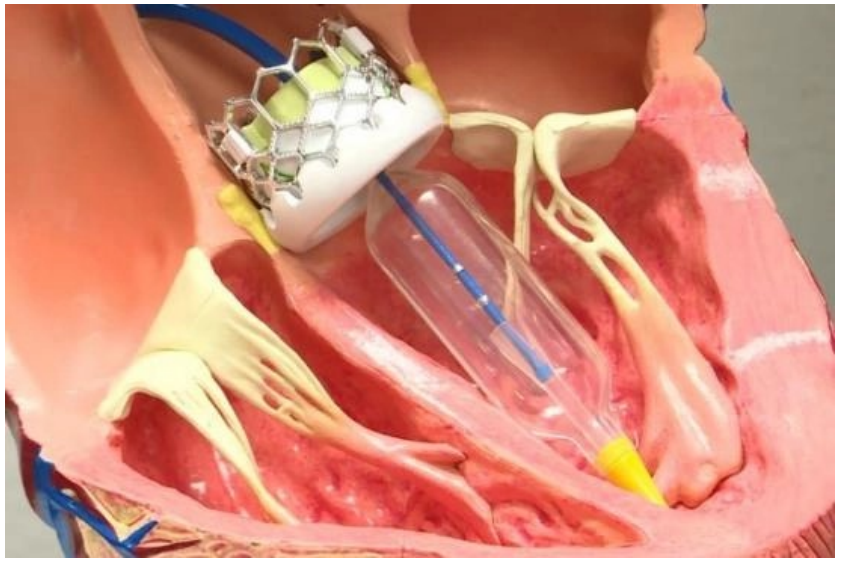
Sesiones de Microbiología 2026.

Nuevos dispositivos intracardiacos: ¿tenemos un problema?



Jose Guerra Laso.
Sº de Medicina Interna.
Jueves 26 de Marzo de 2026.

Complejo Asistencial Universitario de León | Sacyl | Junta de Castilla y León

CONFLICTO DE INTERESES.

Jose Manuel Guerra Laso, especialista en M. Interna con dedicación preferente a las Enfermedades Infecciosas.

He participado como ponente en reuniones científicas con patrocinio por parte de Pfizer, Gilead, MSD, ViiV y Jansen, por las que he recibido una compensación económica.

He recibido ayuda para acudir a congresos, cursos y reuniones científicas por parte de Pfizer, Gilead y Jansen.

Colaboro activamente en la organización de sesiones y cursos de formación continuada, por los que en ocasiones recibo remuneración económica por parte de instituciones públicas y privadas.

No he recibido ninguna compensación económica por esta sesión. Los datos, la información, las diapositivas y las opiniones expresadas en la presentación son propias del autor o recogidas de bibliografía médica referenciada, y no presentan ningún tipo de conflicto de intereses.

El Test de Declaración (Disclosure)

¿Me sentiría cómodo si mis pacientes, colegas o revisores conocieran el nivel exacto de intervención de la IA en este documento?

NO

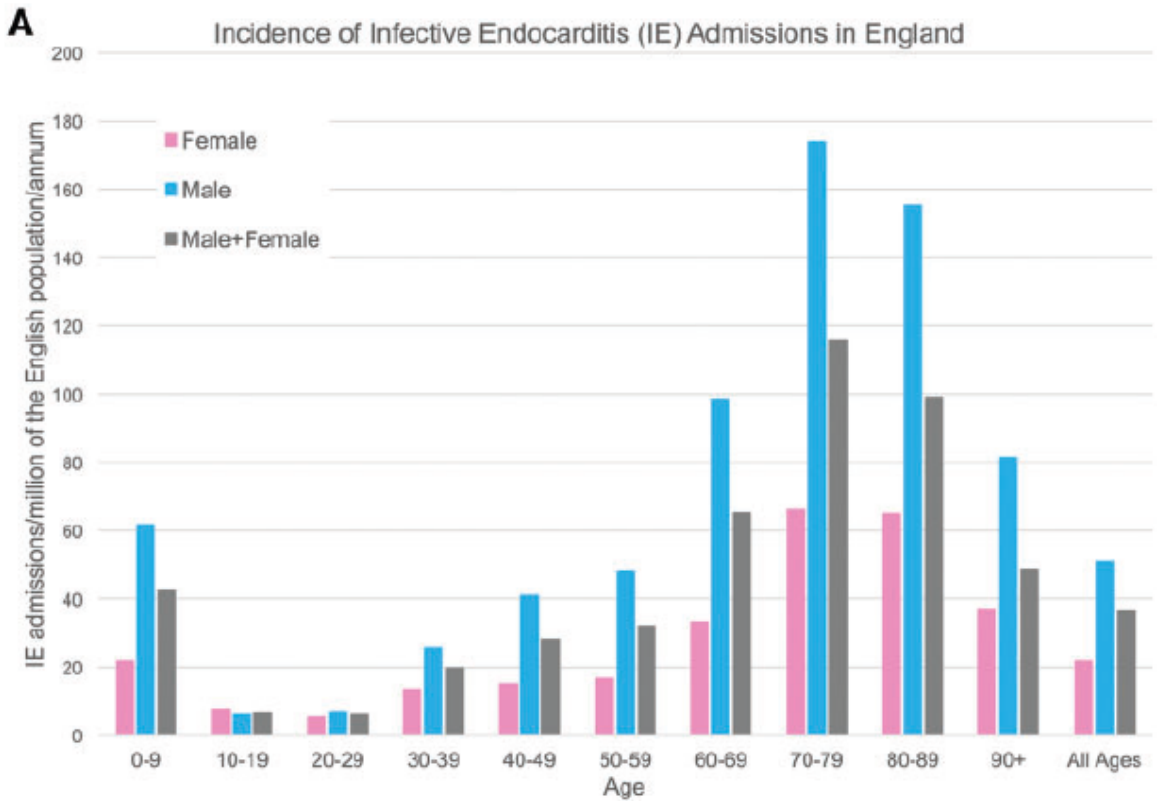
Si la respuesta es incomodidad o temor al rechazo:
Existe una clara influencia indebida. Debe replantearse el uso de la herramienta.

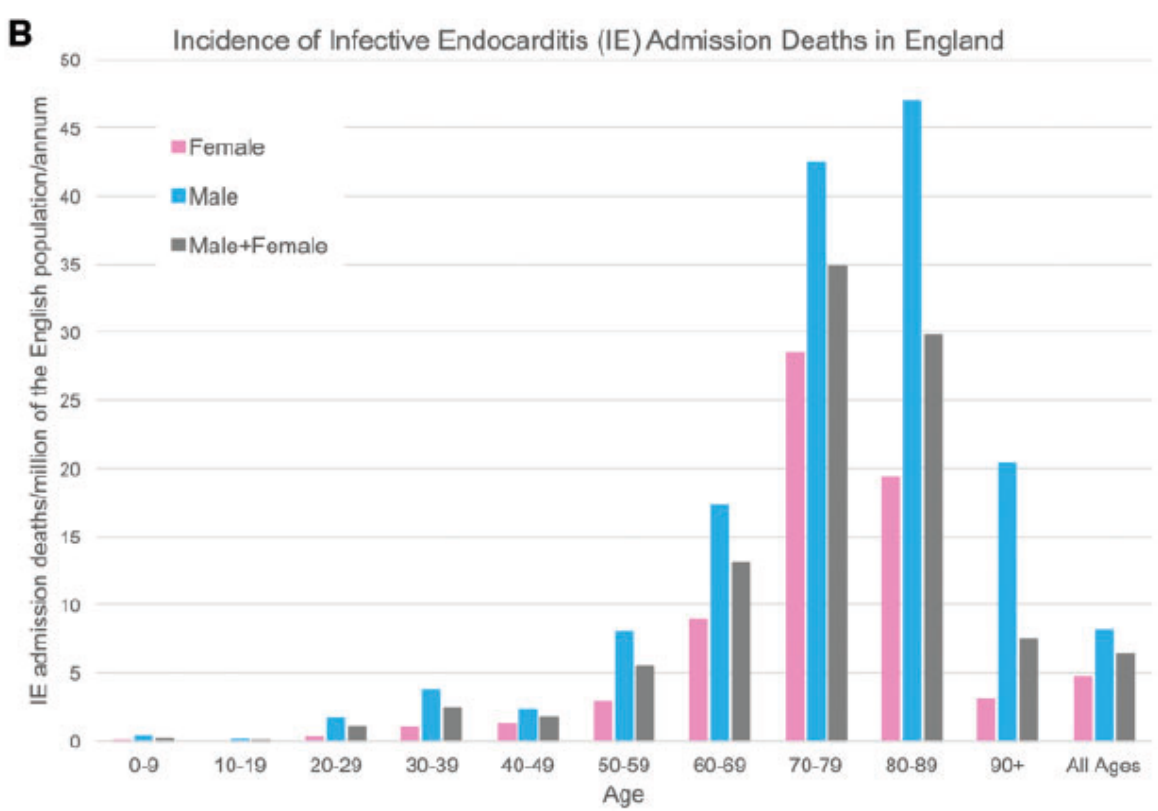
SÍ

Si la respuesta es positiva:
Proceder con una declaración formal en la metodología del documento detallando qué modelo se usó y para qué secciones.

ESC European Society of Cardiology
European Heart Journal (2018) **39**, 586–595
doi:10.1093/eurheartj/ehx655

Quantifying infective endocarditis risk in patients with predisposing cardiac conditions





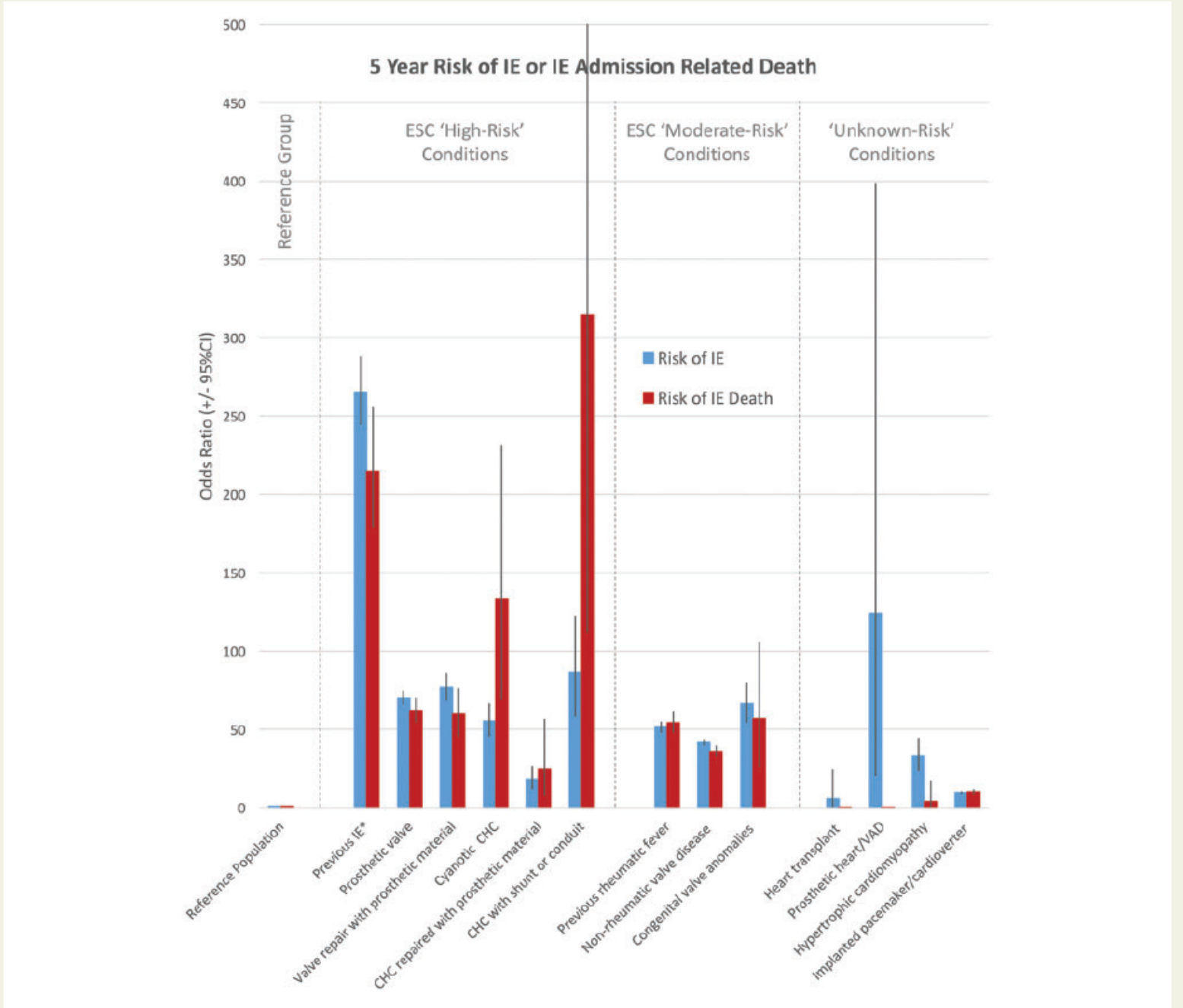


Figure 2 Five-year risk (odds) of developing infective endocarditis or dying during an infective endocarditis admission in different cardiac conditions. *Excluding recurrent infective endocarditis within 180 days of the original episode.

