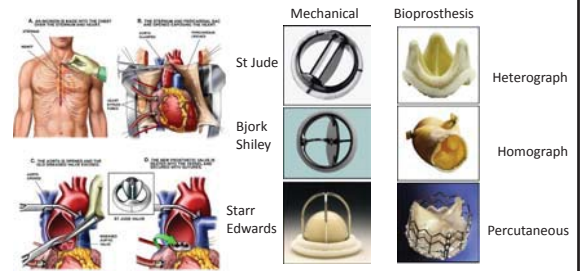


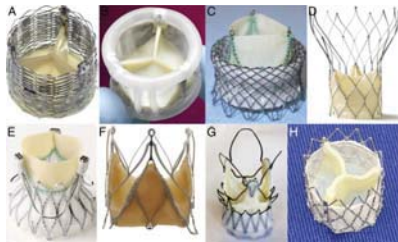
3D Echo Use in TAVR

Ernesto E Salcedo, MD
 Professor of Medicine University of Colorado Denver
 Director of Echocardiography University of Colorado Hospital
 Anschutz Medical Campus

Aortic Valve Replacement



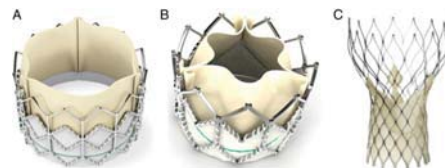
Valves Undergoing Early Evaluation



(A) Lotus (Boston Scientific Inc., Natick, Massachusetts), (B) Direct Flow (Direct Flow Medical Inc., Santa Rosa, California), (C) HLT (Bracco Inc., Princeton, New Jersey), (D) Portico (St. Jude Medical Inc., St. Paul, Minnesota), (E) Engager (Medtronic Inc., Minneapolis Minnesota), (F) JenaClip (JenaValve Inc., Munich, Germany), (G) Acurate valve (Symetis Inc., Ecublens, Switzerland), and (H) Inovare (Braile Biomedica Inc., São José do Rio Preto, Brazil) valves.

Am Coll Cardiol. 2012;60(6):483-492

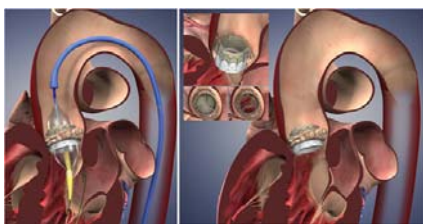
Currently Available Transcatheter Valves



(A) The Edwards SAPIEN THV balloon-expandable valve (incorporates a stainless steel frame, bovine pericardial leaflets, and a fabric sealing cuff).
 (B) The SAPIEN XT THV utilizes a cobalt chromium alloy frame and is compatible with lower profile delivery catheters.
 (C) The Medtronic CoreValve (incorporates a self-expandable frame, porcine pericardial leaflets, and a pericardial seal).

Am Coll Cardiol. 2012;60(6):483-492

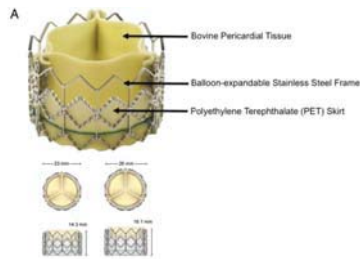
Trans-femoral TAVR



Trans-apical TAVR

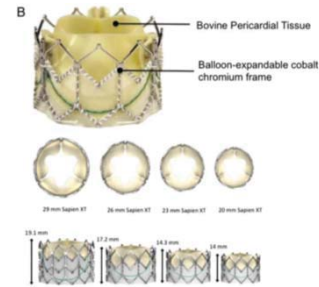


Edwards-SAPIEN Transcatheter Heart Valve (Edwards Lifesciences)



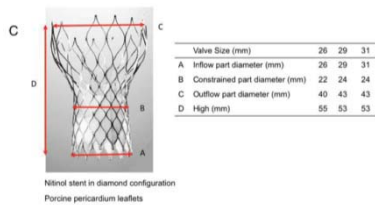
European Heart Journal (2012) 33, 2388–2400

Edwards-SAPIEN XT (Edwards Lifesciences)



European Heart Journal (2012) 33, 2388–2400

Medtronic CoreValve™ (Medtronic).



