



# TAVR in Korea

## Data from National TAVR Database

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# Disclosure

- Nothing to Declare

# Introduction

- First time in Korea : 2010
- Insurance Coverage & Data Acquisition : 2015
  - Patients 80% + NHIS (GOV) 20%
- Insurance Coverage in selective patients : 2022
  - High risk patients
  - Age over 80
  - Patients 5% + NIHS (GOV) 95%

❖ **1<sup>st</sup> May 2015 to 30<sup>th</sup> June 2021**

❖ **Every Korean Pts treated with TAVR**

# Data Source (1) TAVR REGISTRY

Health Insurance Review and Assessment Service (HIRA), South Korea

- All Severe AS pts treated with TAVR
- Mandatory for Every Korean Patients
- Prospective Registry
- Acquisition
  - ✓ At Discharge
  - ✓ 6 month
  - ✓ 1 yr
  - ✓ 2 yr
  - ✓ 3 yr

VI. 임상자료 제출 양식

□ 퇴원시 제출 임상자료

A. 환자정보	
요양기관 코드	기관명
중재등록번호	차료제출일
1. 환자성명	2. 생년월일
3. 성별	4. 신장
4. 시술중 체중	5. 신장
B. 환자병력	
1. 증상 (발병일) (발병일 포함)	2. 진단명
2. 당뇨병	3. 고혈압
3. 고혈압	4. 심각한 간질형/간경변
4. 심각한 간질형/간경변	5. 폐질환 (중독성)
5. 폐질환 (중독성)	6. 신경학적 질환
6. 신경학적 질환	7. 알츠하이머
7. 알츠하이머	8. 심장고혈, 폐동맥질환, 조영제 알러지, 과민증 또는 기타
C. 과거 수술 경험	
1. 이전 심장 수술 (중독성)	2. 경피적 심방방싹상술 (중독성)
3. 이전 PCI 시행	4. 이전 TAVI 시행
D. 시술전 검사결과(혈관조영 또는 심초음파 등)	
1. 대동맥관 평균압력	2. 대동맥관 최대 혈류속도
3. 대동맥관 면적	4. 대동맥관 관측지수
5. 좌심실 구혈률	6. 대동맥 관측면적 크기
E. 시술전 환자상태	
1. NYHA 기능분류 지수 (시술전 안정성)	2. 수술예측사양률
3. SFS score	4. 심장담 위험일시

# Data Source (2)

## Health Insurance Review and Assessment Service (HIRA), South Korea

- Every Korean Insurance Service
- Prescription History including
  - ✓ Admission
  - ✓ Outpatient
  - ✓ Physician Fee
  - ✓ Medication
  - ✓ Material Costs
  - ✓ ETC

The screenshot shows the Healthcare Bigdata Hub website. The header includes the logo and navigation tabs: '공공데이터' (Public Data), '의료빅데이터' (Medical Big Data), '의료통계정보' (Medical Statistics Information), '고객지원' (Customer Support), and '시스템소개' (System Introduction). The main content area features a banner with the text '공개는 빨리! 제공은 빨리! 이용은 편리!' (Release fast! Provide fast! Use conveniently!) and a list of data services: '데이터 서비스 현황' (Data Service Status) showing 110 public data items, 20 Open APIs, 132 medical statistics, and 470 total systems. Below this are icons for '의료통계 정보' (Medical Statistics Information) and '데이터 결합' (Data Integration). The '의료빅데이터' (Medical Big Data) section lists '과제목록' (Task List) and '전문적인 빅데이터 분석' (Professional Big Data Analysis). The '공공데이터 신청 안내' (Public Data Application Guide) section includes '공공데이터' (Public Data) and 'Open API' options. The '공지사항' (Notice) and '자료실' (Resource Room) sections provide additional information and resources.

