ACURATE neo2 Post-Market Clinical Follow-Up Study 30-Day Results
30-day Results from the ACURATE neo2 Post-market Study

Won Keun-Kim, MD
Kerckhoff Klinik Heart Center, Bad Nauheim, Germany
On behalf of the ACURATE neo2 Post-Market Clinical Follow-up Study Investigators

Abstract
Background: The second-generation ACURATE neo2 transcatheter aortic valve was designed for simplified implantation and to mitigate the risk of perivalvular leak (PVL) compared to the earlier device. The aim was to evaluate clinical outcomes and technical performance, including echocardiographic and neurological outcomes.

Methods: ACURATE neo2 and PORTA is a single-arm, multicenter study of patients with severe AS treated in usual clinical practice. The primary safety endpoint was all-cause mortality at 30 days. The primary efficacy endpoint was the absence of PVL as assessed by transthoracic echocardiography and transthoracic echocardiography at 30 days. Secondary outcomes included the incidence of all-cause mortality, target valve stenosis, and the incidence of stroke, transient ischaemic attack (TIA), and major vascular complications.

Results: The study enrolled 92 patients in 11 European centres (mean age 83.6 ± 7.6 years; 69.6% male; 80.4% with chronic kidney disease). The median follow-up was 18 months (interquartile range 13-23 months). The all-cause mortality rate at 30 days was 0%, and the freedom from all-cause mortality at 1 year was 92.2% (95% CI 85.3-96.1%). The incidence of PVL was 5.5% (1.8% for type A and 3.7% for type B). No major complications were reported. The rates of neurological events were 2.2% (0.5% for stroke and 1.7% for major vascular complications).

Conclusion: The results indicate excellent safety and efficacy with ACURATE neo2 in patients in routine clinical practice.
ACURATE neo2 PMCF Study

Continuing to deliver excellent patient outcomes

ACURATE neo2 PMCF study demonstrated outstanding ACURATE neo2 Safety and independent core lab adjudicated 30-Day outcomes

- Procedural success rate: 98.4%
- Moderate PVL: 1.9%
- Permanent pacemaker rate: 6.5% (BEST-IN-CLASS)
- Mean gradient: 8.6 mmHg
- All cause mortality: 0.8%
- All stroke: 0.8%

Echocardiographic and CT imaging: Independently core lab adjudicated. † Among pacemaker-naïve patients. Among all patients, implanted pacemaker rate = 6.1%

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
ACURATE neo2 PMCF Study

ACURATE neo2 Aortic Valve System

ACURATE neo2 Valve Design Features
- Self-expanding, open-cell Nitinol frame; axial stabilization arches
- Radiopaque positioning markers for placement accuracy
- Porcine pericardium leaflets and skirt
- Supra-annular leaflets
- Inner and outer skirt with active sealing to reduce PVL

ACURATE neo2 AS Study (N=120)
- Demonstrated neo2 safety and performance through 1 year
- Hemodynamics at 1y
  - Mean AV gradient: 7.6 mmHg
  - Mean EOA: 1.7 cm²
- Paravalvular Leak at 1y
  - ≤ Mild: 97.5%
  - Moderate: 2.5%
  - Severe: 0%

ACURATE neo2 PMCF (N=250)
- Patients with severe calcific AS treated with ACURATE neo2 in routine clinical practice
- Clinical outcomes and outcomes through 1 year
- Core laboratories for echocardiography & CT, Independent CEC adjudication

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.

© 2022 Boston Scientific Corporation or its affiliates. SH-1454002-AA
ACURATE neo2 PMCF Study
Study Design and Endpoints

Single arm, prospective, post-market surveillance study
  • Enrolled 250 patients at 18 European sites

Safety assessments
  • Primary safety endpoint: 30-day all-cause mortality
  • Additional endpoints with independent CEC adjudication: death, stroke, bleeding, major vascular complications, hospitalization for valve-related symptoms

Imaging assessments
  • Echocardiography: evaluated at discharge, 30 days, and 1 year by an independent core lab
  • Primary imaging endpoint: hypo-attenuated leaflet thickening (HALT) at 30 days as measured by 4D-CT

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
ACURATE neo2 PMCF Study
Study Execution

Intention-To-Treat
N=250

- Withdrew consent n=12
- Death < 30 days n=2

Successfully Implanted
98% (246/250)

- Device not in correct position* n=4

30-day Clinical
Follow-up or Death
94% (236/250)

30-day TTE
Performed
91% (224/246)

30-day 4D-CT
Performed
83% (204/246)

*In 4 patients, ACURATE neo2 embolized and patients were implanted with a non-study valve; these patients were followed for safety only through 30 days, as per protocol requirement.