European Heart Journal (2012) 33, 2388–2400

Feasibility

Table 1 Multicentre feasibility studies

Study	Enrollment	Number of patients	Approach	Device	Procedural success	30-day mortality
I-REVIVE/RECAST*	2003–2005	26	Transseptal	Edwards SAPIEN	83% (22/26)	16.7% (4/24)
		7	TA	Edwards SAPIEN	57% (4/7)	
Grube et al. ⁸	2005–2007	86	TF	CoreValve	74% (64/86)	11.6% (10/86)
		168	TA	Edwards SAPIEN	95.8% (161/168)	14.9% (25/168)
REVAL ^{14,15}	2006–2008	40	TA	Edwards SAPIEN	100% (40/40)	12.5% (7/40)
		55	TF	Edwards SAPIEN	87% (48/55)	7.3% (4/55)

TF, transcatheter; TA, transapical; I-REVIVE, Initial Registry of EndoVascular Implantation of Valves in Europe trial; RECAST, Registry of Endovascular Critical Aortic Stenosis Treatment trial; REVIVAL, Percutaneous EndoVascular Implantation of Valves trial; TRAVERICE, The initial multicentre feasibility trial for TA-AVI.

Genex P European Heart Journal (2012) 33, 2388–2400

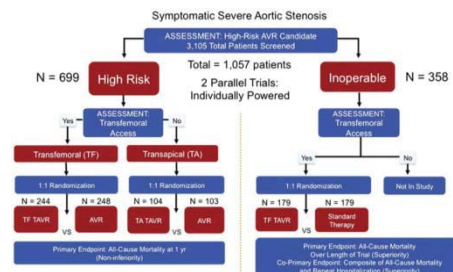
Clinical Outcomes

Table 2 Clinical outcomes after TAVI according to access site and device type: major published data