European Heart Journal (2018) **39**, 586–595
doi:10.1093/eurheartj/ehx655

JAMA | Review

Transcatheter Treatment of Valvular Heart Disease
A Review

JAMA. 2021;325(24):2480-2494. doi:10.1001/jama.2021.2133

Figure 1. Transcatheter Aortic Valve Implantation (TAVI)

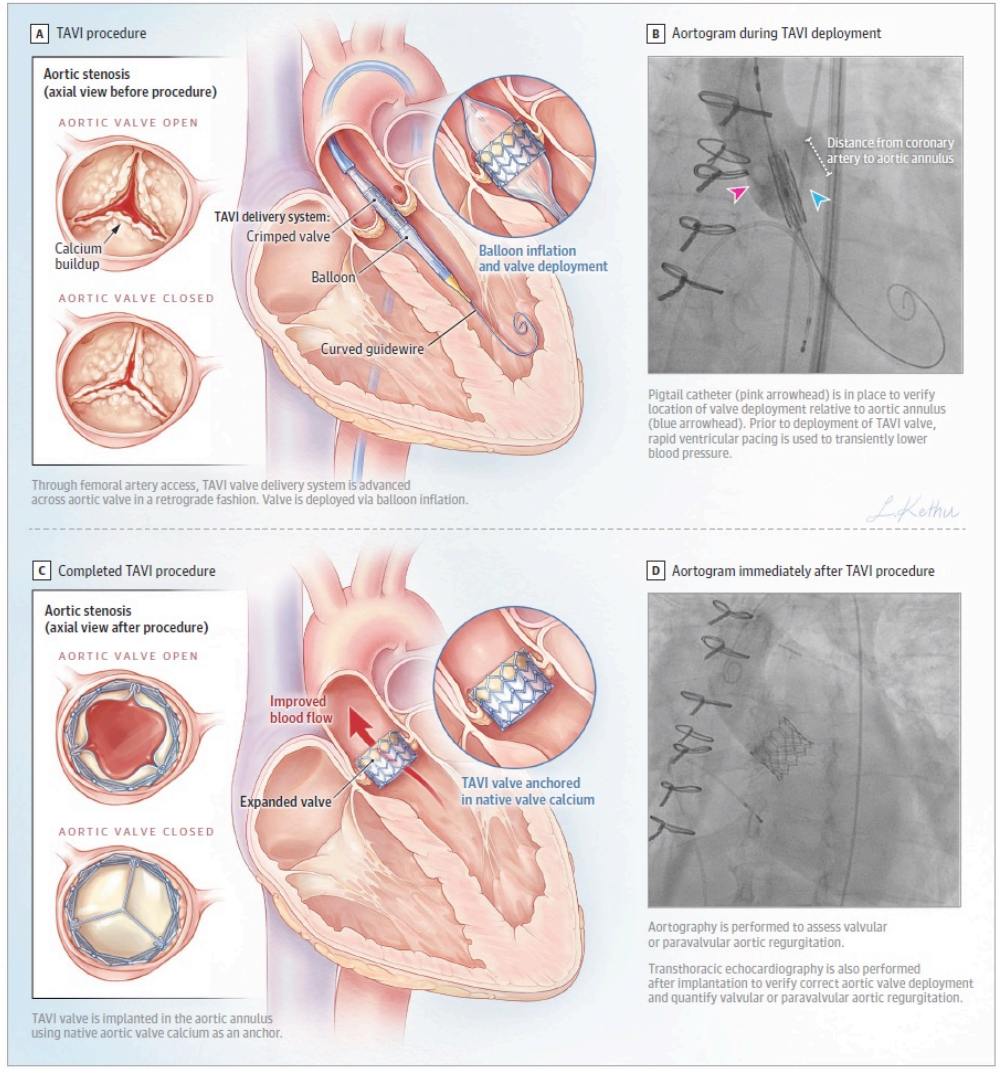
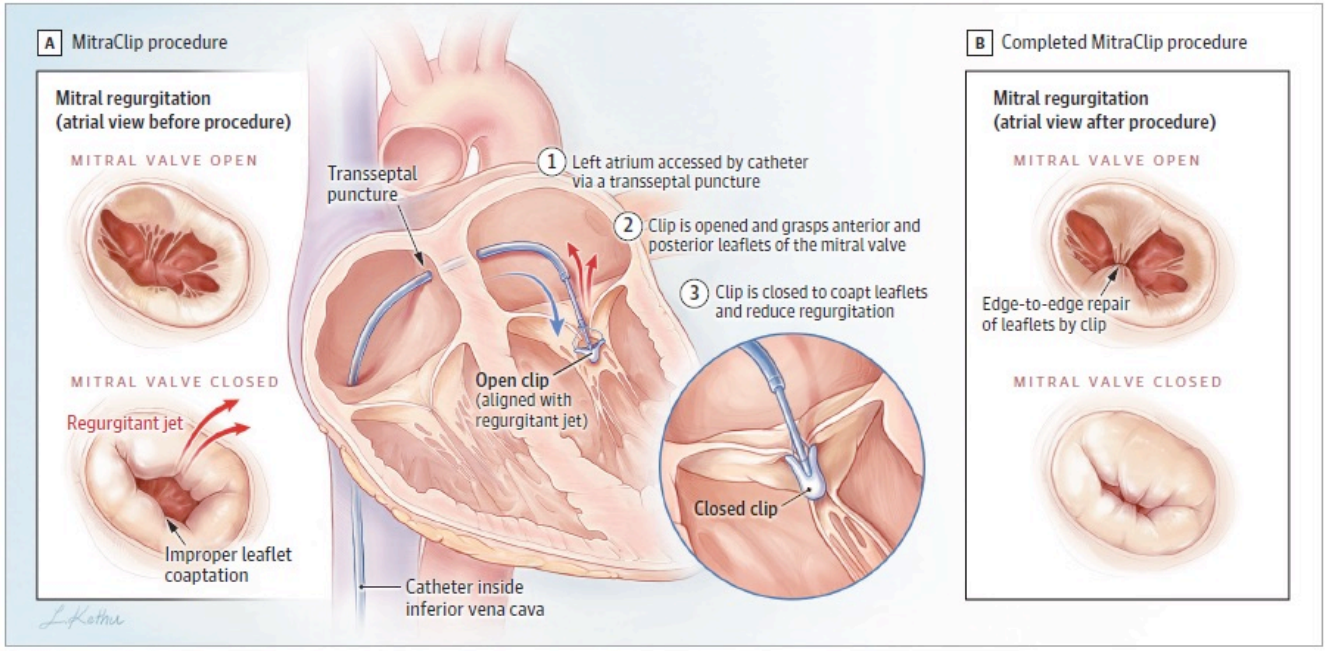


Figure 4. Mitral Valve Transcatheter Edge-to-Edge Repair



Emerging transcatheter heart valve technologies for severe aortic stenosis

EXPERT REVIEW OF MEDICAL DEVICES
2023, VOL. 20, NO. 12, 1065–1077
https://doi.org/10.1080/17434440.2023.2277229

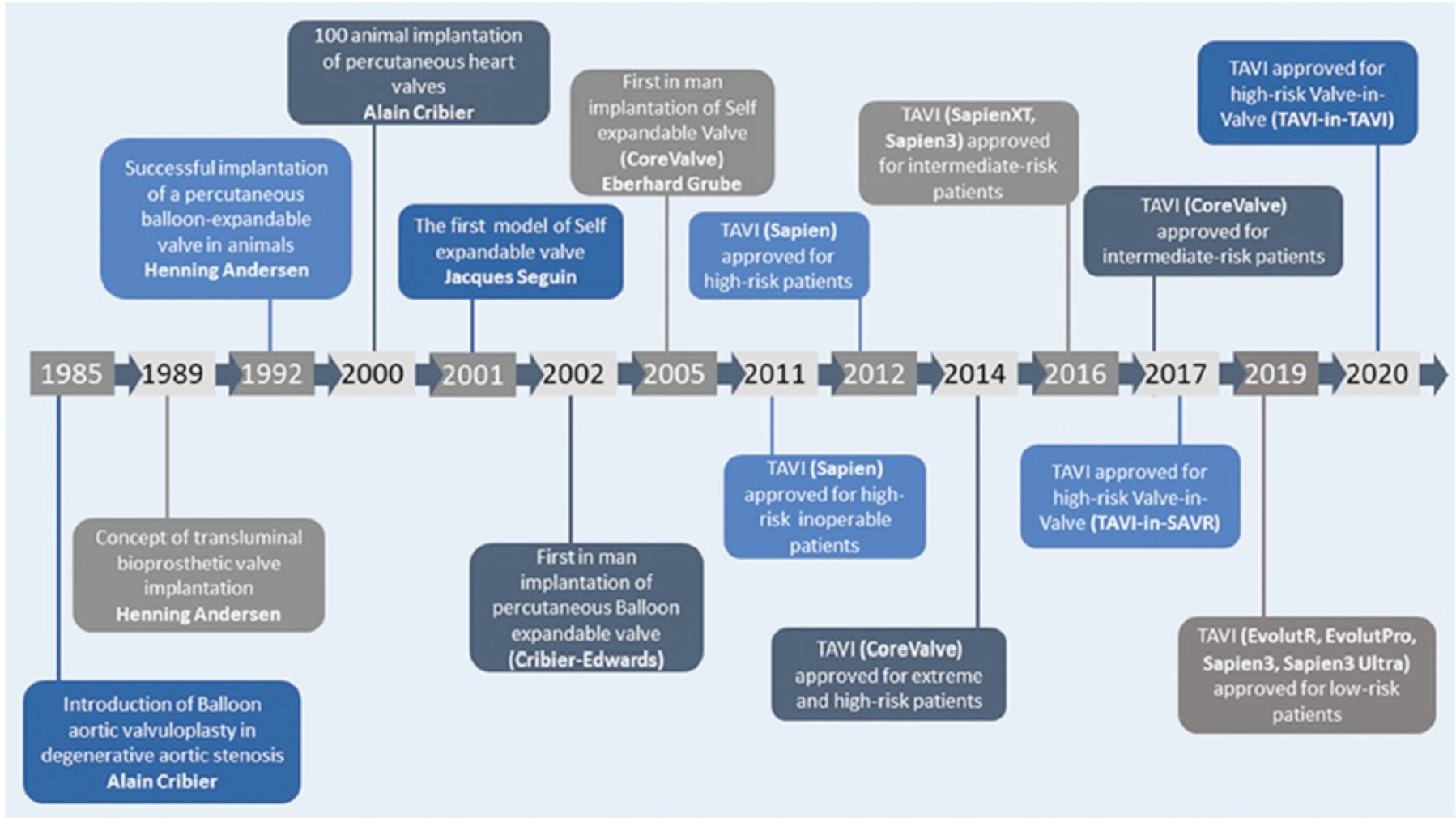


Figure 1. Historical milestones of non-operative (percutaneous) intervention for patients with degenerative aortic stenosis (aortic valve balloon valvuloplasty and transcatheter aortic valve implantation).

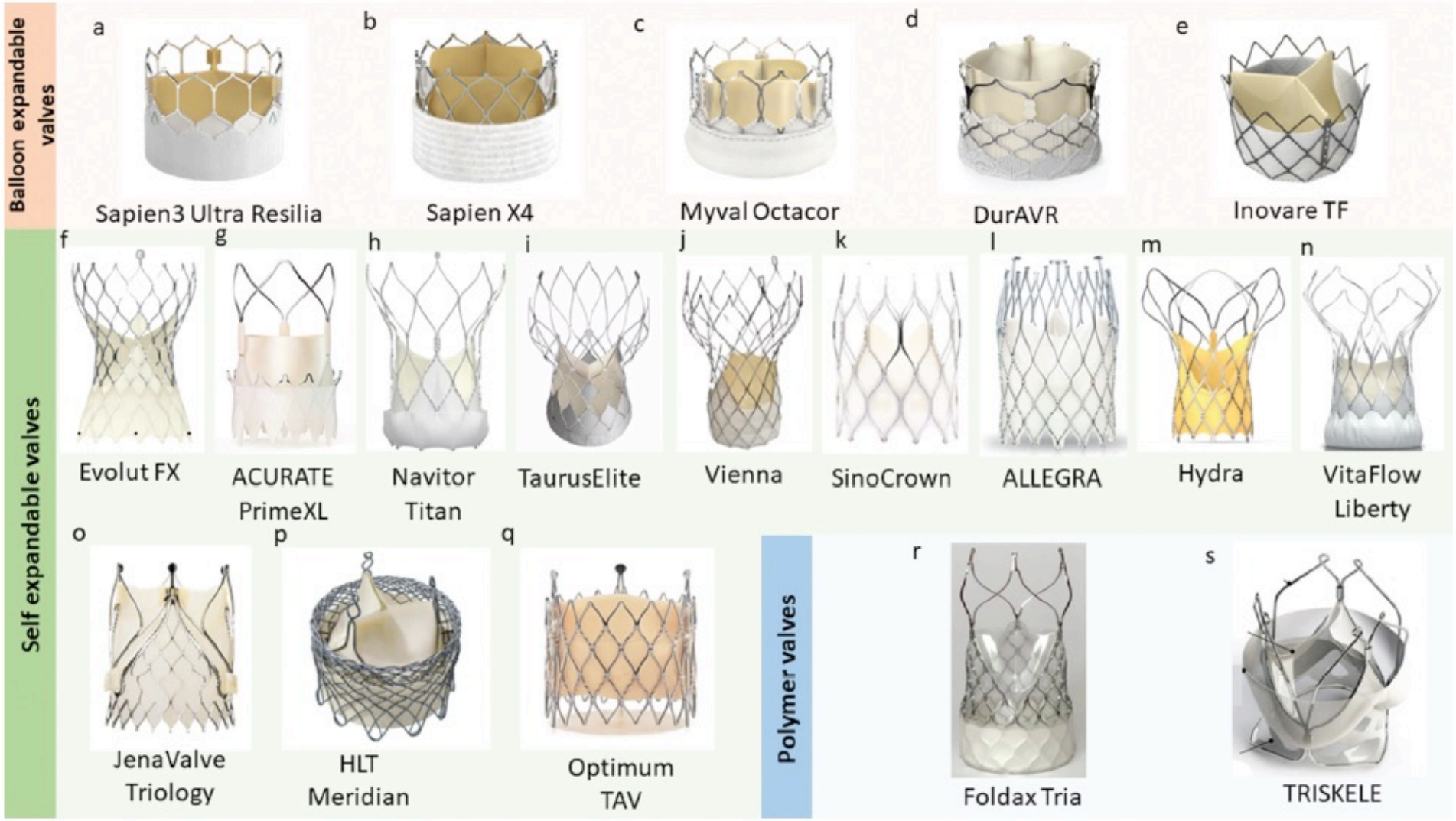


Figure 3. The new emerging TAVI devices technologies to treat patients with aortic stenosis.