# Data Source (3)

## National Health Insurance Sharing Service (NHIS)

- Eligibility for Insurance
- Every Korean Patients
- Loss of Eligibility means
  - ✓ Death (m/c)
  - ✓ Intentional Nonpayment

h-well 국민건강보험 NHISS National Health Insurance Sharing Service

로그인 회원가입 사이트맵 ENGLISH

서비스이용안내 데이터신청 성과공유 통계 의료이용지표 공공데이터 고객센터

### 건강보험자료 공유서비스

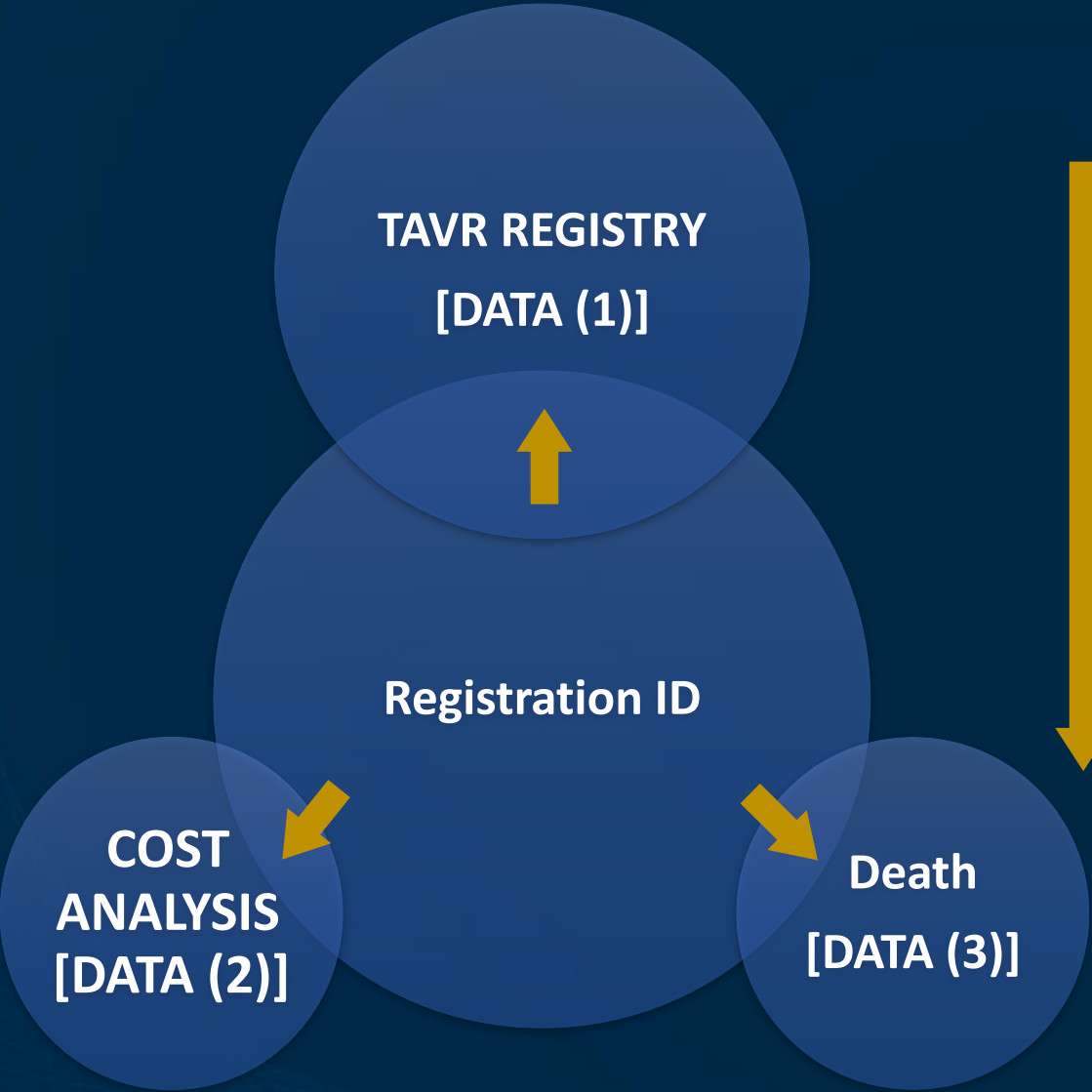
근거중심의 보건의료 정책 및 학술연구 지원을 선도합니다.