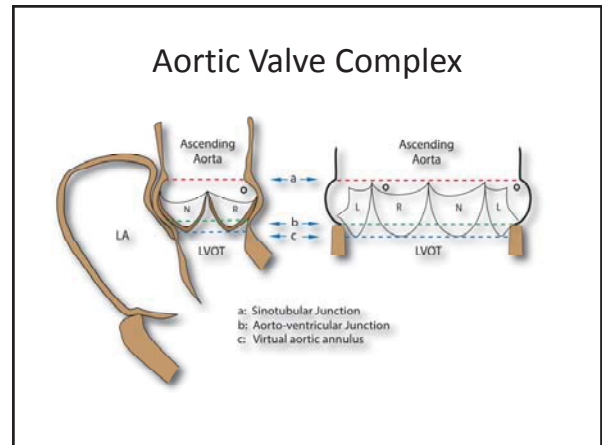
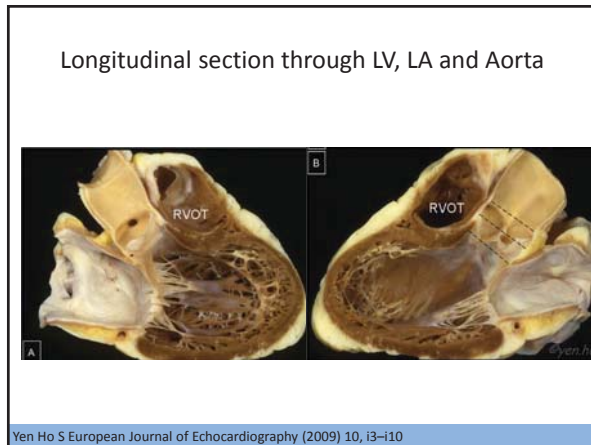
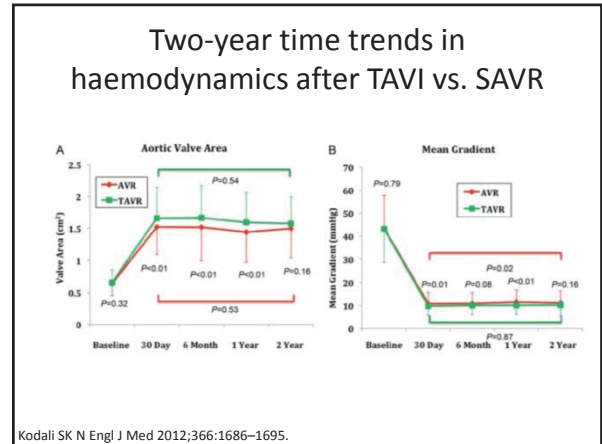
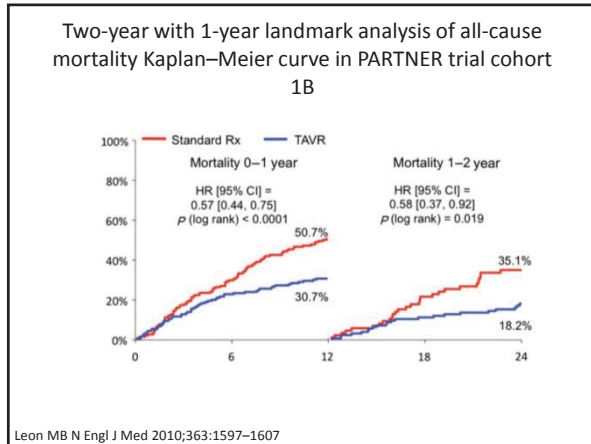
Authors	Type of study	Number of patients	STS (%)	Logistic EuroSCORE (%)	Follow-up (months)	Procedural success rate (%)	Mortality 30-day (%)	Mortality 1-year (%)	Major access complications 30-day (%)	Stroke 30-day (%)	Need for new PPM (%)
Edwards SAPIEN TF	Registry	61	11.3	25.7	12	95.4	8.2	21.3	16.4	3.3	1.8
		95	17.4	25.6	1	98.3*	8.4	—	6.3	4.2	3.3
Hakken et al. ²⁷	Registry	11	15.0	25.0	12	95.0	8.0†	19.0	12.0	6.0	6.0
		162	9.0	—	24	95.5	9.5	25.0	13.1	3.0	3.4
Thomas et al. ^{17,18}	Registry	463	—	14.5	1	95.2	6.3	18.9	22.9	2.4	6.7
		179	11.2	36.4	12	—	5.0†	30.7†	16.2	6.7†	3.4
Bavaria et al. ²	Registry	19	—	29.0	12	—	9.0	18.0	—	1.0	4.0
		344	11.7	29.1	12	—	3.7†	22.2†	14.0	3.7†	3.7†