EXPERT REVIEW OF MEDICAL DEVICES
2023, VOL. 20, NO. 12, 1065–1077
https://doi.org/10.1080/17434440.2023.2277229

Transcatheter Aortic Valve Replacement Without On-Site Cardiac Surgery

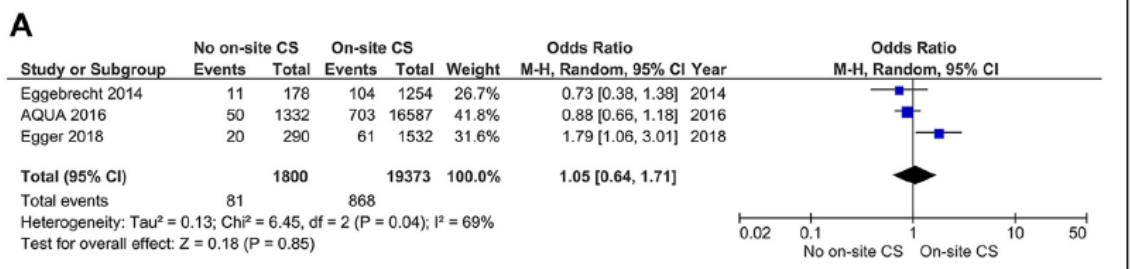
Ready for Prime Time?

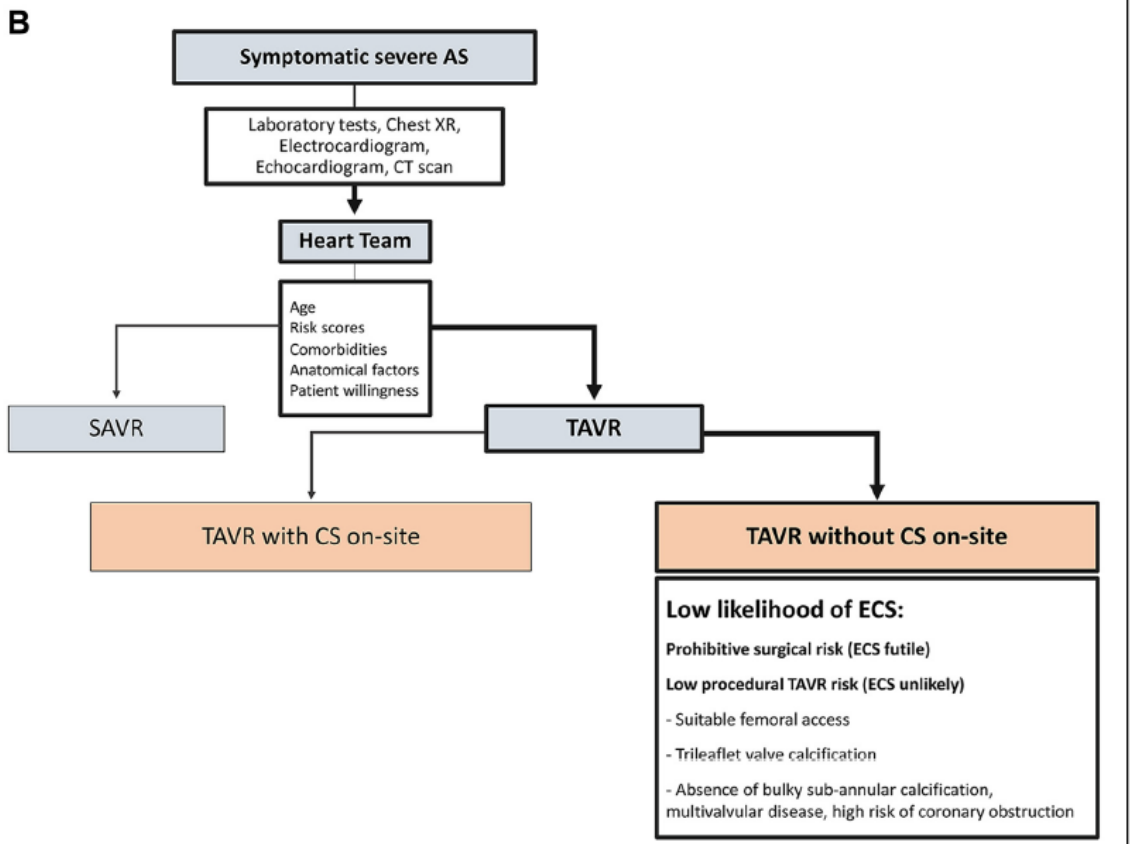
JACC: CARDIOVASCULAR INTERVENTIONS
https://doi.org/10.1016/j.jcin.2023.09.020

In current guidelines, TAVR is recommended for patients with prohibitive or high surgical risk and in elderly patients suitable for transfemoral access regardless of their surgical risk.

As a consequence, the number of TAVRs around the world is projected to increase further in the future. The use of TAVR as an alternative to surgical replacement is associated with a reduction in length of stay potentially increasing the number of available hospital beds.

FIGURE 1 Meta-Analysis and Flowchart





(A) Meta-analysis of studies on transcatheter aortic valve replacement (TAVR) without on-site cardiac surgery (CS). All-cause short-term mortality of TAVR in centers with and without CS.[13-15] Risk is illustrated as odds ratio and 95% confidence intervals. (B) Flowchart to perform TAVR in centers without on-site CS. We suggest that TAVR can be performed in centers without on-site CS when the likelihood of conversion to emergency cardiac surgery (ECS) is low, that is, prohibitive surgical risk and/or low procedural TAVR risk. AS = aortic stenosis; CT = computed tomography; MH = Mantel-Haenszel; SAVR = surgical aortic valve replacement; XR = X-ray.

