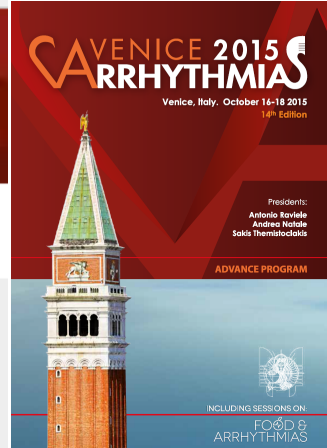


**Friday 16 morning - Cipressi Room**



**12.30-14.00**

**Medtronic Luncheon Panel**

**Insertable cardiac monitors and NOACs: joining forces to prevent AF related strokes**

# **Managing cryptogenic stroke and AF patients using insertable cardiac monitors: results from the INSHIGHTS XT real world study**

**Andrea Ungar, MD, PhD, FESC**

**Syncope Unit, Hypertension Centre  
Geriatric Cardiology and Medicine  
University of Florence, Italy**



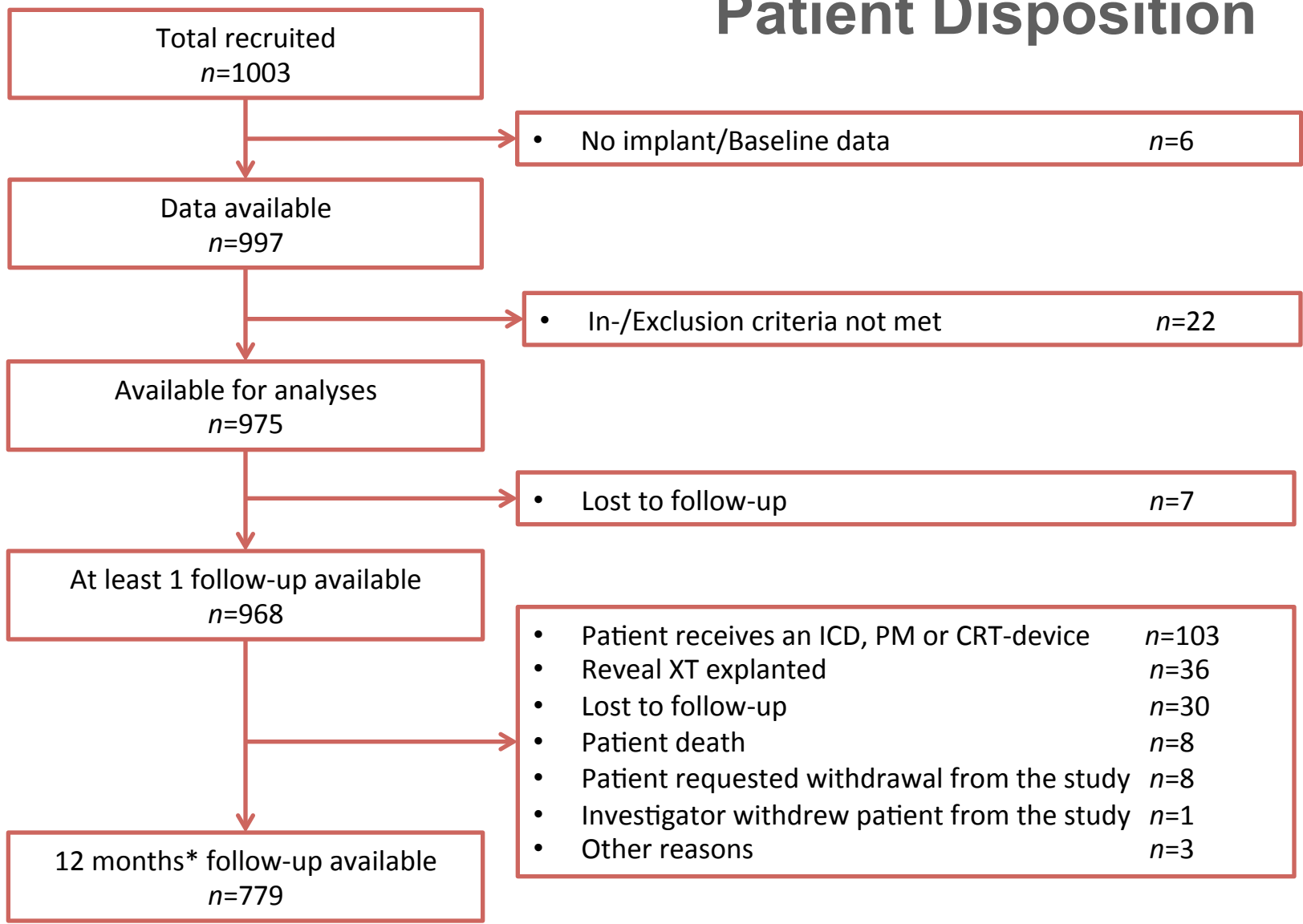
*INDicationS for diaGnosis, ArrhytHmia and  
MoniToring of Reveal XT*

