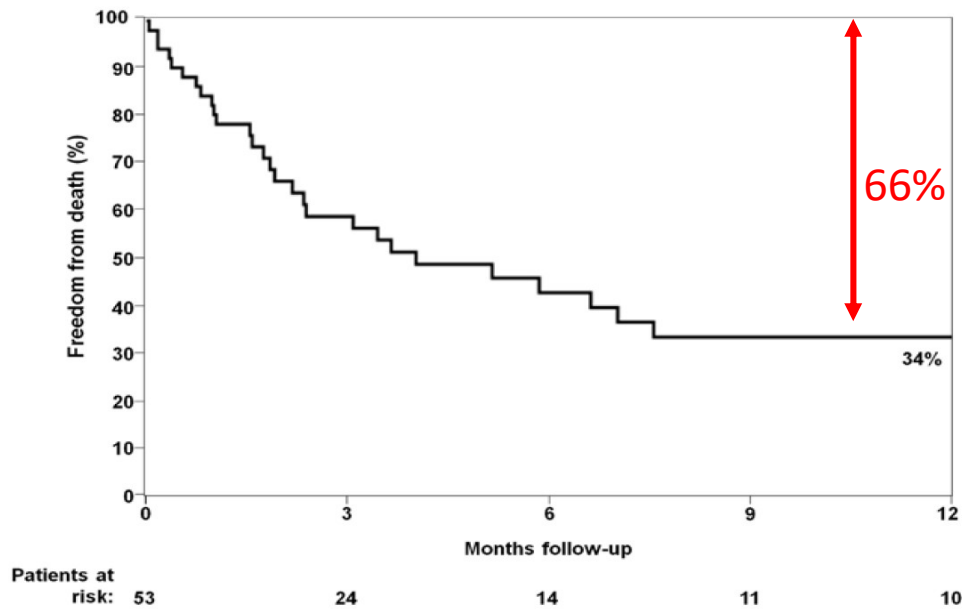
*Acinetobacter* spp.

\* Transapical TAVI insertion, groin surgically prepared in case that emergency heart surgery was needed

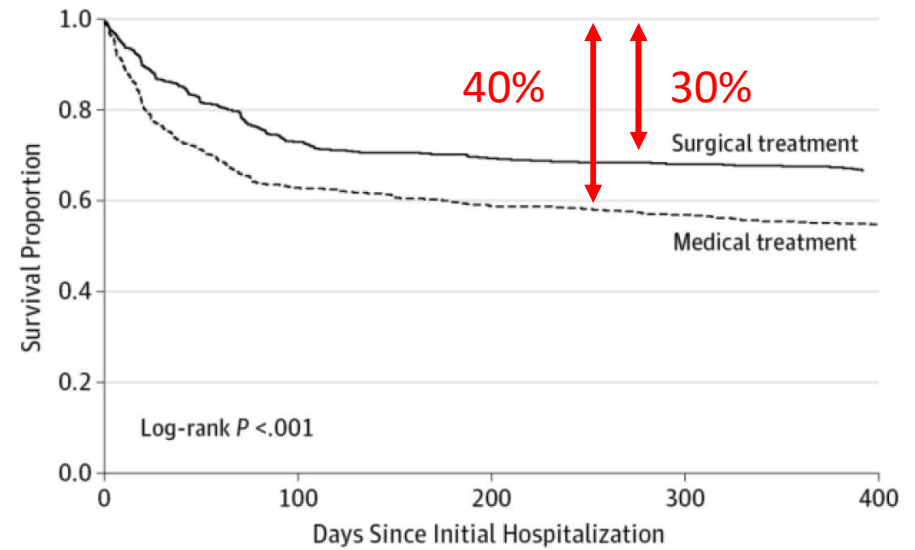
# TAVI – hospital hygiene recommendations

Location / process	Patient preparation	Staff
Catheter laboratory or (hybrid) operation room	Shower with sope the evening before intervention	Surgical hand disinfection, sterile gown and gloves, surgical mask and hair protection
Minimal traffic in operation room	If needed, hair clipping before intervention	Before contact with heart valve/valve introduction change gloves or remove outer glove in «double gloving»
Doors closed	Preoperative skin disinfection according to surgical standards: alcohol-based preparation with additional remanent adjunct (Chlorhexidine, Octenidine or PCP-iodine)	
Minimal exposition time of unpacked heart valve to room air	Antibiotic prophylaxis 0-60 minutes before arterial puncture with Augmentin® 2.2g i.v.	

# TAVIE mortality



**53 patients**  
**TAVI IE**



**1025 patients**  
**Prosthetic Valve IE**

# TAVIE - conclusions

- **Endocarditis rate** after TAVI comparable to infection after surgical valve replacement
  - 30-40% in-hospital **mortality**
  - Swiss TAVI endocarditis data comparable with the largest analysis (n=250, Regueiro)
    - Old and polymorbid patients
    - 2/3 present within the **first year after TAVI**
    - >50% **nosocomial and healthcare-associated** cases
    - 15-20% need **surgical** interventions
  - **Enterococci** dominant (**25-30% of cases!**), mainly in early TAVIE
  - Current periinterventional **antibiotic prophylaxis (cephalosporine)** needs discussion:
    - Adapting prophylaxis to CoAmoxicillin 2.2g i.v. 30-60 min. before intervention ?
    - BUT: Need for observation, how many penicillin-resistant enterococci emerge
-