Lancet 2024; 403: 1576–89

Valvular heart disease: from mechanisms to management

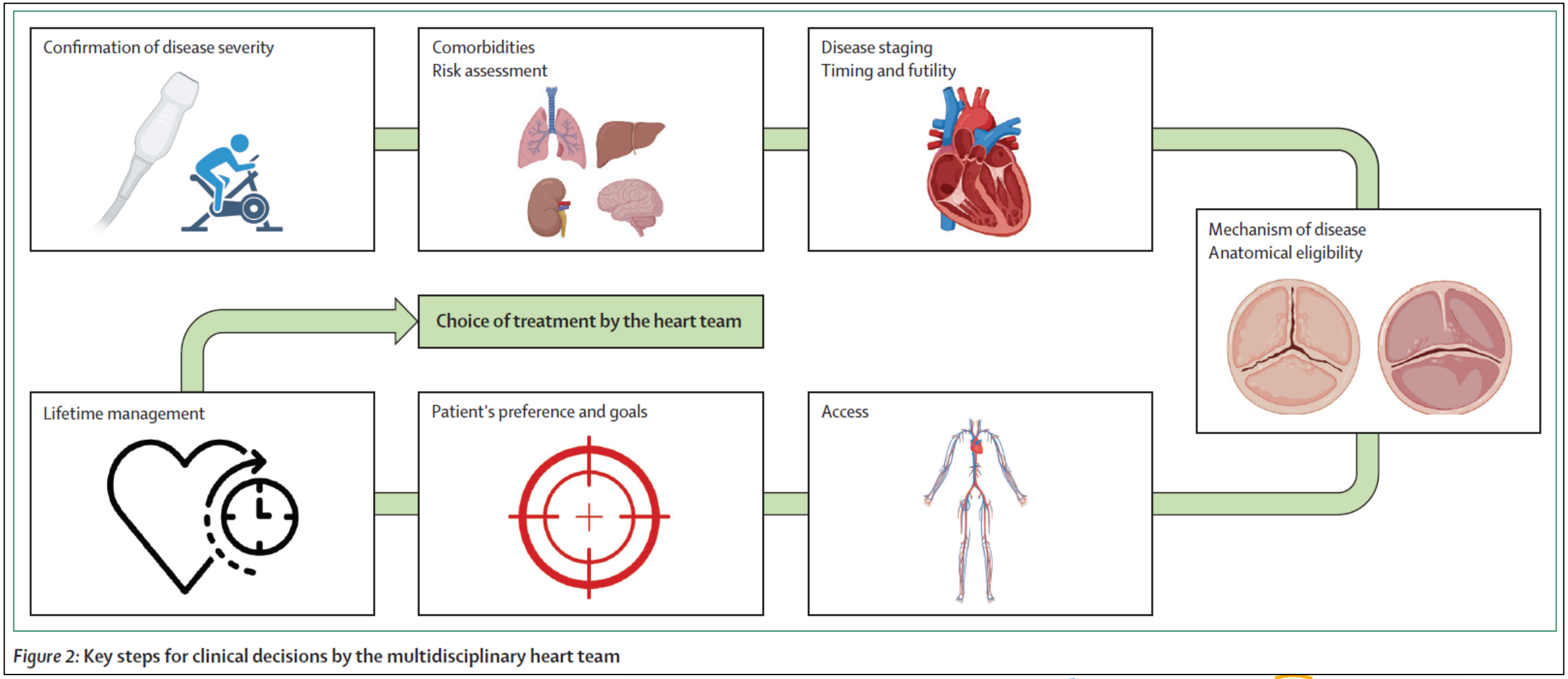


Figure 2: Key steps for clinical decisions by the multidisciplinary heart team

Transcatheter Aortic Valve Durability: Focus on Structural Valve Deterioration

J Am Heart Assoc. 2025;14:e041505. DOI: 10.1161/JAHA.125.041505

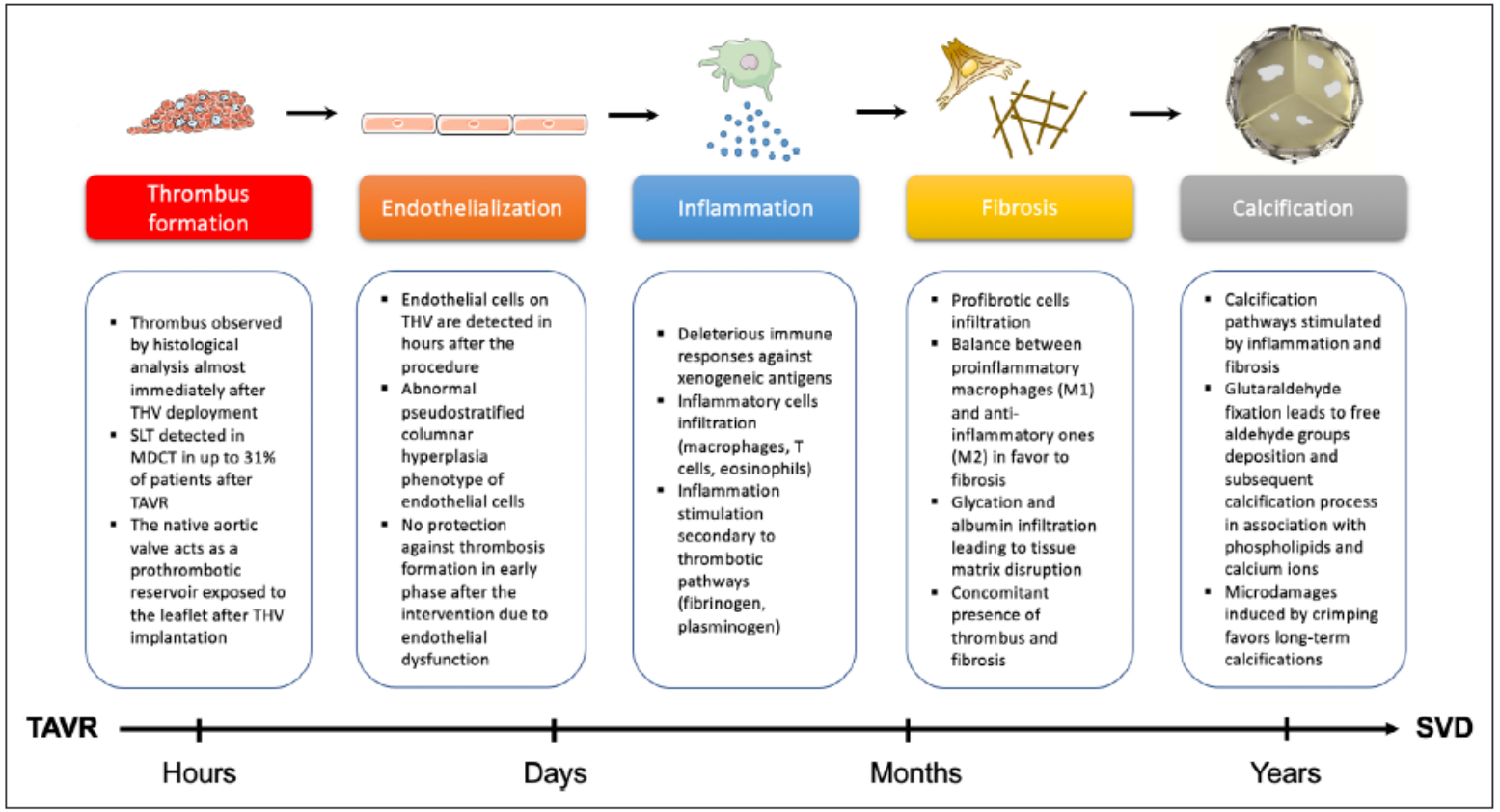


Figure 2. Pathomechanisms involved in structural valve deterioration after transcatheter aortic valve replacement.
MDCT indicates multidetector computed tomography; SLT, subclinical leaflet thrombosis; SVD, structural valve deterioration; TAVR, transcatheter aortic valve replacement; and THV, transcatheter heart valve.

Table 1. Transcatheter Valve Therapies Commercially Approved by the US Food and Drug Administration (FDA)

Therapy[a]	First FDA approval date	Indications	Risk type	Major complications	Approximate No. performed in US/y[b]
Transcatheter aortic valve implantation	• 2011 (extreme risk)[c] • 2012 (high risk)[d] • 2016 (intermediate risk)[e] • 2019 (low risk)[f]	Severe, symptomatic aortic stenosis	Any risk	Death, stroke, bleeding, need for permanent pacemaker, and emergent surgery	75 000
Mitral transcatheter edge-to-edge repair (degenerative mitral regurgitation)	2013	Severe, symptomatic, degenerative mitral regurgitation refractory to medical therapy	High surgical risk	Death, stroke, bleeding, single leaflet detachment, and emergent surgery	10 000
Mitral transcatheter edge-to-edge repair (functional mitral regurgitation)	2019	Severe, symptomatic functional mitral regurgitation on optimal medical therapy	Any risk	Death, stroke, bleeding, single leaflet detachment, and emergent surgery	5000

[a] Transcatheter tricuspid valve repair and replacement trials are ongoing but have not been commercially approved in the US.

[b] Estimates are based on data from 2019.

[c] Defined as inoperable.

[d] Predicted by 30-day mortality greater than 7%.

[e] Predicted by 30-day mortality of 3% to 7%.

[f] Predicted by 30-day mortality less than 3%.

JAMA. 2021;325(24):2480-2494. doi:10.1001/jama.2021.2133

Circulation

ORIGINAL RESEARCH ARTICLE

Five-Year Clinical and Echocardiographic Outcomes From the NOTION Randomized Clinical Trial in Patients at Lower Surgical Risk

Circulation. 2019;139:2714–2723. DOI: 10.1161/CIRCULATIONAHA.118.036606

Clinical Perspective

What Is New?

- The NOTION trial (Nordic Aortic Valve Intervention) is the first to compare transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement in patients with severe isolated aortic valve stenosis and at lower surgical risk.
- The 5-year outcomes did not demonstrate a significant difference for all-cause death, stroke, or myocardial infarction.
- TAVR patients had a higher rate of new permanent pacemaker implantation and paravalvular leakage, whereas surgical patients experienced more new-onset or worsening atrial fibrillation during the immediate postprocedure course.

What Are the Clinical Implications?

- The NOTION trial indicates that TAVR could be a safe treatment alternative in patients with isolated severe aortic valve stenosis and at lower surgical risk.
- Improvements in TAVR valve prostheses and implantation techniques are warranted to avoid conduction abnormalities and paravalvular leakage.
- Larger scale clinical trials and long-term follow-up are needed to confirm these findings before the routine use of TAVR in this patient cohort.

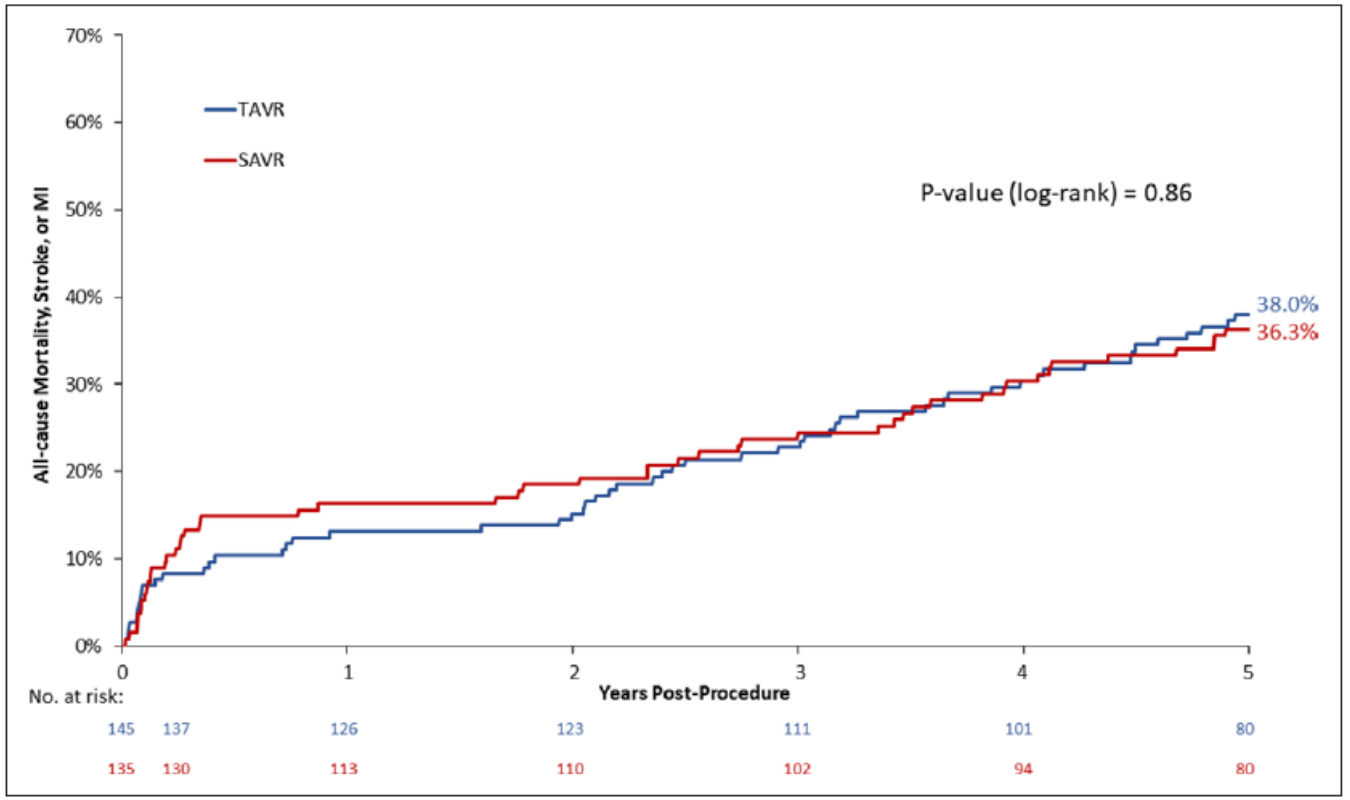


Figure 1. Kaplan-Meier estimates at 5 years for transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR) patients.
MI indicates myocardial infarction.

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Table. Clinical Outcomes at 5 Years for TAVR and SAVR Patients

Outcome (%)	TAVR (n=145)	SAVR (n=135)	*P* Value
All-cause mortality, stroke, or MI*	55 (38.0)	49 (36.3)	0.86
All-cause mortality*	40 (27.6)	39 (28.9)	0.75
Cardiovascular mortality	30 (20.8)	31 (23.0)	0.62
Stroke	13 (9.0)	10 (7.4)	0.65
TIA	9 (6.2)	5 (3.7)	0.33
MI	11 (7.7)	10 (7.4)	0.96
Atrial fibrillation	34 (23.4)	82 (60.8)	<0.0001
Pacemaker†	58 (41.7)	10 (7.8)	<0.0001
Aortic valve reintervention	3 (2.1)	1 (0.7)	0.35
Valve endocarditis‡	9 (6.2)	6 (4.4)	0.51

MI indicates myocardial infarction; SAVR, surgical aortic valve replacement; TAVR, transcatheter aortic valve replacement; and TIA, transient ischemic attack.

*Percentages are Kaplan-Meier estimates and *P* values were calculated from log-rank tests in the intention-to-treat population. Other rows report cumulative incidence function estimates and *P* values from Gray tests.

†Baseline pacemakers are not included.

‡Confirmed definite cases according to modified Duke criteria.

Circulation. 2019;139:2714–2723. DOI: 10.1161/CIRCULATIONAHA.118.036606

Infective endocarditis

Lancet 2024; 404: 377–92

Transcatheter valve prosthetics and other intracardiac devices

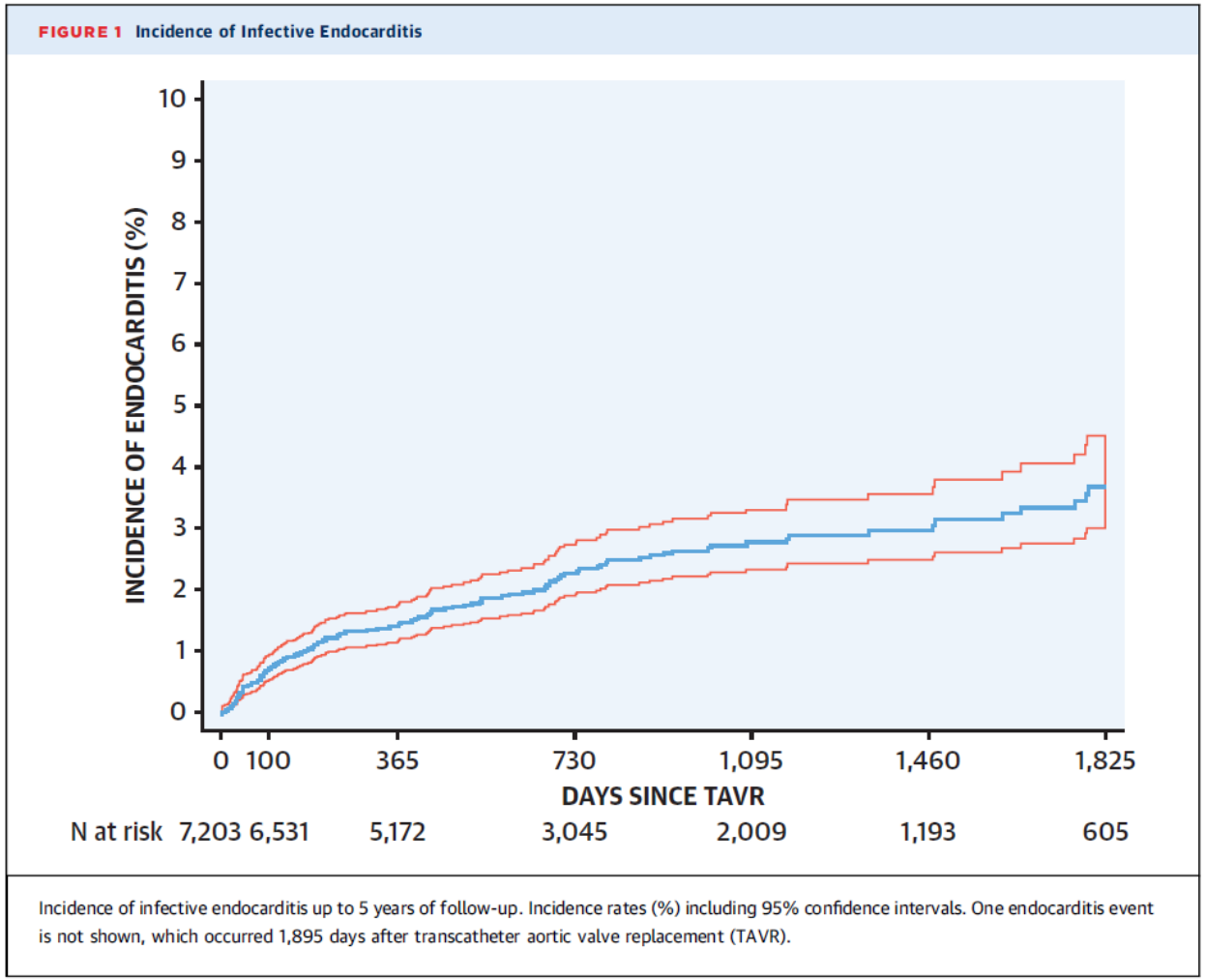
The risk of infective endocarditis is higher within the first year following transcatheter aortic valve implantation (TAVI). The incidence of infective endocarditis following TAVI ranges from 0·3 to 1·9 per 100 person-years, which is comparable with that observed in surgical aortic valve replacement (SAVR).141–145 However, the mortality was higher for patients with infective endocarditis following TAVI than for those following SAVR, which might be attributed to the older age and more comorbidities in that population. As for the treatment, antimicrobial therapy for infective endocarditis post-TAVI is similar to that of prosthetic valve endocarditis. Approximately 19% of cases of infective endocarditis following TAVI require cardiac surgery, whereas the rate is around 50% for infective endocarditis associated with SAVR. Cardiac surgeries in patients post-TAVI pose considerable risks due to advanced age, increased comorbidities, and the potential for complex surgical interventions because of the self-expanding devices in the ascending aorta. Cardiac surgery is considered first when combining any complications, particularly severe prosthetic failure or heart failure. Compared with antibiotics alone, cardiac surgery was not associated with reduced all-cause in-hospital or 1-year mortality in post-TAVI infective endocarditis. Notably, the incidence of TAVI-associated-infective endocarditis has decreased in recent years, particularly due to improvements in procedures and refinements of devices.