**INSIGHT-XT**

Observational multicentre study that enrolled patients inserted with an **insertable cardiac monitor (ICM)** for arrhythmia diagnosis or monitoring in **real life**

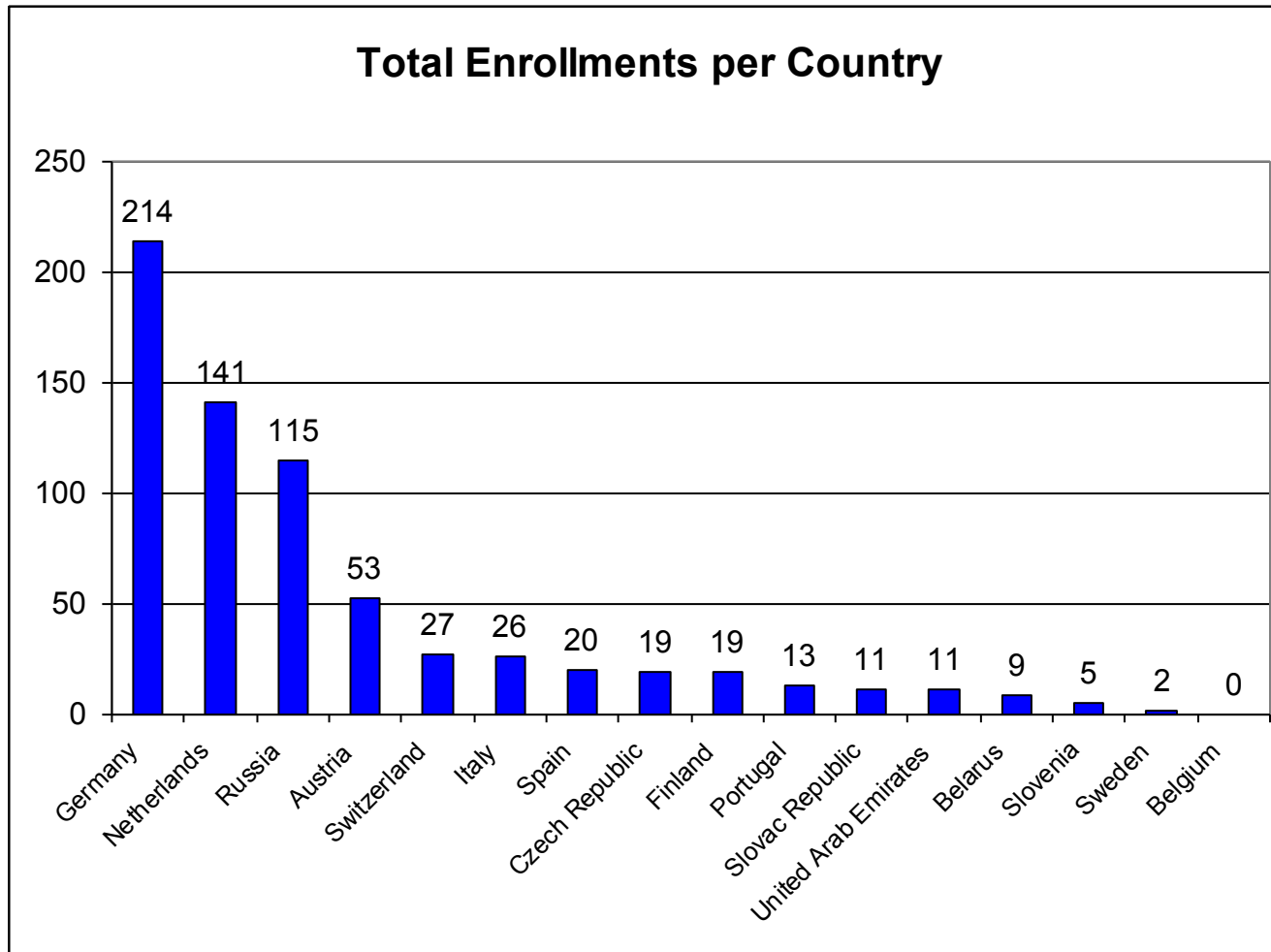
# Patient Disposition

Full population



\* More than 300 days

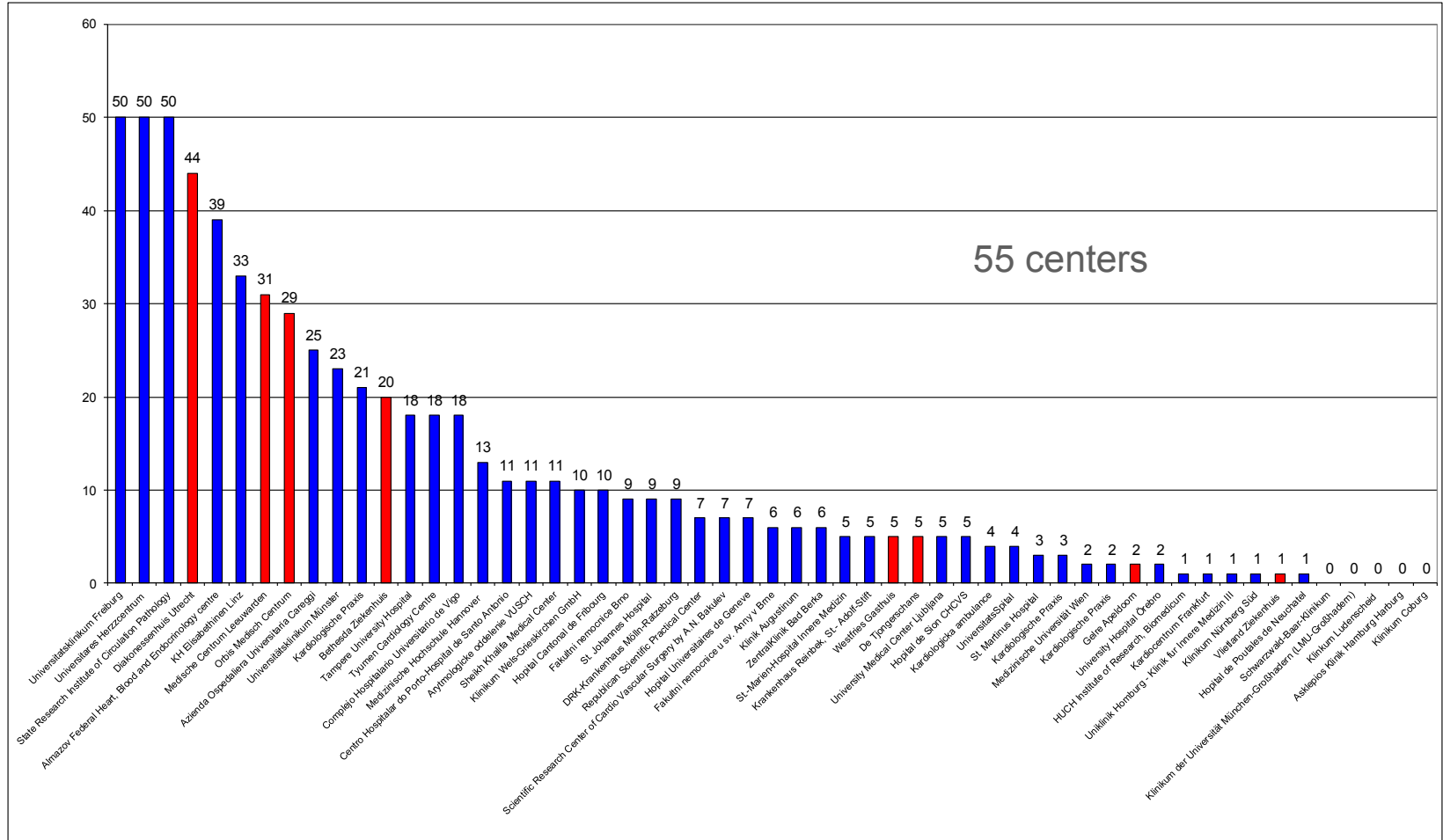
# INSIGHT-XT Enrollment



*INDICATIONS for diAGNOSIS, Arrhythmia and MONITORING of REVEAL XT*

**INSIGHT-XT**

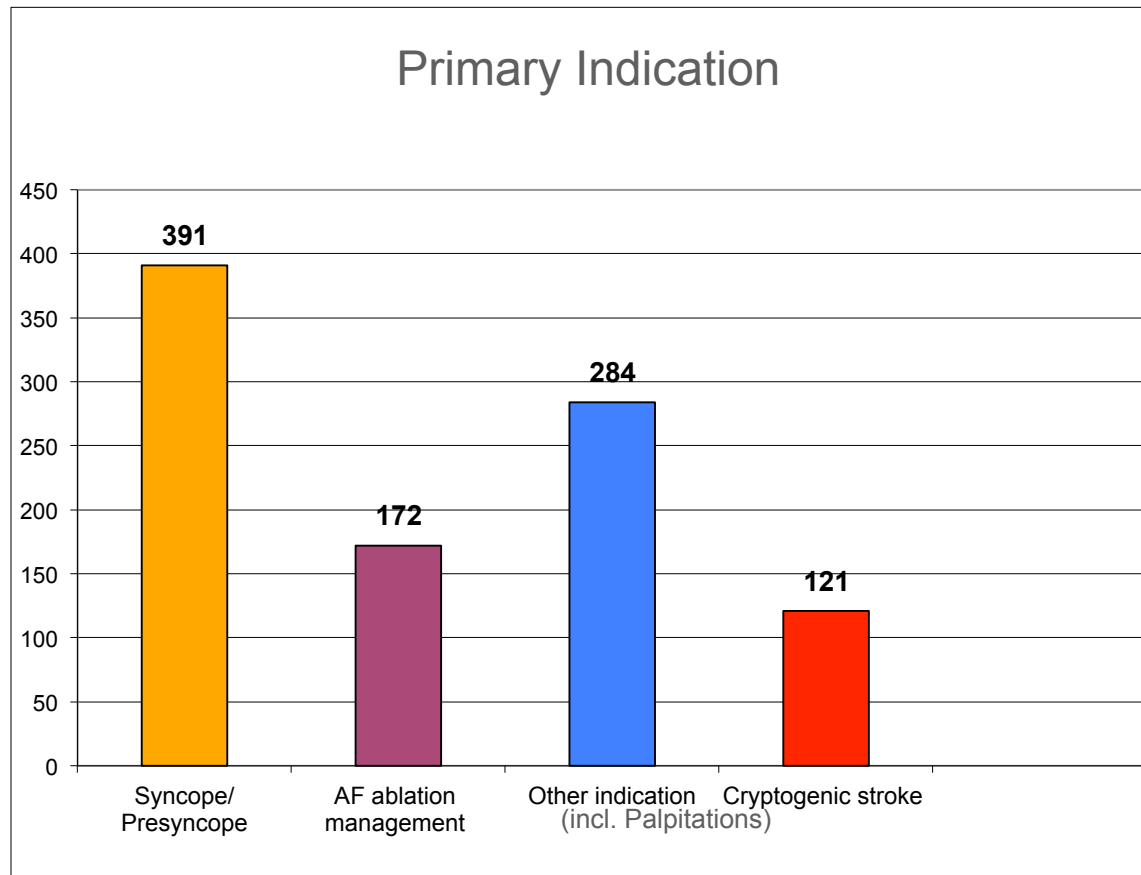
# Enrollments Per Center



**Indications for diaGnosis, ArrhytHmia and MoniToring of Reveal XT**

**INSIGHT-XT**

# 968 INSIGHT-XT patients for indication



# Patients characteristics

| Patient Characteristics                  | Syncope or Pre-syncope<br>(N = 391) | AF patients<br>(N = 327) | Cryptogenic Stroke<br>(N = 121) | Other<br>(N = 129) | Total<br>(N = 968) |
|--|-------------------------------------|--------------------------|---------------------------------|--------------------|--------------------|