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
### ACURATE neo2 PMCF Study
Baseline and Procedural Characteristics

**Patient Demographics**
- Mean Age: 80.8 ± 6.2 yrs
- 63.6% Female, 36.4% Male

**Medical History**
- Diabetes, medically treated: 24.0% (60)
- Hypertension: 80.8% (202)
- Coronary artery disease: 40.8% (102)
- History of atrial fibrillation: 4.4% (11)
- History of stroke: 5.2% (13)
- Prior pacemaker: 6.0% (15)
- Preexisting conduction abnormality: 13.3% (33/248)

**Baseline TTE; Site-reported**
- Mean AV gradient: 47.6 ± 14.5 mmHg
- Mean EOA: 0.7 ± 0.2 cm²

**Risk Scores**
- EuroSCORE II: 3.3% ± 2.8%
- STS Score: 2.9% ± 2.0%
- NYHA Class III or IV: 52.4%

**Operative Risk (per Heart Team)**
- Low: 37.2%
- Intermediate: 31.6%
- High: 31.2%

**Procedural Characteristics**
- Successful vascular access, delivery, and deployment of valve: 98.4% (246)
- Total procedure time (min): 63.2 ± 32.3
- Pre-dilation BAV: 96.8% (242)
- Rapid pacing used during valve deployment: 46.0% (115)
- Embolic protection device used: 10.4% (26)
- Post-dilation balloon performed: 26.0% (65)

### CAUTION
- In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
Deaths:
1 patient experienced life-threatening bleeding (admitted to secondary hospital, source of bleeding not recorded) and hemodynamic instability leading to circulatory arrest and death
1 patient died post index procedure following valve embolization and unsuccessful TAV-in-TAV with non-study valve leading to coronary obstruction and procedural myocardial infarction.

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
ACURATE neo2 PMCF Study
Essential Outcomes

<table>
<thead>
<tr>
<th>Key Safety Events</th>
<th>Discharge N=250</th>
<th>30 Days N=245</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-cause mortality</td>
<td>0.4% (1)</td>
<td>0.8% (2)*</td>
</tr>
<tr>
<td>Cardiovascular mortality</td>
<td>0.4% (1)</td>
<td>0.8% (2)</td>
</tr>
<tr>
<td>All stroke</td>
<td>0.4% (1)</td>
<td>0.8% (2)</td>
</tr>
<tr>
<td>Disabling stroke</td>
<td>0.0% (0)</td>
<td>0.0% (0)</td>
</tr>
<tr>
<td>Non-disabling stroke</td>
<td>0.4% (1)</td>
<td>0.8% (2)</td>
</tr>
<tr>
<td>Major vascular complication</td>
<td>3.2% (8)</td>
<td>--</td>
</tr>
<tr>
<td>Bleeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-threatening or disabling</td>
<td>2.0% (5)</td>
<td>2.9% (7)</td>
</tr>
<tr>
<td>Major</td>
<td>2.4% (6)</td>
<td>2.4% (6)</td>
</tr>
</tbody>
</table>

Note: 245 patients were evaluable for safety at 30 days (defined as subjects who experience a CEC-adjudicated event through 30 days post-procedure or who were event-free with last follow-up at least 23 days post-procedure).

*Deaths: 1 patient experienced life-threatening bleeding (admitted to secondary hospital, source of bleeding not recorded) and hemodynamic instability leading to circulatory arrest and death; 1 patient died post index procedure following valve embolization and unsuccessful TAV-in-TAV with non-study valve leading to coronary obstruction and procedural myocardial infarction.

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
# ACURATE neo2 PMCF Study

## Essential Outcomes

### Additional Safety Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Discharge</th>
<th>30 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial infarction</td>
<td>0.8% (2)</td>
<td>0.8% (2)</td>
</tr>
<tr>
<td>Acute kidney injury (Stage 2 or 3)</td>
<td>0.0% (0)</td>
<td>--</td>
</tr>
<tr>
<td>Valve malpositioning</td>
<td>1.6% (4)</td>
<td>--</td>
</tr>
<tr>
<td>Repeat procedure for valve-related dysfunction†</td>
<td>0.4% (1)</td>
<td>0.4% (1)</td>
</tr>
<tr>
<td>Prosthetic aortic valve thrombosis‡</td>
<td>0.4% (1)</td>
<td>0.4% (1)</td>
</tr>
<tr>
<td>Prosthetic aortic valve endocarditis</td>
<td>0.0% (0)</td>
<td>0.4% (1)</td>
</tr>
<tr>
<td>Newly implanted permanent pacemaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Among all patients</td>
<td>5.2% (13)</td>
<td>6.1% (15)</td>
</tr>
<tr>
<td>Among pacemaker-naïve patients (N=231)</td>
<td>5.5% (13)</td>
<td>6.5% (15)</td>
</tr>
</tbody>
</table>

Note: 245 patients were evaluable for safety at 30 days (defined as subjects who experience a CEC-adjudicated event through 30 days post-procedure or who were event-free with last follow-up at least 23 days post-procedure)

†ACURATE neo2 embolization, followed by implantation of a non-study valve; surgery was later performed to remove the embolized valve.