- ► Mayor riesgo en el primer año tras el implante.
- ► 0,3-1,9/100 personas/año, similar a la sustitución quirúrgica.
- ► Mayor mortalidad.
- ► Tratamiento quirúrgico de la EI: 19 % en TAVI y 50% en válvulas quirúrgicas.
- ► En las EI sobre TAVI: misma mortalidad con tratamiento solo antibiótico que combinado antibiótico + cirugía.

Infective Endocarditis After Transcatheter Aortic Valve Replacement

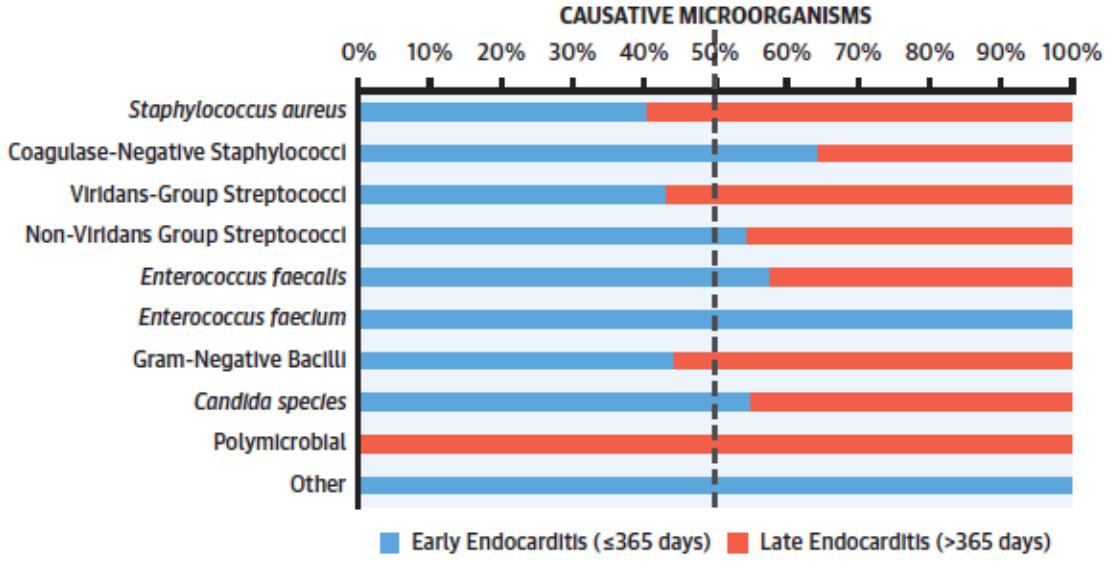
J Am Coll Cardiol 2020;75:3020–30

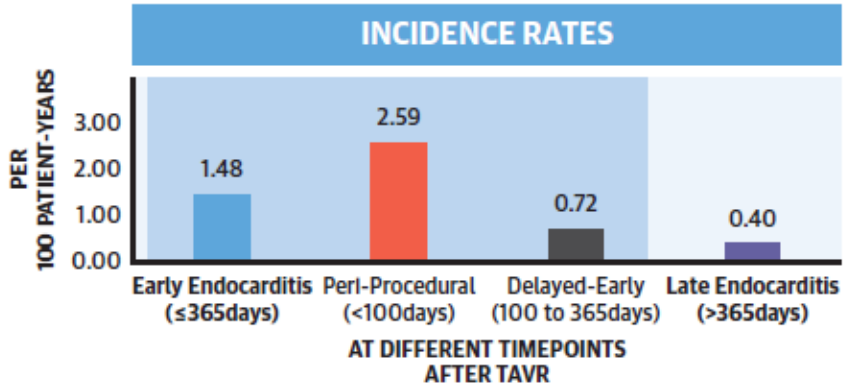
2011-2018. 15 hospitales en Suiza.
7203 implantes de TAVI. 149 EI.

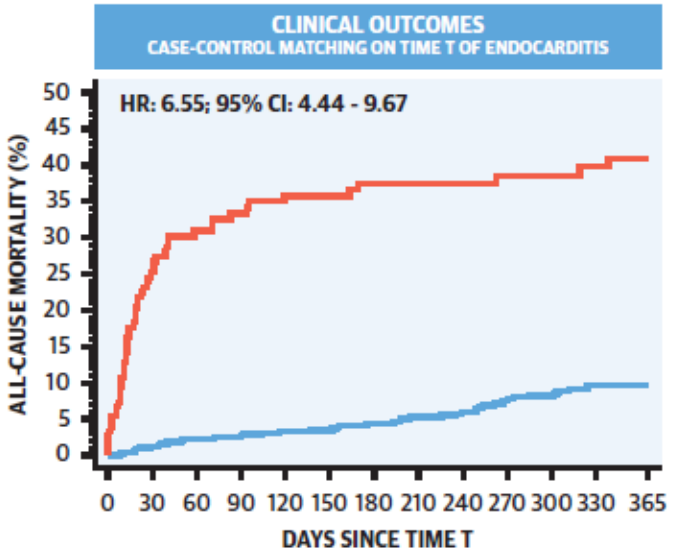


CENTRAL ILLUSTRATION Infective Endocarditis After Transcatheter Aortic Valve Replacement

SWISSTAVI COHORT STUDY
7,203 Consecutive Patients Undergoing Transcatheter Aortic Valve Replacement (TAVR) at 15 Hospitals in Switzerland







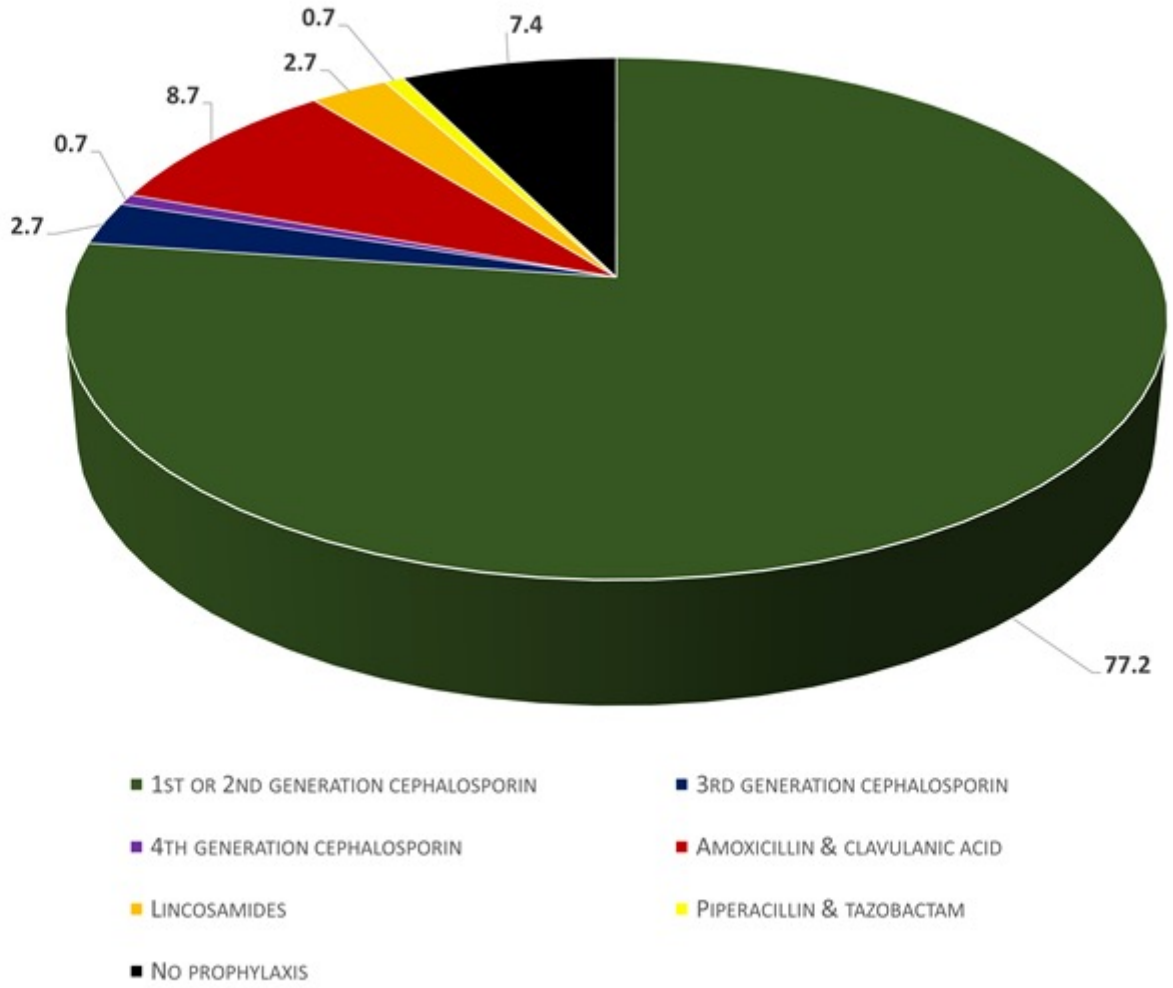
NUMBER AT RISK

Control	579	554	533	518	505	499	475	444	422	401	374	345	308
Case	148	107	91	84	78	74	70	64	59	57	55	51	45

- *Every second patient* with peri-procedural endocarditis had a pathogen *not susceptible to the peri-procedural antibiotic prophylaxis.*
- Independent predictors of infective endocarditis included *younger age, male sex, lack of balloon aortic valvuloplasty* before transcatheter valve replacement and treatment in a *catheterization laboratory* as opposed to hybrid operating room.

Stortecky, S. et al. J Am Coll Cardiol. 2020;75(24):3020-30.

SUPPLEMENTAL FIGURE 1 – PRE-OPERATIVE ANTIBIOTIC PROPHYLAXIS IN PATIENTS WITH ENDOCARDITIS



Of note, antimicrobial susceptibility testing proved that 47.9% of patients with early peri-procedural infective endocarditis after TAVR in the present study had a pathogen that was not susceptible to the antibiotic prophylaxis administered before or during TAVR. This is mainly explained by the increased rate of enterococcal infections during the peri-procedural period, that are not covered by the prophylactic regimen consisting of first- or second-generation cephalosporins.