| <b>Demographics</b>                      |                                     |                          |                                 |                    |                    |
| Male %, n/Pts                            | 50.1% (196/ 391)                    | 65.7% (220/ 335)         | 52.9% (64/ 121)                 | 47.9% (58/ 121)    | 55.6% (538/ 968)   |
| Age at first implant (years)             | 63.0 ± 16.6                         | 59.9 ± 11.0              | 62.4 ± 13.2                     | 57.5 ± 16.5        | 61.1 ± 14.5        |
| <b>Medical history</b>                   |                                     |                          |                                 |                    |                    |
| AT/AF history %, n/Pts                   | 18.4% (72/ 391)                     | 87.5% (293/ 335)         | 0.0% (0/ 121)                   | 18.2% (22/ 121)    | 40.0% (387/ 968)   |
| Coronary artery disease %, n/Pts         | 6.4% (25/ 391)                      | 7.8% (26/ 335)           | 71.9% (87/ 121)                 | 4.1% (5/ 121)      | 14.8% (143/ 968)   |
| Prior Myocardial Infarction %, n/Pts     | 7.2% (28/ 391)                      | 5.7% (19/ 335)           | 5.0% (6/ 121)                   | 7.4% (9/ 121)      | 6.4% (62/ 968)     |
| Prior Transient Ischemic Attack %, n/Pts | 4.6% (18/ 391)                      | 6.0% (20/ 335)           | 35.5% (43/ 121)                 | 3.3% (4/ 121)      | 8.8% (85/ 968)     |
| <b>Pts</b>                               |                                     |                          |                                 |                    |                    |
| Prior CVA/Stroke %, n/Pts                | 4.6% (18/ 391)                      | 6.3% (21/ 335)           | 71.1% (86/ 121)                 | 3.3% (4/ 121)      | 13.3% (129/ 968)   |
| Hypertension %, n/Pts                    | 60.9% (238/ 391)                    | 68.1% (228/ 335)         | 62.0% (75/ 121)                 | 54.5% (66/ 121)    | 62.7% (607/ 968)   |
| Diabetes %, n/Pts                        | 15.3% (60/ 391)                     | 12.5% (42/ 335)          | 11.6% (14/ 121)                 | 10.7% (13/ 121)    | 13.3% (129/ 968)   |
| Hypercholesterolemia %, n/Pts            | 33.5% (131/ 391)                    | 33.4% (112/ 335)         | 52.9% (64/ 121)                 | 38.0% (46/ 121)    | 36.5% (353/ 968)   |
| CHADS ≥ 3 %, n/Pts                       | 16.4% (64/ 391)                     | 16.8% (55/ 327)          | 67.8% (82/ 121)                 | 14.0% (18/ 129)    | 22.6% (219/ 968)   |
| CHADSVASC ≥ 4 %, n/Pts                   | 31.5% (123/ 391)                    | 26.6% (87/ 327)          | 60.3% (73/ 121)                 | 24.8% (32/ 129)    | 32.5% (315/ 968)   |