연구DB신청 바로가기    데이터결합신청 바로가기    보안센터 바로가기

회사	마감일	심의일	심의건수
제211차	03/30	04/11	83건
제212차	04/13	04/25	78건
제213차	04/27	05/09	0건
제214차	05/11	05/23	0건

공지사항

# Data Integration



TAVI Registry			
ID	DATE	...	
490103-1234567	value1	...	

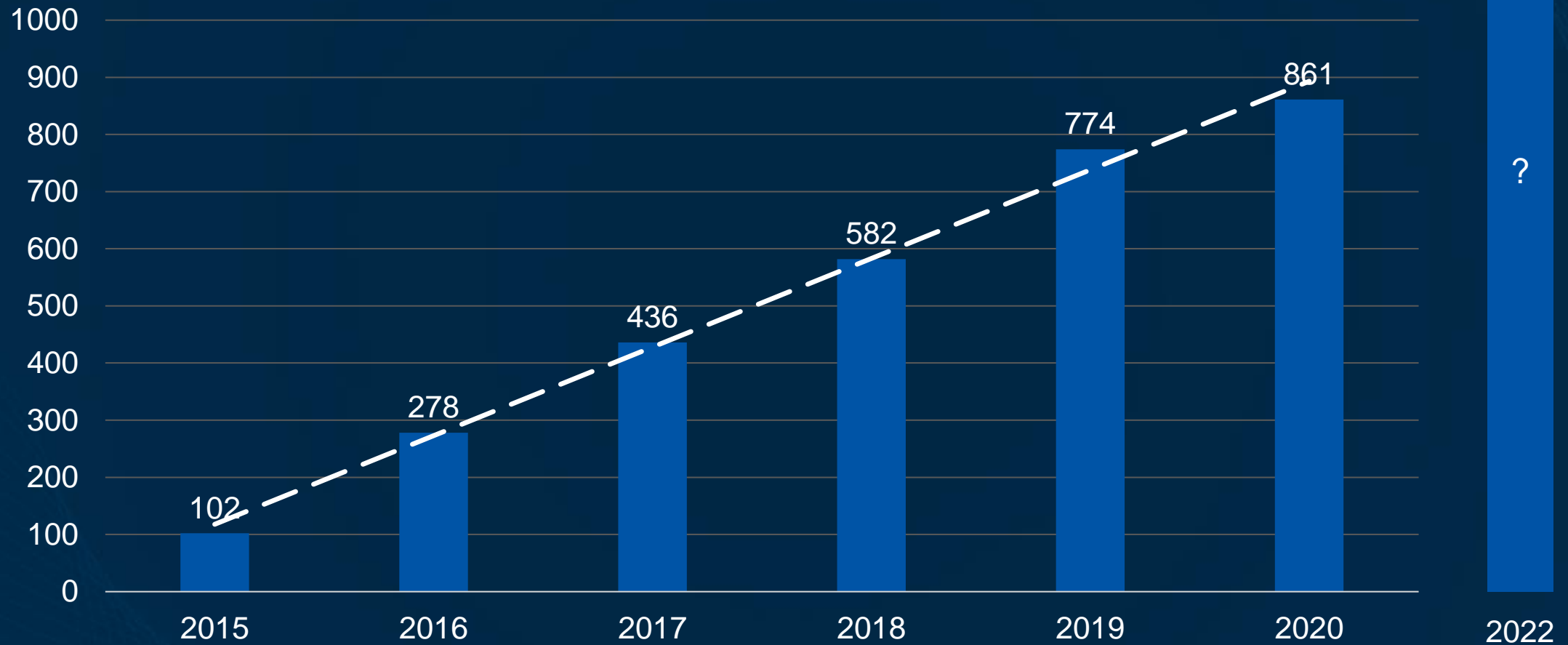
  

NIHSS		
ID	Loss of Eligibility	DATE
490103-1234567	Y	2022/11/01

Integrated DATA			
Encrypted ID	DATE	Loss of Eligibility	DATE
1342	value1	Y	2022/11/01

