

Minimally Invasive Aortic Valve Replacement Reduces Intensive Care Stay in a real-world setting

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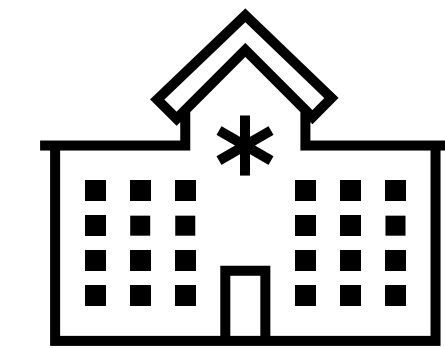
INTRODUCTION

- **Surgical aortic valve replacement (AVR)** remains a cornerstone **therapy for aortic valve disease**
- **Minimally invasive** AVR may **reduce surgical trauma** and **enhance postoperative recovery**
- Broader adoption remains **limited in contemporary surgical practice**
- Concerns regarding **technical complexity** and **prolonged operative times** persist
- **Large real-world multicenter** comparative **data** remain **scarce**

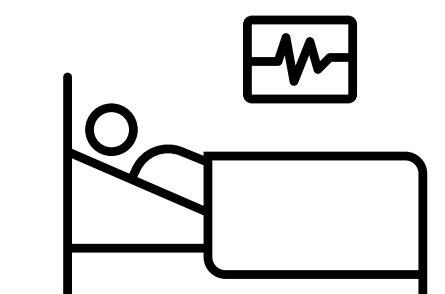
AIM

To evaluate the **real-world performance** of **minimally invasive access** for **isolated AVR** compared with full sternotomy in a **large, contemporary, multicenter surgical cohort**.

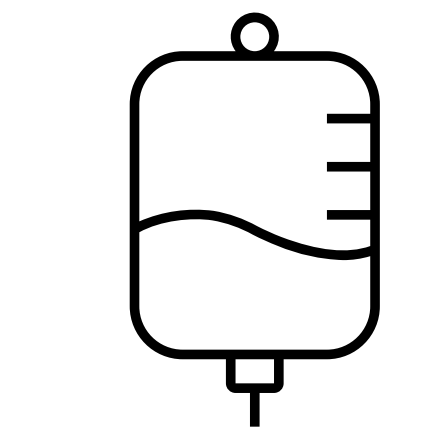
METHODS



Prospective, single-arm **registries** across 30 European sites (11 countries)



All-comers population (exclusion: <18y, salvage surgery)



- Enrolment:
- **Avalus**: 2021–2024 (**N = 1250**)
 - **Ultra**: 2024-ongoing (**N = 473**)
- 653 isolated AVR** procedures
- 198 minimally invasive
 - 455 full sternotomy



Endpoints: **mortality**, **stroke**, bleeding, pacemaker, **ICU/hospital stay**, valve function, reintervention

Data collection: discharge (complete), 1-year follow-up (ongoing)

RESULTS

Preoperative characteristics	Minimally invasive N = 198	Full sternotomy N = 455
Age (years)	71.1 ± 6.2	70.3 ± 6.6
BMI	27.6 ± 4.6	27.7 ± 5.0
BSA	1.9 ± 0.2	1.9 ± 0.2
Male	142 (71.7%)	341 (74.9%)
Euroscore-II	1.9 ± 3.4	2.2 ± 3.6
Renal impairment		
Moderate	72 (36.4%)	186 (40.9%)
Severe	12 (6.1%)	32 (7.0%)
NYHA class		
I-II	137 (69.2%)	334 (73.4%)
III-IV	61 (30.8%)	121 (26.6%)
Aortic regurgitation		
Moderate	30 (15.2%)	63 (13.8%)
Severe*	31 (15.7%)	108 (23.7%)
Pulmonary hypertension		
Moderate	40 (20.2%)	74 (16.3%)
Severe	3 (1.5%)	5 (1.1%)

Safety outcomes at 1 year	Minimally invasive N = 198	Full sternotomy N = 455
Mortality	1 (0.5%)	5 (1.1%)
Neurological deficit		
CVA	2 (1.0%)	6 (1.3%)
TIA	0 (0.0%)	2 (0.4%)
Bleeding		
Major	1 (0.5%)	0 (0.0%)
Life-threatening	0 (0.0%)	1 (0.2%)
Mean gradient	12.9 ± 4.5	12.1 ± 4.1
Peak gradient	22.1 ± 8.0	20.5 ± 6.5
Effective orifice area*	1.7 ± 0.3	1.9 ± 0.4
Aortic cross clamp time*	74.4 ± 23.8	66.1 ± 21.4
Cardiopulmonary bypass*	100.6 ± 34.8	90.1 ± 29.7
ICU stay*	2.1 ± 3.5	2.5 ± 2.7
Hospital stay*	8.5 ± 4.9	9.6 ± 6.3