***INDICATIONS for diagnosis, Arrhythmia and Monitoring of Reveal XT***

**INSIGHT-XT**

# Patients characteristics

| Patient Characteristics                  | Syncope or Pre-syncope<br>(N = 391) | AF patients<br>(N = 327) | Cryptogenic Stroke<br>(N = 121) | Other<br>(N = 129) | Total<br>(N = 968) |
|--|-------------------------------------|--------------------------|---------------------------------|--------------------|--------------------|
| <b>Demographics</b>                      |                                     |                          |                                 |                    |                    |
| Male %, n/Pts                            | 50.1% (196/ 391)                    | 65.7% (220/ 335)         | 52.9% (64/ 121)                 | 47.9% (58/ 121)    | 55.6% (538/ 968)   |
| Age at first implant (years)             | 63.0 ± 16.6                         | 59.9 ± 11.0              | 62.4 ± 13.2                     | 57.5 ± 16.5        | 61.1 ± 14.5        |
| <b>Medical history</b>                   |                                     |                          |                                 |                    |                    |
| AT/AF history %, n/Pts                   | 18.4% (72/ 391)                     | 87.5% (293/ 335)         | 0.0% (0/ 121)                   | 18.2% (22/ 121)    | 40.0% (387/ 968)   |
| Coronary artery disease %, n/Pts         | 6.4% (25/ 391)                      | 7.8% (26/ 335)           | 71.9% (87/ 121)                 | 4.1% (5/ 121)      | 14.8% (143/ 968)   |
| Prior Myocardial Infarction %, n/Pts     | 7.2% (28/ 391)                      | 5.7% (19/ 335)           | 5.0% (6/ 121)                   | 7.4% (9/ 121)      | 6.4% (62/ 968)     |
| Prior Transient Ischemic Attack %, n/Pts | 4.6% (18/ 391)                      | 6.0% (20/ 335)           | 35.5% (43/ 121)                 | 3.3% (4/ 121)      | 8.8% (85/ 968)     |
| Prior CVA/Stroke %, n/Pts                | 4.6% (18/ 391)                      | 6.3% (21/ 335)           | 71.1% (86/ 121)                 | 3.3% (4/ 121)      | 13.3% (129/ 968)   |
| Hypertension %, n/Pts                    | 60.9% (238/ 391)                    | 68.1% (228/ 335)         | 62.0% (75/ 121)                 | 54.5% (66/ 121)    | 62.7% (607/ 968)   |
| Diabetes %, n/Pts                        | 15.3% (60/ 391)                     | 12.5% (42/ 335)          | 11.6% (14/ 121)                 | 10.7% (13/ 121)    | 13.3% (129/ 968)   |
| Hypercholesterolemia %, n/Pts            | 33.5% (131/ 391)                    | 33.4% (112/ 335)         | 52.9% (64/ 121)                 | 38.0% (46/ 121)    | 36.5% (353/ 968)   |
| CHADS ≥ 3 %, n/Pts                       | 16.4% (64/ 391)                     | 16.8% (55/ 327)          | 67.8% (82/ 121)                 | 14.0% (18/ 129)    | 22.6% (219/ 968)   |
| CHADSVASC ≥ 4 %, n/Pts                   | 31.5% (123/ 391)                    | 26.6% (87/ 327)          | 60.3% (73/ 121)                 | 24.8% (32/ 129)    | 32.5% (315/ 968)   |