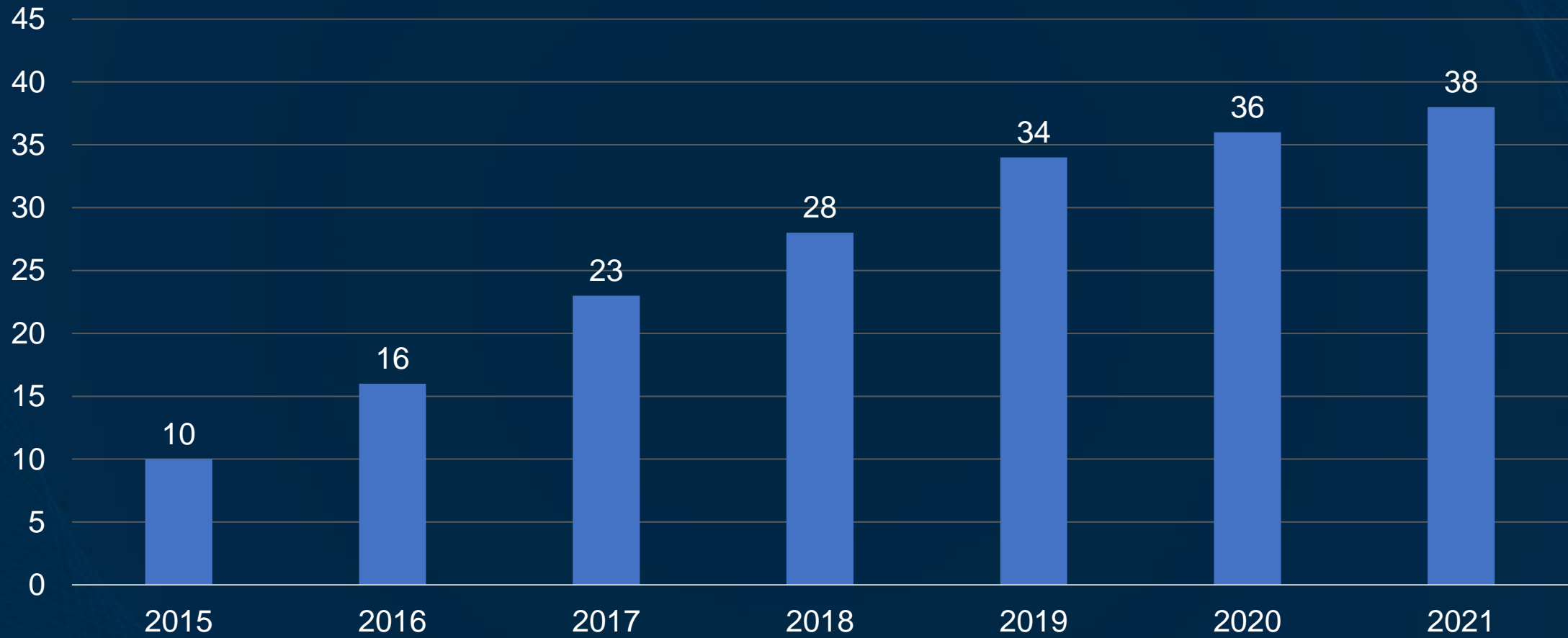
# TAVR in Korea (Patients)



TAVI Registry from Health Insurance Review and Assessment Service (HIRA), South Korea



# TAVR in Korea (Institution)



TAVI Registry from Health Insurance Review and Assessment Service (HIRA), South Korea