Genex P European Heart Journal (2012) 33, 2388–2400

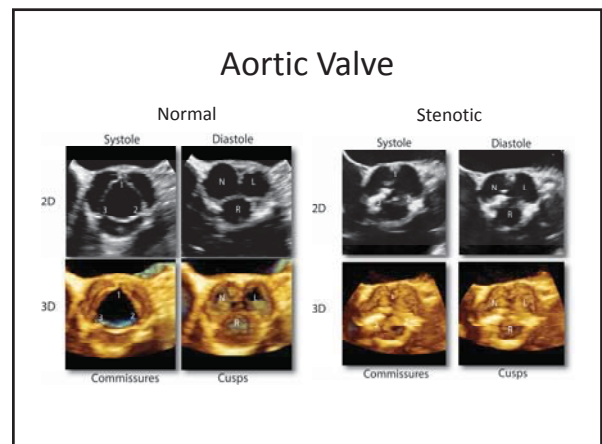
Partner I Trial

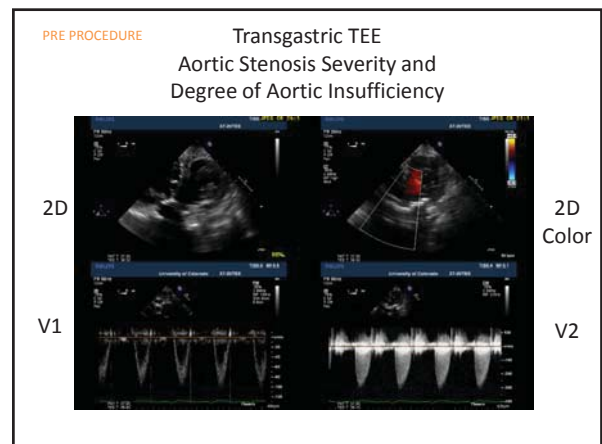
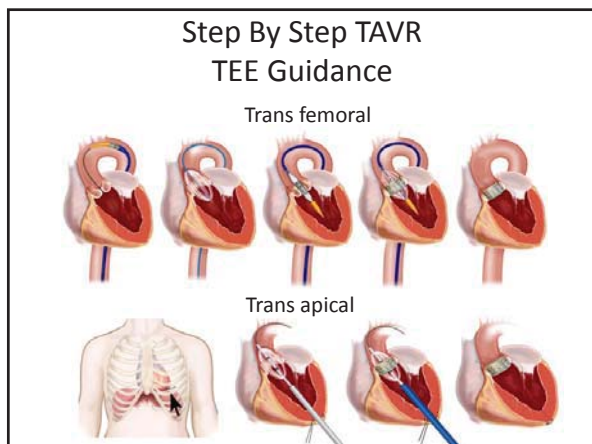
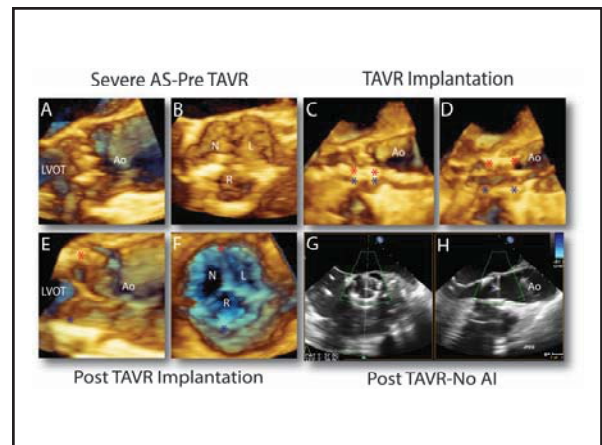
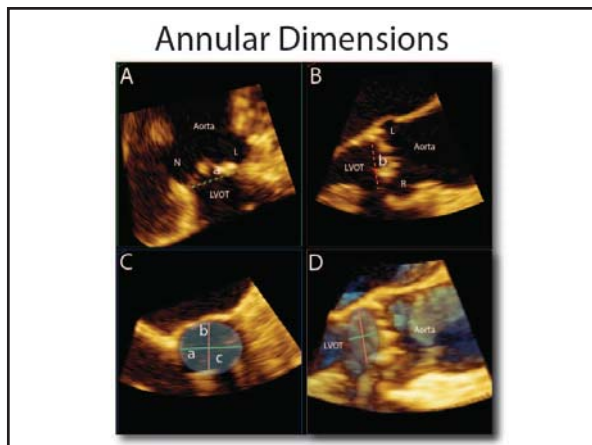
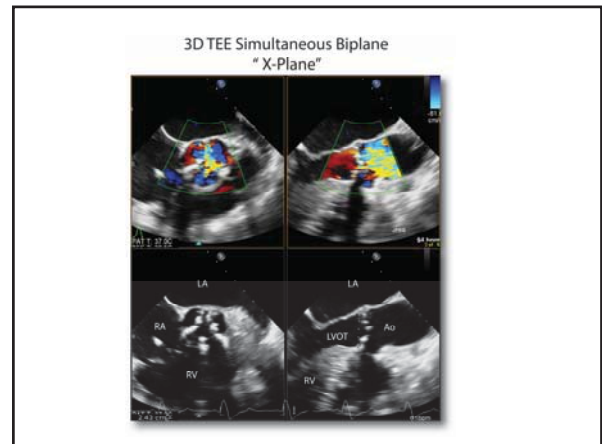
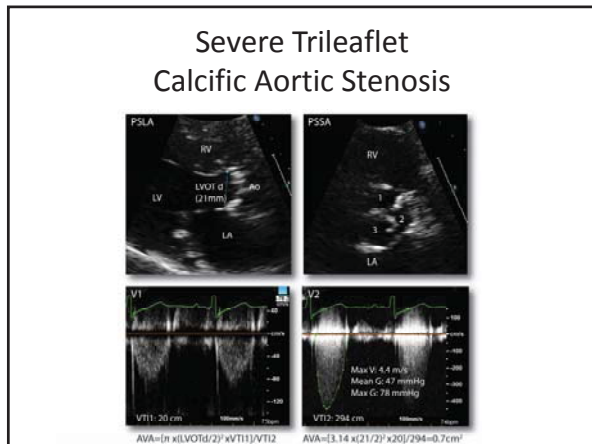