***INDICATIONS for diagnosis, Arrhythmia and Monitoring of Reveal XT***

**INSIGHT-XT**



# Patients characteristics

| Medications                      | Syncope or Pre-syncope<br>(N = 391) | AF patients<br>(N = 327) | Cryptogenic Stroke<br>(N = 121) | Other<br>(N = 129) | Total<br>(N = 968) |
|----------------------------------|-------------------------------------|--------------------------|---------------------------------|--------------------|--------------------|
| <b>Antiarrhythmic drugs</b>      |                                     |                          |                                 |                    |                    |
| Antiarrhythmics (overall), n/Pts | 41.9% (164/ 391)                    | 87.5% (286/ 327)         | 31.4% (38/ 121)                 | 57.4% (74/ 129)    | 58.1% (562/ 968)   |
| AA Class I, n/Pts                | 4.1% (16/ 391)                      | 21.7% (71/ 327)          | 1.7% (2/ 121)                   | 11.6% (15/ 129)    | 10.7% (104/ 968)   |
| Beta-blockers, n/Pts             | 34.5% (135/ 391)                    | 54.7% (179/ 327)         | 29.8% (36/ 121)                 | 48.8% (63/ 129)    | 42.7% (413/ 968)   |
| Sotalol, n/Pts                   | 2.0% (8/ 391)                       | 11.3% (37/ 327)          | 0.8% (1/ 121)                   | 2.3% (3/ 129)      | 5.1% (49/ 968)     |
| AA Class III, n/Pts              | 4.1% (16/ 391)                      | 28.4% (93/ 327)          | 0.8% (1/ 121)                   | 0.8% (1/ 129)      | 11.5% (111/ 968)   |
| Amiodaron, n/Pts                 | 3.6% (14/ 391)                      | 22.9% (75/ 327)          | 0.8% (1/ 121)                   | 0.8% (1/ 129)      | 9.4% (91/ 968)     |
| Other AA Class III, n/Pts        | 0.5% (2/ 391)                       | 5.8% (19/ 327)           | 0.0% (0/ 121)                   | 0.0% (0/ 129)      | 2.2% (21/ 968)     |
| <b>OAC or Antiplatelets</b>      |                                     |                          |                                 |                    |                    |
| OAC or Antiplatelets, n/Pts      | 51.2% (200/ 391)                    | 85.6% (280/ 327)         | 97.5% (118/ 121)                | 54.3% (70/ 129)    | 69.0% (668/ 968)   |
| OAC, n/Pts                       | 12.0% (47/ 391)                     | 64.2% (210/ 327)         | 5.0% (6/ 121)                   | 13.2% (17/ 129)    | 28.9% (280/ 968)   |
| Antiplatelets, n/Pts             | 40.2% (157/ 391)                    | 27.5% (90/ 327)          | 93.4% (113/ 121)                | 42.6% (55/ 129)    | 42.9% (415/ 968)   |