* **P < 0.05**

CONCLUSIONS

Minimally invasive AVR was associated with **faster postoperative recovery**

MICS showed: ICU/hospital stay significantly shorter; Cross-clamp and cardiopulmonary bypass times slightly longer

Safety outcomes remained comparable to full sternotomy AVR

Hemodynamic performance was **preserved**

Minimally invasive access appears **underutilized** in contemporary surgical practice

Broader adoption may **improve recovery** and **reduce healthcare resource** utilization

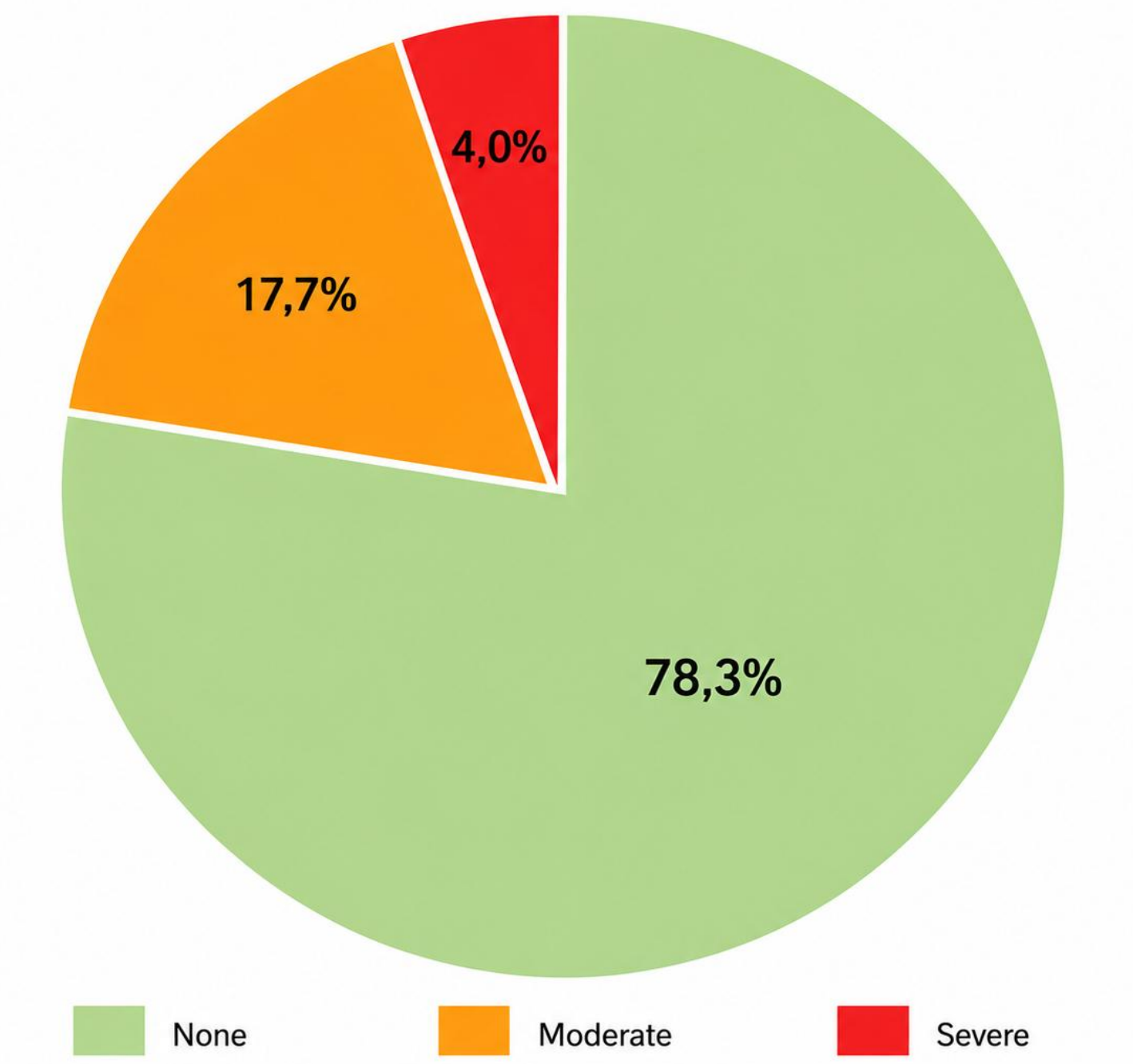
The ACE group will **continue to monitor long-term outcomes** and **valve performance**. Real-world data from this registry is expected to complement findings from randomized controlled trials