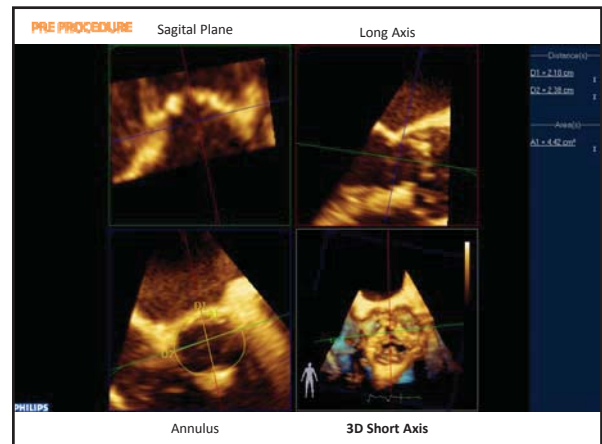
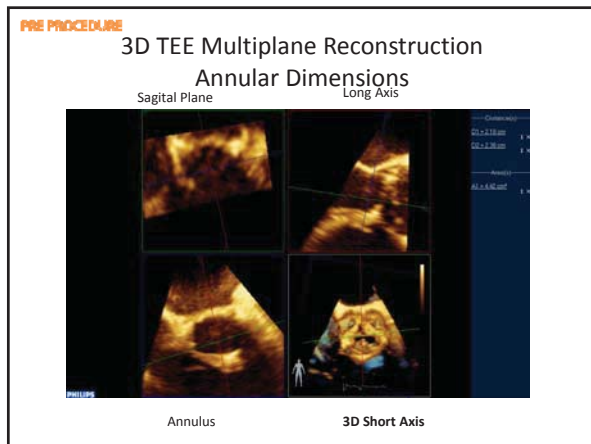
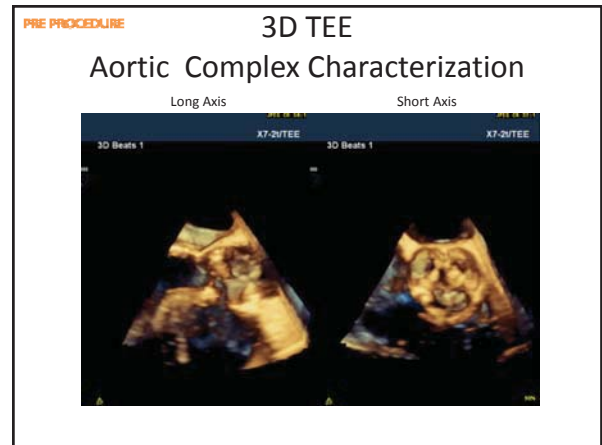
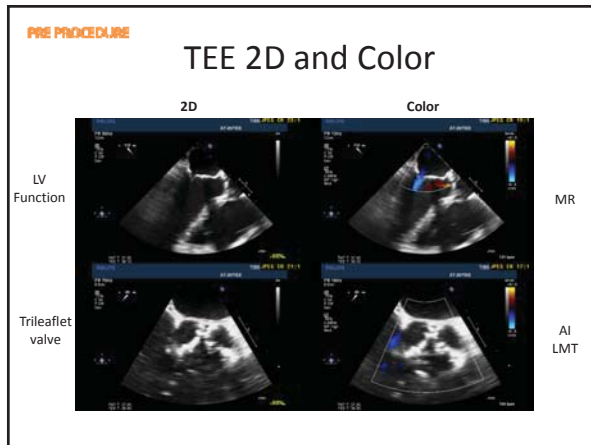
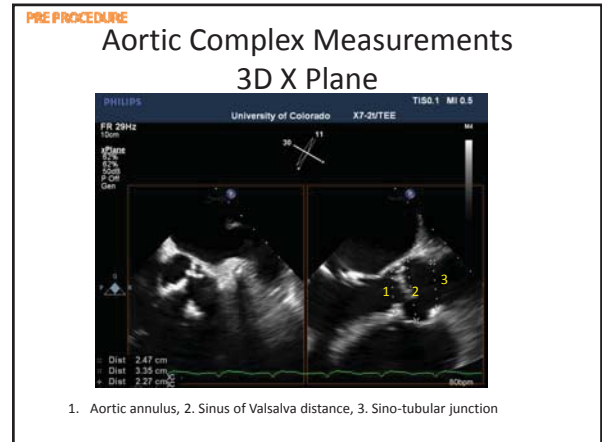
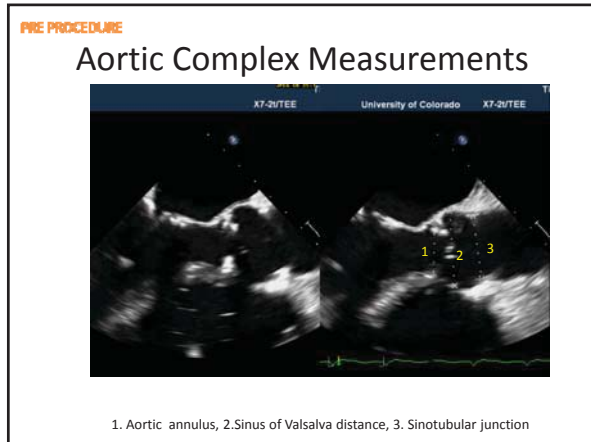
Leon MB N Engl J Med 2010;363:1597–1607