SUPPLEMENTAL TABLE 3. DUKE DIAGNOSTIC CRITERIA

	NR OF PATIENTS	(%)
Major Diagnostic Criteria		
Positive blood culture for typical infective Endocarditis organisms (streptococcus viridans or bovis, HACEK, staph aureus without other primary site, enterococcus), from 2 separate blood cultures or 2 positive cultures from samples drawn > 12 hours apart, or 3 or a majority of 4 separate cultures of blood (first and last sample drawn 1 hour apart)	137	91.9
Echocardiogram with oscillating intracardiac mass on valve or supporting structures, in the path of regurgitant jets, or on implanted material in the absence of an alternative anatomic explanation, or abscess, or new partial dehiscence of prosthetic valve or new valvular regurgitation	78	52.3
Minor Diagnostic Criteria		
Predisposing heart condition or intravenous drug use	149	100.0
Temperature > 38.0°C (100.4° F)	110	73.8
Vascular phenomena: arterial emboli, pulmonary infarcts, mycotic aneurysms, intracranial bleed, conjunctival hemorrhages, Janeway lesions	60	40.3
Immunologic phenomena: glomerulonephritis, Osler nodes, Roth spots, rheumatoid factor	10	6.7
Microbiological evidence: positive blood culture but does not meet a major criterion as noted above or serological evidence of active infection with organism consistent with endocarditis (excluding coag neg staph, and other common contaminants)	12	8.1
Pathological Criteria		
Surgery	22	14.8
Autopsy	2	1.3

TABLE 2 Independent Predictors of Infective Endocarditis

	Multivariable	
	Subhazard Ratio (95% CI)	p Value
Age, yrs	0.969 (0.944-0.994)	0.014
Male	1.989 (1.403-2.818)	<0.001
Body mass index, kg/cm^2	1.016 (0.984-1.049)	0.34
Arterial hypertension	1.388 (0.880-2.188)	0.16
CCS angina	0.730 (0.469-1.136)	0.16
STS PROM	0.989 (0.951-1.029)	0.59
Femoral access	0.839 (0.530-1.327)	0.45
Nonhybrid OR (catheterization laboratory)	1.648 (1.187-2.287)	0.003
Lack of balloon aortic valvuloplasty	1.485 (1.065-2.069)	0.020

Infective Endocarditis After Transcatheter Aortic Valve Replacement

THE PRESENT AND FUTURE

JACC STATE-OF-THE-ART REVIEW

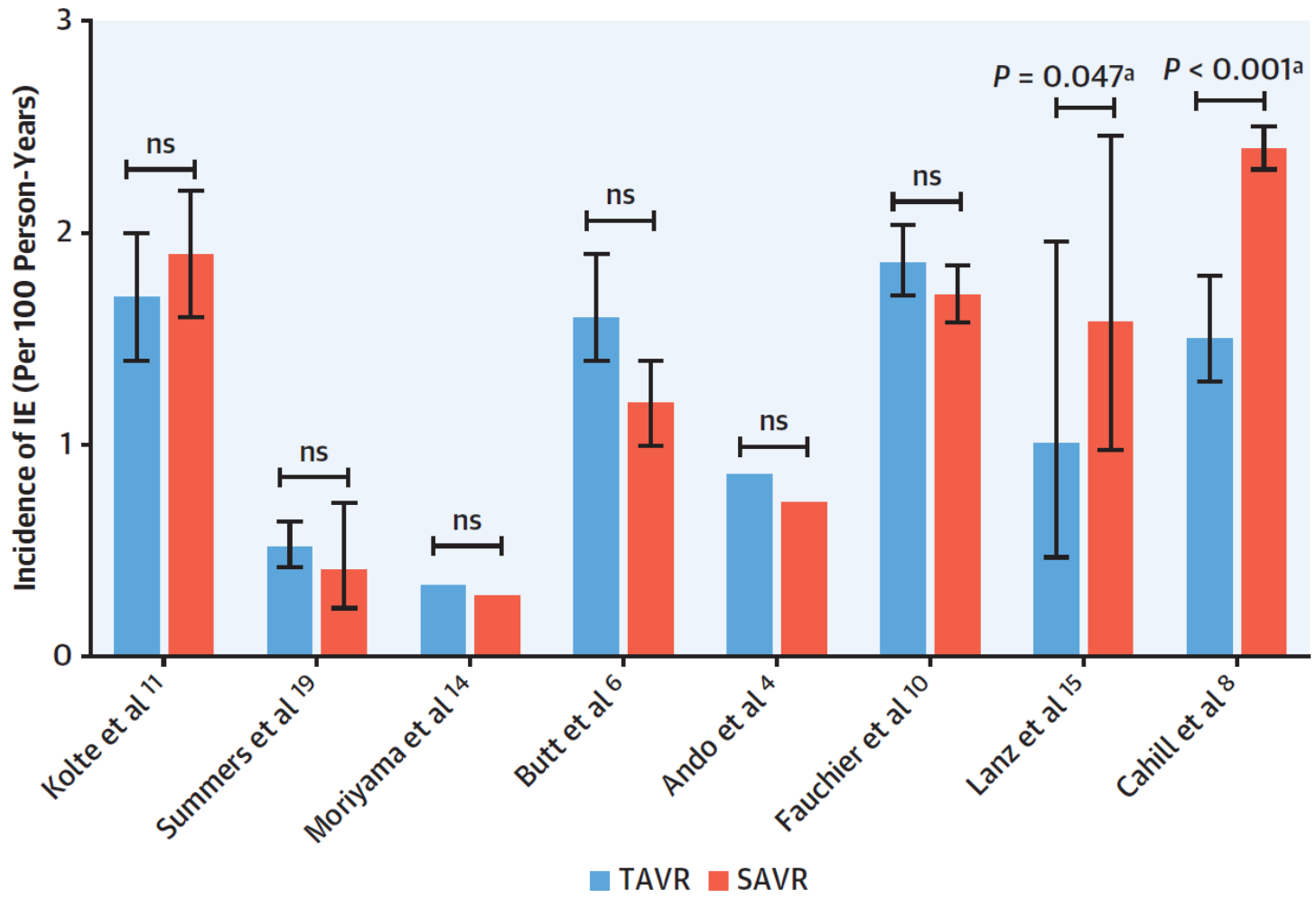
J Am Coll Cardiol 2023;81:394–412

David del Val, MD, PhD,[a,b,c] Vassili Panagides, MD,[c] Carlos A. Mestres, MD, PhD,[d] José M. Miró, MD, PhD,[e,f] Josep Rodés-Cabau, MD, PhD[c,g]

Infective endocarditis (IE) is a rare complication following TAVR and is frequently associated with dismal clinical outcomes. Despite its low incidence, patients at risk of developing this life-threatening complication are expected to grow exponentially in the coming years, because the number of TAVR procedures is steadily increasing and is expanding to younger patients with greater life expectancy. Consequently, IE after TAVR may have a clinically meaningful impact in the future, and therefore, a thorough understanding of this pathology and its complications is essential to improve clinical outcomes.

Over the last few years, the clinical profile of patients undergoing TAVR has evolved substantially from patients with prohibitive or high surgical risk to less complex and younger patients with lower surgical risk.

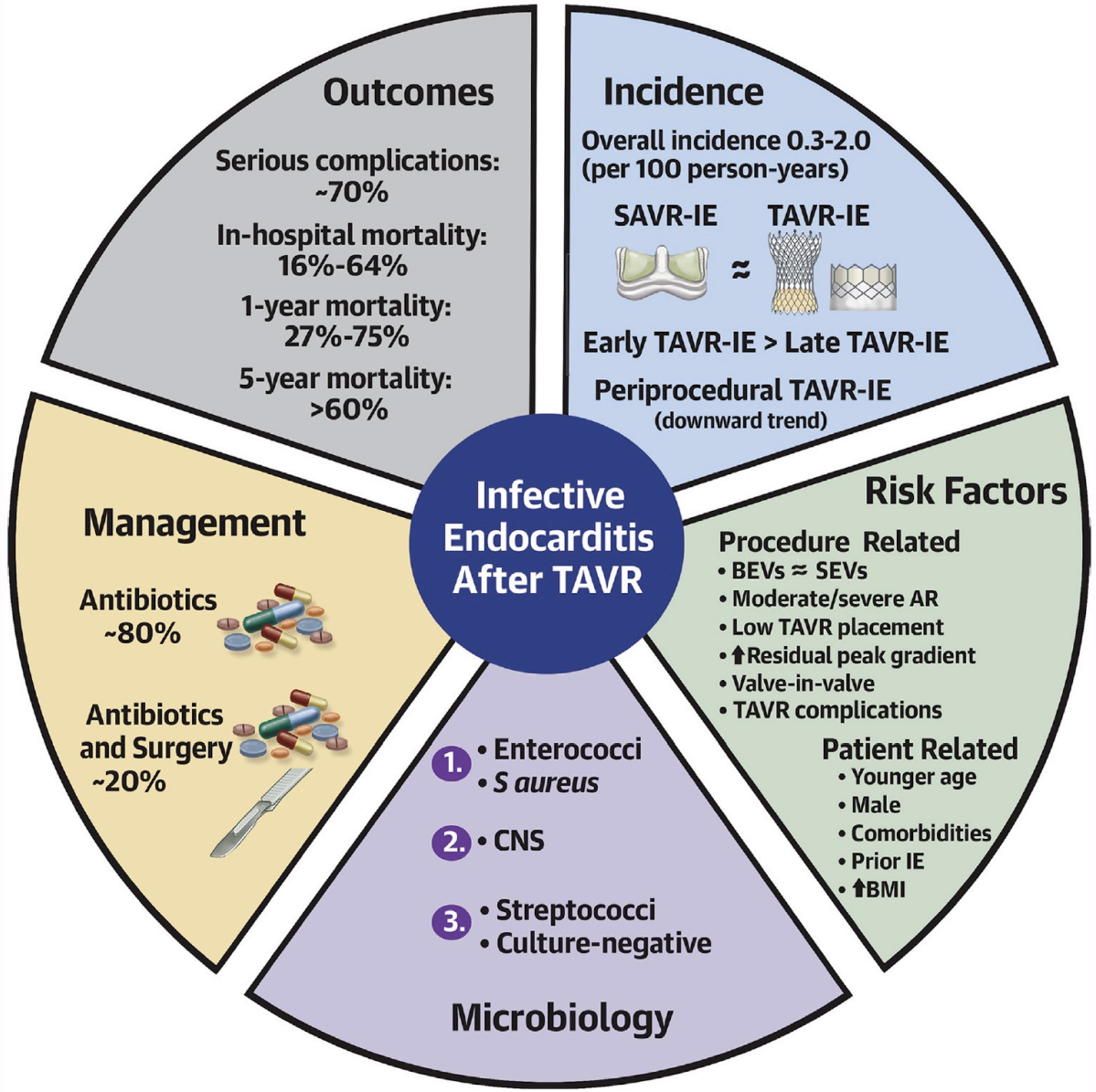
FIGURE 1 Main Studies Comparing the Incidence of IE After TAVR and SAVR



Studies directly comparing the incidence of infective endocarditis (IE) after transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR) in which at least 1,000 patients in each group were analyzed. Data from the Danish National Patient Registry, FinnValve Registry, U.S. National Readmission Databases, French Administrative Hospital Discharge Database, and a pooled cohort from the PARTNER (Placement of Aortic Transcatheter Valves) trials showed similar incidence rates of IE after TAVR and SAVR. Conversely, a pooled cohort of the CoreValve family trials and data from a UK administrative database found a lower cumulative incidence of IE after TAVR compared with SAVR at 5 years. Error bars indicate the 95% CI. [a]*P* value for the cumulative IE incidence at 5 years. NS = not significant ($P > 0.05$).

J Am Coll Cardiol 2023;81:394–412

CENTRAL ILLUSTRATION Infective Endocarditis After Transcatheter Aortic Valve Replacement



del Val D, et al. J Am Coll Cardiol. 2023;81(4):394-412.

Summary of the incidence, risk factors, microbiological profile, management, and outcomes of infective endocarditis (IE) after transcatheter aortic valve replacement (TAVR). AR = aortic regurgitation; BEV = balloon-expandable valve; BMI = body mass index; CNS = coagulase-negative staphylococci; *S aureus* = *Staphylococcus aureus*; SAVR = surgical aortic valve replacement; SEV = self-expanding valve.

J Am Coll Cardiol 2023;81:394–412

MICROBIOLOGY

In contrast, IE after TAVR shows a distinct microbiological profile. The most common causative microorganisms in TAVR-IE are enterococci, S aureus, and coagulase-negative staphylococci.

Enterococci have a strong affinity for warm, moist habitats such as the groin region.

Of note, a recent study highlighted the remarkable virulence of S aureus in patients with TAVR-IE, almost doubling inhospital (47.8% vs 26.9%) and 2-year mortality (71.5% vs 49.6%) rates compared to other pathogens.