# Demographics and Medical History

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<u>Total No.</u>	<u>3463</u>
<u>Age (mean (SD)), y</u>	<u>80.48 (5.93)</u>
<u>Sex, female (%)</u>	<u>1868 (54.0)</u>
Diabetes (%)	
- <u>None</u>	<u>2154 (62.2)</u>
- Uncontrolled	82 (2.4)
- Diet	60 (1.7)
- OHA	1033 (29.8)
- Insulin	133 (3.8)
Hypertension (%)	2638 (76.2)
Liver disease (%)	88 (2.5)
Lung disease(%)	651(18.8)
<u>Neurologic disease (%)</u>	
- <u>None</u>	<u>2892 (83.5)</u>
- TIA	48 (1.4)
- CVA with full recovery	310 (9.0)
- CVA with residual deficit	135 (3.9)
- ETC	77 (2.2)
Peripheral artery disease (%)	331 (9.6)

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# Previous Cardiac Medical History

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## Previous cardiac surgery

- <b><u>None</u></b>	<b><u>3255 (94.0)</u></b>
- CABG	116 (3.3)
- CABG & AVR	8 (0.2)
- AVR (Replacement or Repairment)	57 (1.6)
- Other pericardium operation	26 (0.8)

## Previous percutaneous valvuloplasty (%)

- None	3442 (99.4)
- AV	14 (0.4)
- AV & MV	1 (0.0)
- MV	5 (0.1)

<b><u>Previous PCI (%)</u></b>	<b><u>950 (27.4)</u></b>
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Previous TAVI (%)	15 (0.4)
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# Patient Characteristics

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## STS Score (%)

- Low	1442 (41.7)
- Intermediate	1083 (31.3)
- <b><u>High</u></b>	<b><u>937 (27.1)</u></b>

LVEF (mean (SD)) 58.03 (12.04)

## LV function (%)

- >50%	2794 (80.7)
- 40-50%	307 (8.9)
- <b><u>&lt;40%</u></b>	<b><u>361 (10.4)</u></b>

## NYHA (%)

- 1	147 (4.2)
- 2	1188 (34.3)
- 3	1537 (44.4)
- <b><u>4</u></b>	<b><u>590 (17.0)</u></b>

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## Coronary artery disease (%)

- <b><u>None</u></b>	<b><u>1735 (50.1)</u></b>
- One vessel	770 (22.2)
- Two vessels	506 (14.6)
- Three vessels	388 (11.2)
- Not checked	63 (1.8)

## LMCA disease (%)

- <b><u>None</u></b>	<b><u>3217 (92.9)</u></b>
- > 50% stenosis	174 (5.0)
- Not checked	71 (2.1)

Renal Replace Treatment (%) 192 (5.5)

Creatinine level (mean (sd)) 1.29 (1.35)

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# Patient Characteristics

Mean PG (mean (sd)) 52.61 (18.69)

V max (mean (sd)) 4.76 (3.98)

**EOA (mean (sd))** **0.71 (0.22)**

Index EOA (mean (sd)) 0.45 (0.14)

Annulus (mean (sd)) 22.55 (16.94)

## **Etiology (%)**

- **Degenerative** **3267 (94.3)**

- Rheumatic 35 (1.0)

- Others 161 (4.6)

## Morphology (%)

- Unicuspid 5 (0.1)

- **Bicuspid** **300 (8.7)**

- Tricuspid 3151 (91.0)

- Quadricuspid 6 (0.2)

## **Aortic Regurgitation (%)**

- None or trace 1089 (31.5)

- Mild 1720 (49.7)

- **Moderate** **552 (15.9)**

- **Severe** **101 (2.9)**

## **Mitral Regurgitation (%)**

- None or trace 1563 (45.1)

- Mild 1515 (43.8)

- Moderate 347 (10.0)

- Severe 37 (1.1)

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**Total length of stay (median (IQR))**                      **9 [6-15]**

**Length of stay after TAVI procedure (median (IQR))**                      **5 [3-8]**

Access site (%)

- **Transfemoral**                      **3428 (99.0)**

- Transapical                      20 (0.6)

- Transsubclavian                      7 (0.2)

- Transaortic                      7 (0.2)