- ### TAVR Qualifiers
- High risk or inoperable patients with severe symptomatic aortic stenosis
 - Trileaflet valve
 - Mean gradient 40 mmHg
 - Peak trans aortic velocity of 4m/sec
 - The patient’s aortic root and blood vessels are of appropriate size for the TAVR procedure.







INTRA PROCEDURE


Wire and Catheter Guidance Trans Apical TAVR

Finding the Apex

Wire To AV


Wire Through AV

No MR



INTRA PROCEDURE

Balloon Valvuloplasty




INTRA PROCEDURE

Prosthesis Positioning and Deployment



POST PROCEDURE

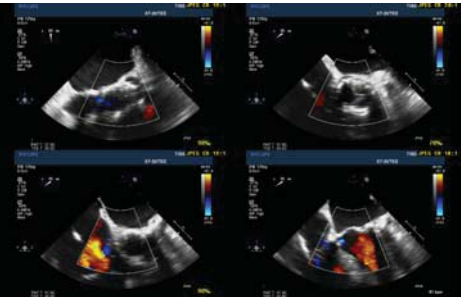
Immediately Post TAVR Deployment



1. Positioning, 2. Stability, 3 Leaflet excursion

POST PROCEDURE

Search for AI



POST PROCEDURE


POST TAVR

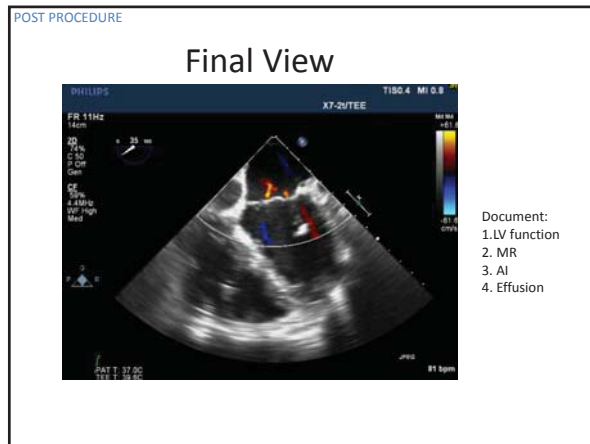
TG 2D TEE

V1

TG Color

V2





- ### Conclusions
- 2D and 3D TEE play a central role during TAVR procedures
 - Pre Procedure:
 - Characterization of aortic complex , determination of AS severity, identification of contraindications
 - Intra Procedure:
 - Catheter and device guidance, AVR deployment
 - Post Procedure
 - Valve position stability and function, AI, complications

THANK
YOU

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