Más casos asociacos a cuidados sanitarios, 7/10 sin foco conocido

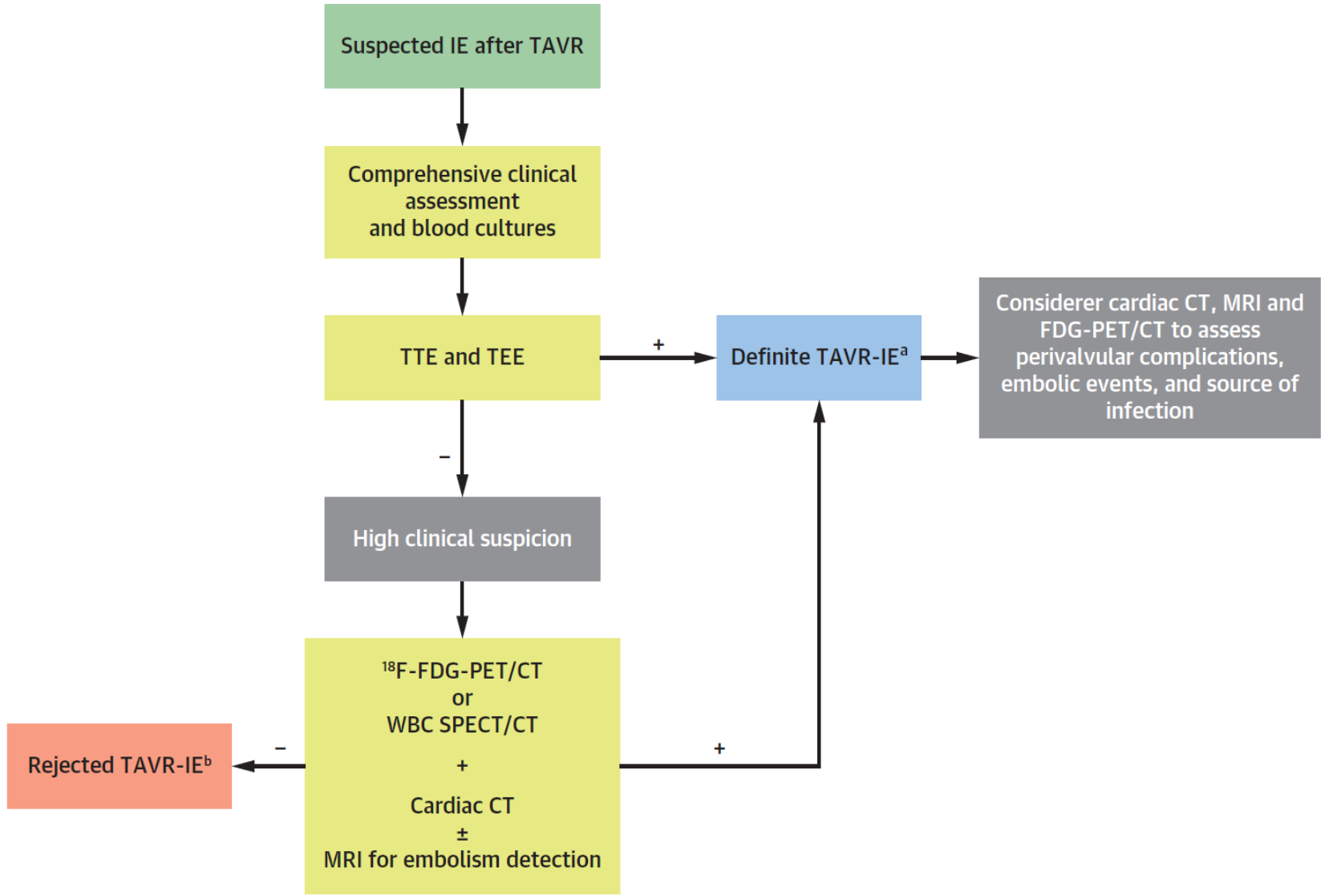
CLINICAL FEATURES AND DIAGNOSIS

Fiebre 80% (menos que en IE válvula nativa)
IªCC 40%
Émbolos sépticos 13%.

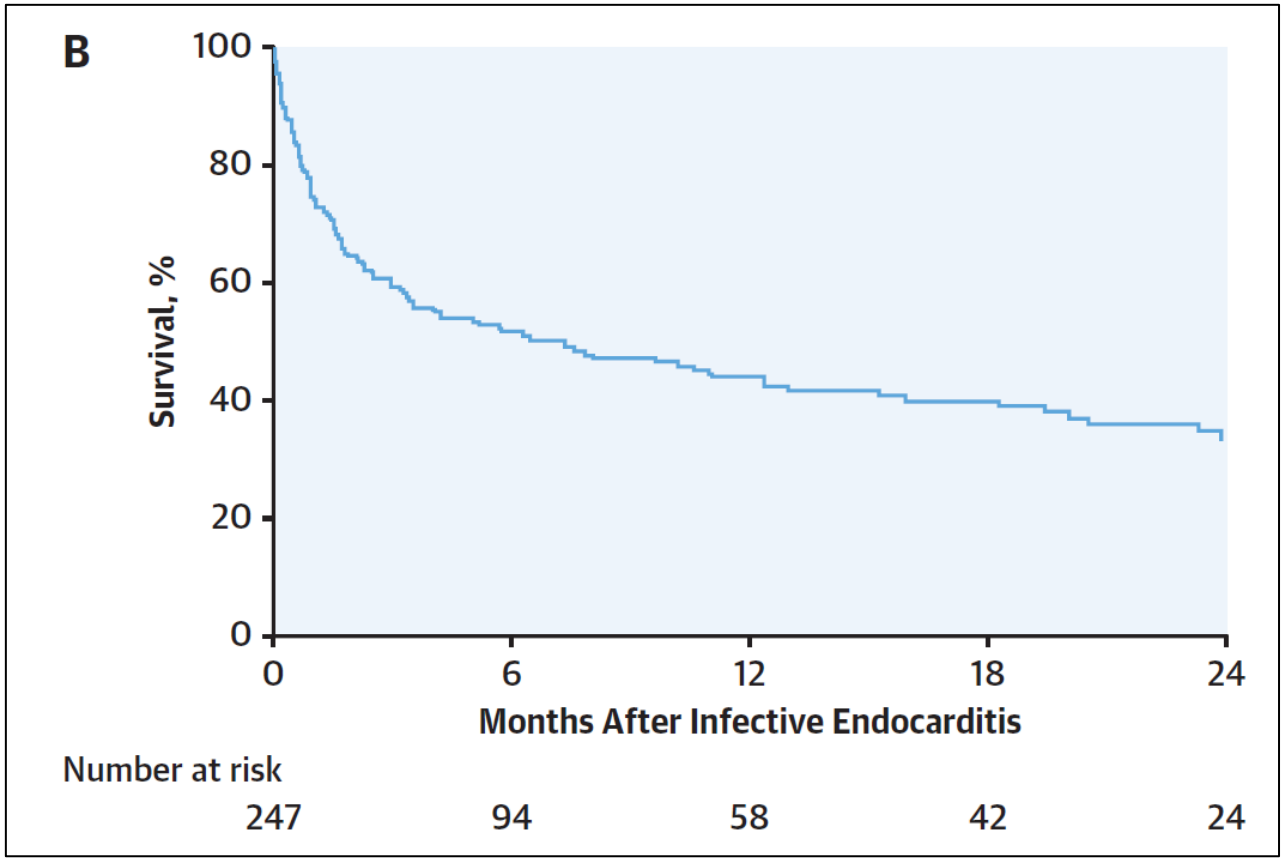
Prior studies have shown that the combined sensitivity of transthoracic and transesophageal echocardiography for diagnosing TAVR-IE was 67.8%, in contrast to 73% in patients with surgical PVE and 89.9% in patients with native valve IE.

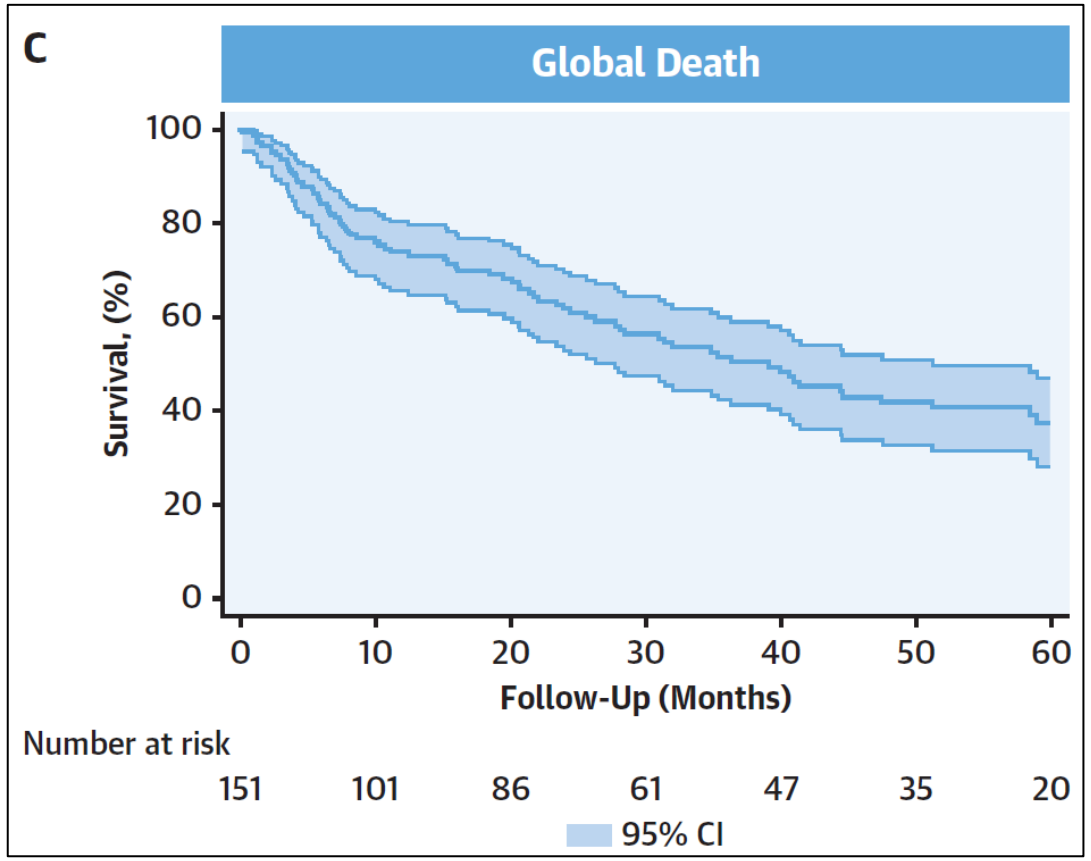
Nearly one-third of the patients (31.3%) had IE with at least 2 cardiac structures affected.

FIGURE 5 Multimodality Imaging Approach in Patients With Suspected IE



TEE, in addition to transthoracic echocardiography (TTE), should be performed promptly in all patients with suspected IE. In patients with inconclusive echocardiographic findings and high clinical suspicion, advanced imaging techniques such as FDG-PET/CT, white blood cell (WBC) single-photon emission computed tomography (SPECT)/CT, cardiac CT, and magnetic resonance imaging (MRI) should be considered to rule out or establish the diagnosis of TAVR-IE. [a]If additional diagnostic criteria are met. [b]In the absence of additional diagnostic criteria. Abbreviations as in Figures 1 and 4.





(B) Kaplan-Meier survival curve at 2 years follow-up after IE following TAVR.

(C) Kaplan-Meier survival curve at 5-year follow-up of patients with IE after TAVR who survived the initial IE hospitalization.

PREVENTION OF IE AFTER TAVR

► *Elevada morbimortalidad. Necesidad de mejora.*

► *Antisepsia. Profilaxis pre procedimiento y 48 después.*

► *Optimización de la cefazolina. Mal uso en general.*

► *Aproximadamente el 50% de las EI asociadas a TAVI están causadas por microorganismos NO cubiertos por la pauta de profilaxis.*

► *Cambiar a amoxicilina/ác. clavulánico? Añadir glicopéptido.*

► *Pautas de descontaminación para portadores de S. aureus.*

► *Limitar las pruebas invasivas/ingreso en estos pacientes. 50% de los casos IRAS*

https://doi.org/10.1093/cid/ciae046

^{18}F-FDG PET/CT and radiolabeled leukocyte SPECT/CT imaging for the evaluation of cardiovascular infection in the multimodality context: ASNC Imaging Indications (ASNC I^2) Series Expert Consensus Recommendations from ASNC, AATS, ACC, AHA, ASE, EANM, HRS, IDSA, SCCT, SNMMI, and STS