Cath Lab (%)                      1258 (36.3)

Post balloon (%)

- Not done                      2527 (73.0)

- Done                      930 (26.9)

- None                      5 (0.1)

**Additional valve in valve (%)**

- **Emergent**                      **15 (0.4)**

- Non-emergent                      33 (1.0)

**Valve malposition (%)**

- **Valve migration**                      **13 (0.4)**

- Inadequate position or deployment                      5 (0.1)

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## Procedural Details

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Procedural success (%)                      3452 (99.7)

**Emergent surgery (%)**                      **18 (0.5)**

- THV migration to aorta                      3 (0.08)

- THV migration to LV                      2 (0.06)

- LV perforation                      6 (0.17)

- Annular perforation                      1 (0.03)

- Aortic dissection                      2 (0.06)

- Coronary obstruction                      1 (0.03)

- Others                      4 (0.12)

Urgent PCI (%)                      21 (0.6)

ECMO(%)                      44 (1.3)

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# Index Procedural Outcomes

Vmax (mean (sd))	2.35 (0.49)	NYHA class (%)	
<b><u>EOA (mean (sd))</u></b>	<b><u>1.76 (0.51)</u></b>	- 1	2802 (80.9)
<b><u>Paravalvular leak (%)</u></b>		- 2	582 (16.8)
- None or trace	1908 (55.1)	- 3	45 (1.3)
- Mild	1375 (39.7)	- 4	32 (0.9)
- <b><u>Moderate</u></b>	<b><u>178 (5.1)</u></b>	Re-operation (%)	
- <b><u>Severe</u></b>	<b><u>1 (0.0)</u></b>	- Redo TAVI	1 (0.0)
LVEF (mean (sd))	59.77 (10.69)	- Redo AVR	6 (0.2)
		- Others	20 (0.5)
		PPI (%)	243 (7.0)

# Clinical End Points before Discharge

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## All cause mortality (%) **101 (2.9)**

- Cardiovascular death **57 (1.6)**

- Non-cardiovascular **44 (1.3)**

Cardiac tamponade (%) 62 (1.8)

Coronary obstruction (%) 8 (0.2)

Myocardial infarction (%) 6 (0.2)

Conduction disorder (%) 812 (23.5)

## Stroke (%)

- Ischemic cause **60 (1.7)**

- Bleeding cause 6 (0.2)

- Undetermined 6 (0.2)

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## Bleeding (%)

- Life threatening or disabling **42 (1.2)**

- Major bleeding 101 (2.9)

- Minor bleeding 184 (5.3)

THV migration 15 (0.4)

Aortic dissection 10 (0.3)

Access site dissection (%) 37 (1.1)

Access site rupture (%) 26 (0.8)

Access site hematoma (%) 154 (4.4)

Access site hematoma (%) 33 (1.0)