ACKNOWLEDGEMENTS

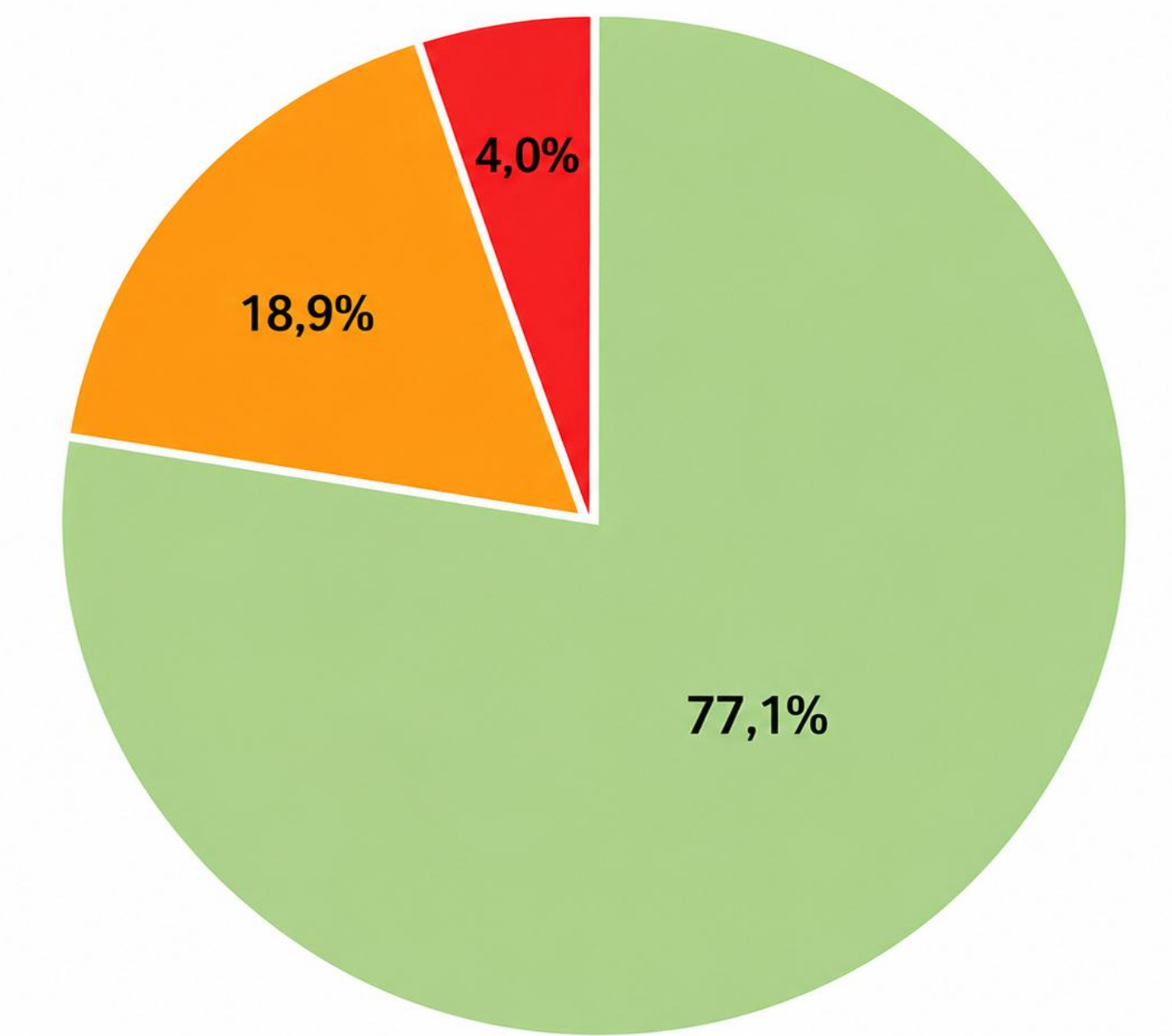
With gratitude to the ACE investigators, surgical teams, and patients who made this registry possible. We thank the following contributing investigators and centers:

J. Guihaire - Groupe Hospitalier Paris Saint-Joseph, France; J. Bustamante-Munguira - Hospital clinico de Valladolid, Spain; D. Pacini - Osp. S.Orsola Malpighi-Bologna, Italy; P. Centofanti - A. O. Ordine Mauriziano-Torino, Italy; N. Doll - Schüchtermann-Klinik, Germany; R. Llorens - Hospital Rambla, Spain; Y. Ben-Gal - Tel Aviv Medical Center, Israel; F. Musumeci - San Camillo Hospital Roma, Italy; T. Philipsen – UZ Gent, Belgium, L. de Kerchove - UCL St-Luc-Bruxelles, Belgium; R. Lorusso – UMC Maastricht, the Netherlands; Tripodi - Villa Maria Cecilia-Cotignola, Italy; A. Canziani - Policlinico San Donato, Italy; A. Valtola - Kuopio University Hospital, Finland; G. Coutinho - University Hospital and Center of Coimbra, Portugal; J. Defraigne – CHU Liege, Belgium; R. Sadaba – Hospital Universitario de Navarra, Spain; A. Kocher – Allgemeines Krankenhaus Universitätskliniken, Austria; O. Bouchot – CHU Dijon-Bourgogne, France

Patient-prosthesis mismatch Minimally access



Patient-prosthesis mismatch Full sternotomy



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