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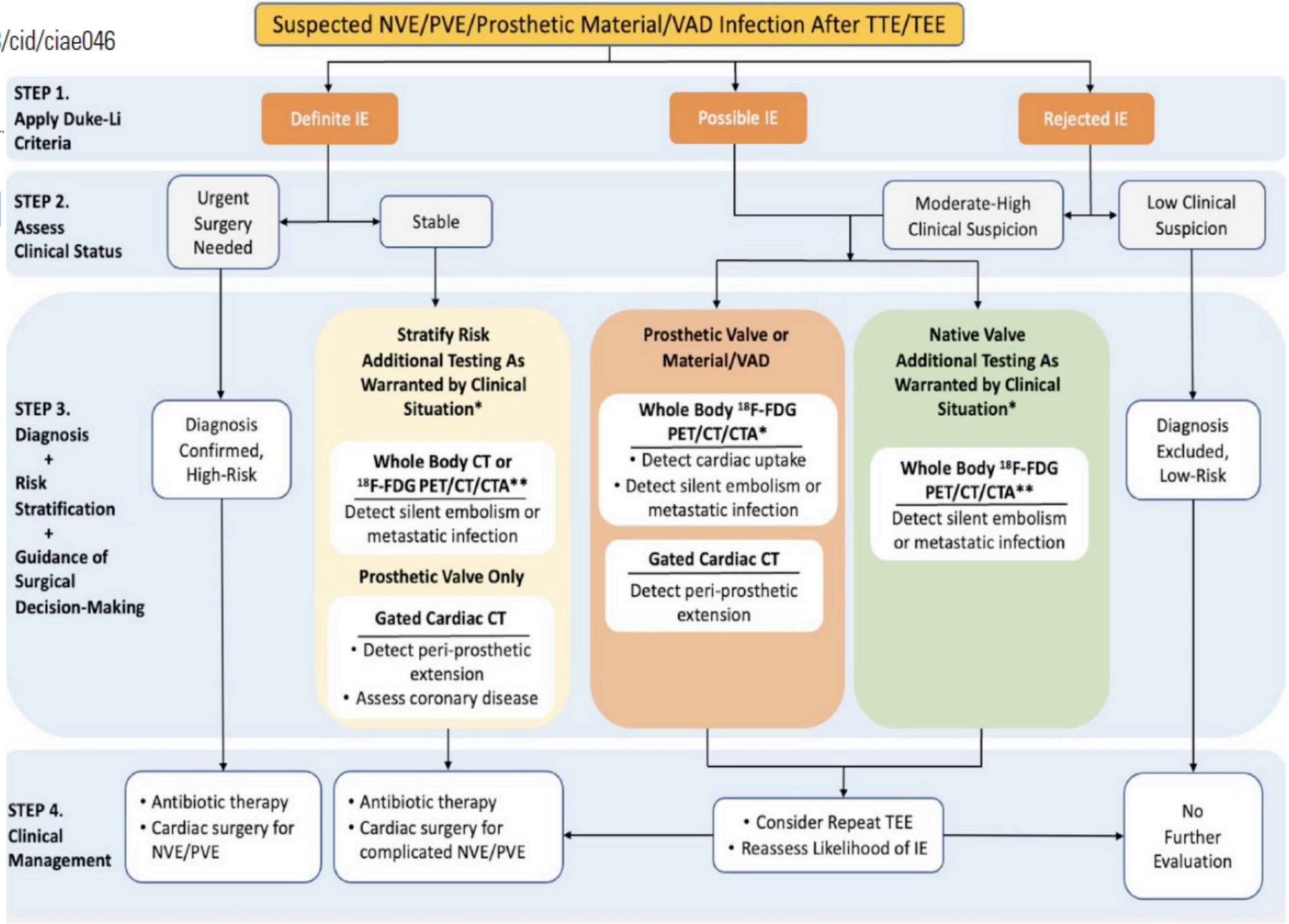

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A Current Perspective on Left Atrial Appendage Closure Device Infections: A Systematic Review

Pacing and Clinical Electrophysiology, 2025; 48:492–499
https://doi.org/10.1111/pace.15184

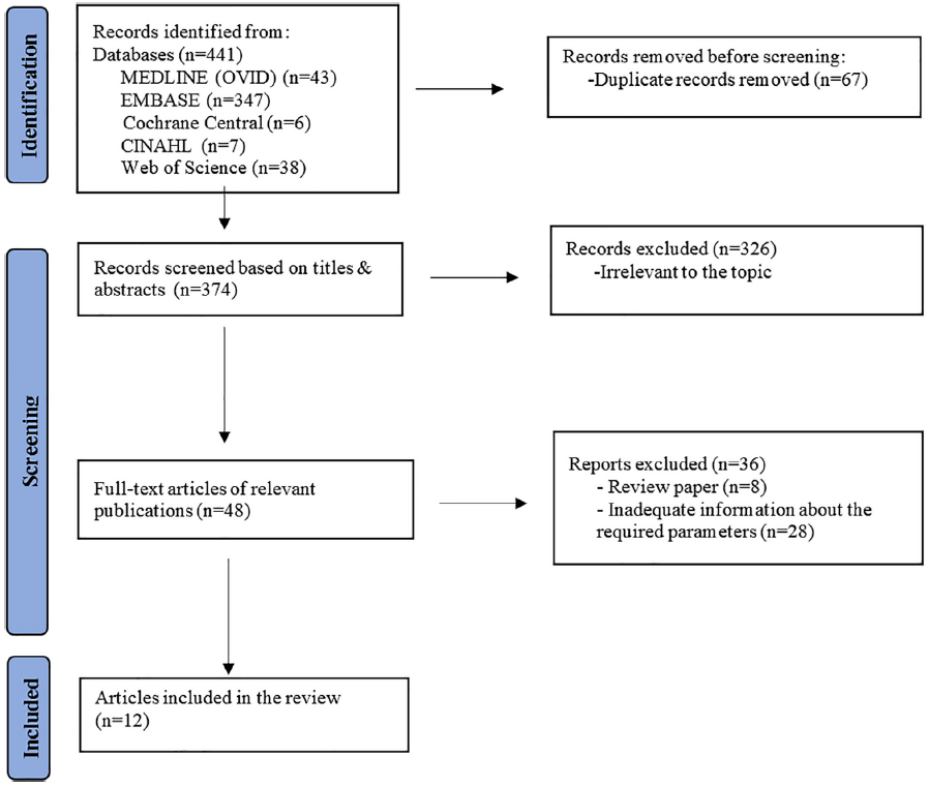


FIGURE 1 | Flow chart for the selection of the publications. [Color figure can be viewed at wileyonlinelibrary.com]

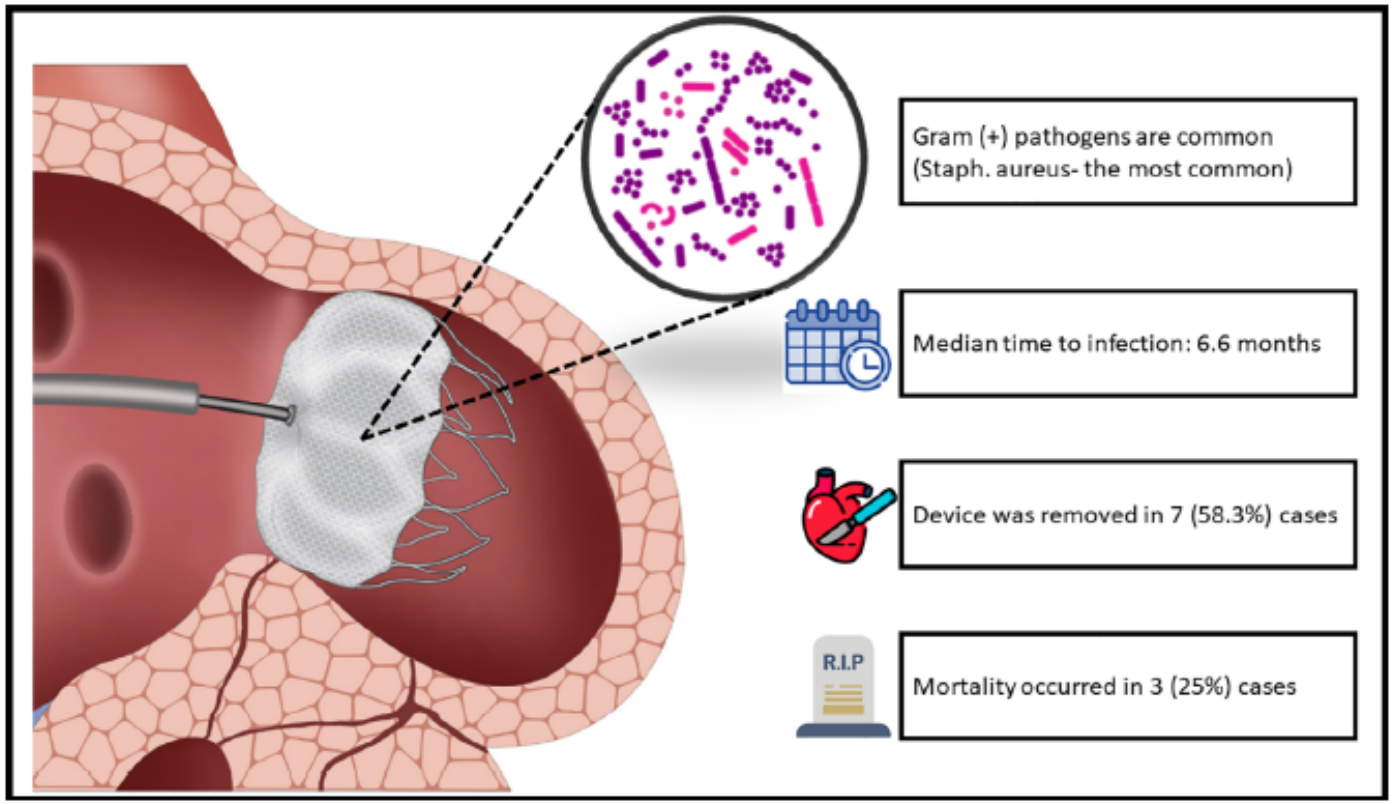
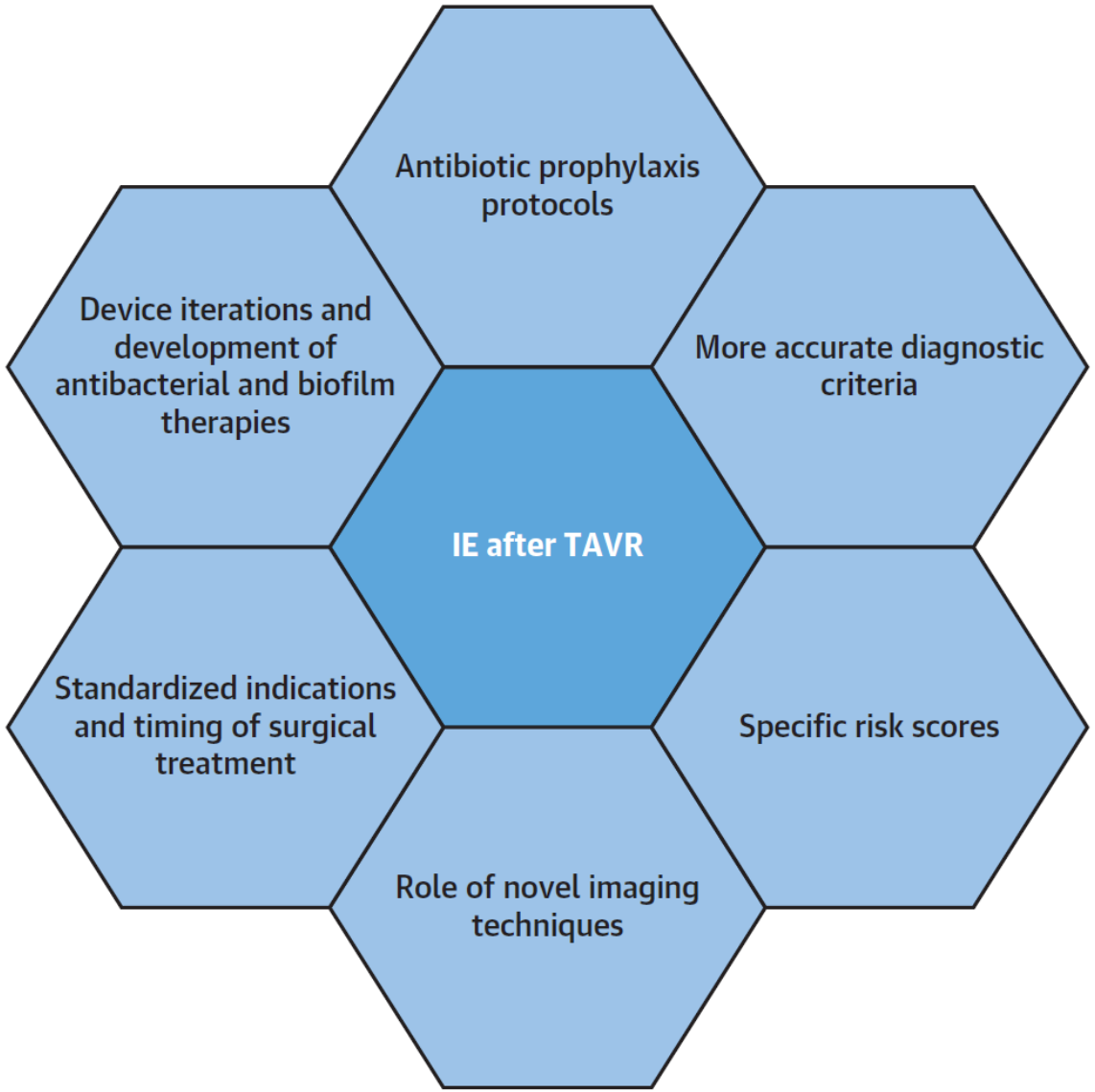


FIGURE 2 | The figure summarizes the characteristics and outcomes of LAAC device infections. [Color figure can be viewed at wileyonlinelibrary.com]

Endocarditis registrada en Excell PROA			
Servicio	2025	2026	Total general
Anestesia	1	1	2
Cardiología	17	2	19
Cirugía Cardíaca	2	2	4
Medicina Interna	18	2	20
Oncología		1	1
UCI	4		4
Total general	**42**	8	50

7 sobre TAVI

FIGURE 9 Top Research Priorities on IE After TAVR



Knowledge gaps in the field of IE after TAVR that need to be addressed in the coming years include specific antibiotic prophylaxis protocols, more accurate diagnostic criteria, the role of novel imaging techniques, specific risk scores for identifying patients at high risk of adverse outcomes, and standardized indications and timing of surgical treatment. Abbreviations as in Figure 1.

Muchas Gracias.