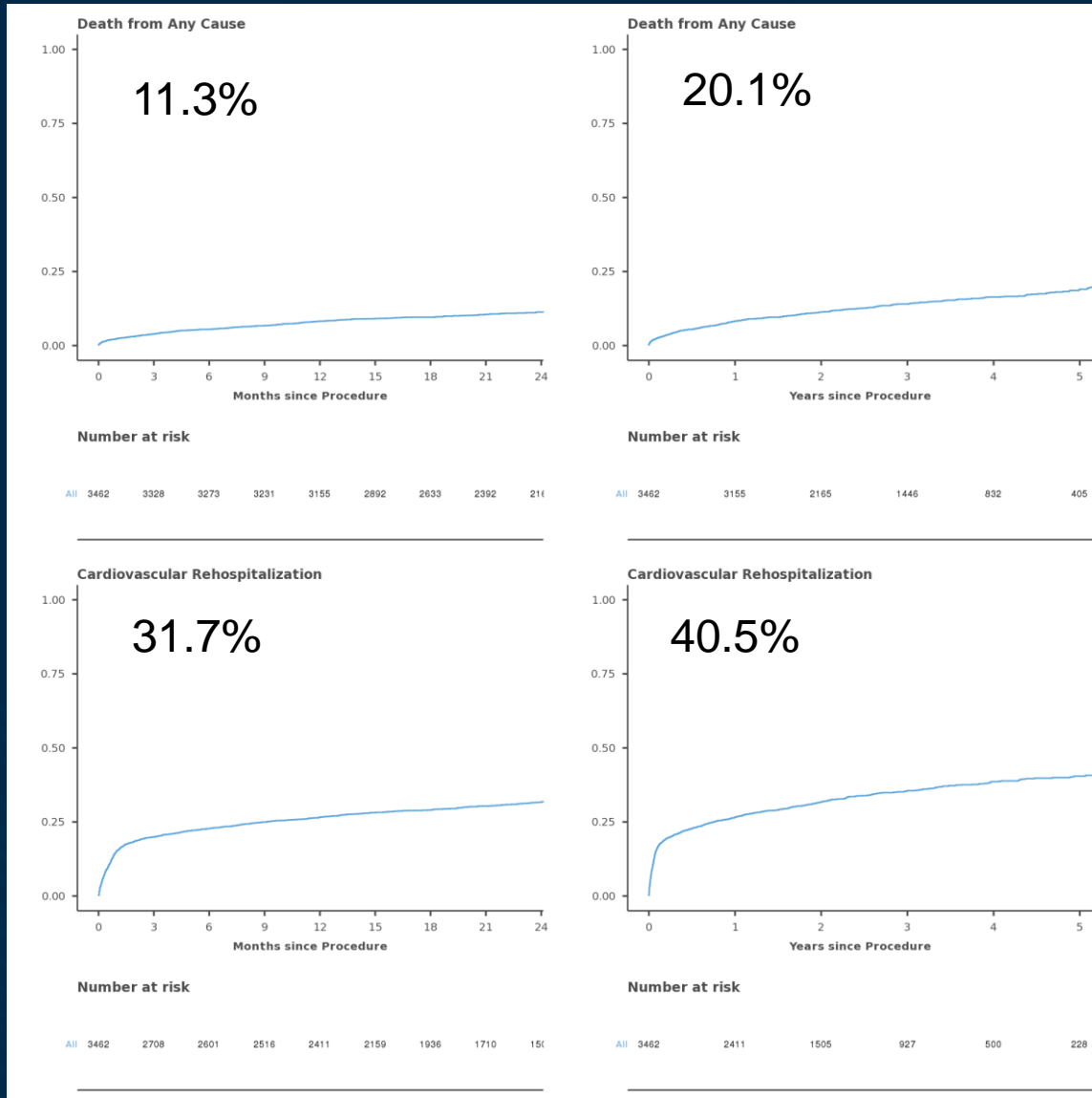
Lower extremity ischemia (%) 19 (0.5)

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# Long-term Outcomes

- All Cause Mortality
- 2yrs 11.3%
- 5yrs 20.1%
- Cardiovascular Readmission
- 2yrs 31.7%
- 5yrs 40.5%



# Index Costs (Total)

(1 \$ = 1,300 won)

<u>Total Cost</u>		<u>n=3462</u>	<u>\$ 32173.52</u>	<u>±7552.44</u>
Classification			Category	
Physician Fee	\$ 4899.06	± 4,158.67	Consultation	\$ 352.70 ± 241.94
Medication	\$ 547.43	± 610.75	Admission	\$ 1,590.36 ± 1308.04
<b><u>Material Costs</u></b>	<b><u>\$ 26,770.33</u></b>	<b><u>± 4624.62</u></b>	Medication	\$ 100.35 ± 108.23
			Injection	\$ 469.55 ± 1148.47
			Anesthesia	\$ 246.22 ± 142.62
			Treatment	\$ 1,984.70 ± 3001.25
			Examination	\$ 1,258.75 ± 930.97
			Radiation	\$ 956.29 ± 1029.09
			Etc**	\$ 25,265.61 ± 4306.43

Mean ± SD