‡Occurred in non-study valve, which was implanted subsequent to ACURATE neo2 embolization.
ACURATE neo2 PMCF Study
Essential Outcomes

Independent Echocardiographic Analyses (Central Core Laboratory)

Valve Hemodynamics

<table>
<thead>
<tr>
<th>Time</th>
<th>Mean AV Gradient (mmHg)</th>
<th>Mean Effective Orifice Area (cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>47.6 ± 14.5 (n=240)</td>
<td>0.7 ± 0.2 (n=237)</td>
</tr>
<tr>
<td>Discharge</td>
<td>1.6 ± 0.4 (n=138)</td>
<td>9.7 ± 5.4 (n=192)</td>
</tr>
<tr>
<td>30 Days</td>
<td>1.6 ± 0.4 (n=127)</td>
<td>8.6 ± 3.9 (n=180)</td>
</tr>
</tbody>
</table>

Paravalvular Leak

<table>
<thead>
<tr>
<th>Time</th>
<th>% Evaluable Echocardiograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge/7d (n=171)</td>
<td>0.6% Severe 22.2% Mod-Sev 77.2% Moderate 18.9% Mild 79.2% None/Trace</td>
</tr>
<tr>
<td>30 Days (n=159)</td>
<td>1.9% Severe 18.9% Mod-Sev 79.2% Moderate 79.2% Mild 79.2% None/Trace</td>
</tr>
</tbody>
</table>

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.
ACURATE neo2 PMCF Study
Key Take Aways

• The ACURATE neo2 PMCF study reinforces the competitive enhancement of ACURATE neo2, delivering differentiated benefits to physicians for the lifetime management of their patients.

• The ACURATE neo2 PMCF study demonstrated outstanding ACURATE neo2 Safety and 30-day outcomes:

  ▪ Very high procedural success rate; **98.4%**

  ▪ No patients with >moderate PVL, 98.1% of patients had mild (18.9%) or no/trace (79.2%) PVL.**

  ▪ Best-in-class permanent pacemaker implantation rate; **6.5%†**

  ▪ Single-digit mean gradient; **8.6 mmHg**

  ▪ Low mortality rate; **0.8%**

ACURATE neo2 PMCF PVL data is independent core lab adjudicated.

*At 30-Days
† Among pacemaker-naïve patients. Among all patients, implanted pacemaker rate = 6.1%
Competitive TAVI Trial Outcomes
**Paravalvular Leak Rates at 30 Days**

### 30-Day Paravalvular Leak Rate

<table>
<thead>
<tr>
<th>Valve</th>
<th>None / Trace (%)</th>
<th>Mild (%)</th>
<th>Moderate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACURATE neo2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(PMCF, n=250)</td>
<td>79.2%</td>
<td>18.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td><strong>Evolut R/PRO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(FORWARD PRO, n=629)</td>
<td>59.5%</td>
<td>38.9%</td>
<td>1.6%</td>
</tr>
<tr>
<td><strong>NAVITOR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(PORTICO NG Study, n=120)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SAPIEN 3 ULTRA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(US Registry, n=1324)</td>
<td>80.0%</td>
<td>20.3%</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

**NOTE:** Data not from head-to-head studies. Data differences depicted between these trials may not be directly comparable, statistically significant, or clinically meaningful due to differences in trial protocols, endpoints, and/or patient populations. Data provided for informational purposes only.
Permanent Pacemaker Rates at 30 Days

30-Day Permanent Pacemaker Implantation Rate

- **ACURATE neo2** (PMCF, n=250): 6.5%
- **Evolut R/PRO** (FORWARD PRO, n=629): 21.0%
- **NAVITOR** (PORTICO NG Study, n=120): 15.0%
- **SAPIEN 3 ULTRA** (US Registry, n=1324): 5.8%

NOTE: Data not from head-to-head studies. Data differences depicted between these trials may not be directly comparable, statistically significant, or clinically meaningful due to differences in trial protocols, endpoints, and/or patient populations. Data provided for informational purposes only.

1 Among pacemaker-naïve patients. Among all patients, implanted pacemaker rate = 6.1%
Mean Aortic Gradients Rates at 30 days

CAUTION: In Europe, ACURATE neo2 Aortic Valve System is CE-marked. In the USA, ACURATE neo2 is an investigational device and restricted under federal law to investigational use only. Not available for sale.

NOTE: Data not from head-to-head studies. Data differences depicted between these trials may not be directly comparable, statistically significant, or clinically meaningful due to differences in trial protocols, endpoints, and/or patient populations. Data provided for informational purposes only.

1. Søndergaard L, et al; 30-day Results from the ACURATE neo2 Post-market Study. Presented at PCR LV 2022
2. Smith, D. One year clinical trial results with a next-generation aortic transcatheter heart valve. Presented at EuroPCR conference: May 17-20, 2022