**IndicationS for diaGnosis, ArrhytHmia and MoniToring of Reveal XT**

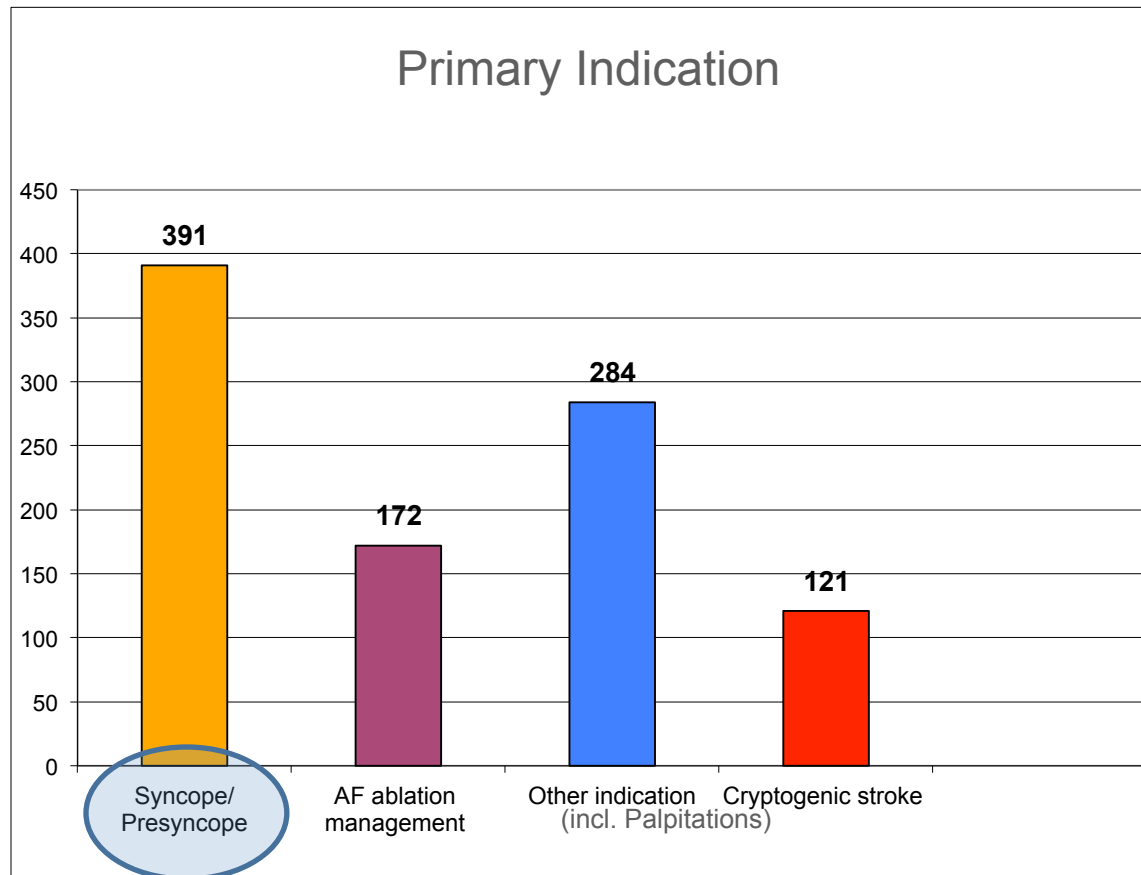
**INSIGHT-XT**

# Patients characteristics

| Symptoms at baseline                        | Syncope or Pre-syncope<br>(N = 391) | AF patients<br>(N = 327) | Cryptogenic Stroke<br>(N = 121) | Other<br>(N = 129) | Total<br>(N = 968) |
|---|-------------------------------------|--------------------------|---------------------------------|--------------------|--------------------|
| Any symptom*, n/Pts                         | 97.2% (380/ 391)                    | 91.1% (298/ 327)         | 33.9% (41/ 121)                 | 93.8% (121/ 129)   | 86.8% (840/ 968)   |
| Palpitations, n/Pts                         | 20.7% (81/ 391)                     | 63.6% (208/ 327)         | 12.4% (15/ 121)                 | 69.0% (89/ 129)    | 40.6% (393/ 968)   |
| Dizziness/Lightheaded/Pre-syncope,<br>n/Pts | 33.0% (129/ 391)                    | 17.7% (58/ 327)          | 13.2% (16/ 121)                 | 38.0% (49/ 129)    | 26.0% (252/ 968)   |
| Syncope, n/Pts                              | 84.4% (330/ 391)                    | 5.8% (19/ 327)           | 6.6% (8/ 121)                   | 27.9% (36/ 129)    | 40.6% (393/ 968)   |
| Dyspnea, n/Pts                              | 10.2% (40/ 391)                     | 42.2% (138/ 327)         | 5.8% (7/ 121)                   | 27.1% (35/ 129)    | 22.7% (220/ 968)   |
| Fatigue, n/Pts                              | 8.4% (33/ 391)                      | 41.6% (136/ 327)         | 2.5% (3/ 121)                   | 18.6% (24/ 129)    | 20.2% (196/ 968)   |
| Chest pain, n/Pts                           | 9.5% (37/ 391)                      | 16.8% (55/ 327)          | 3.3% (4/ 121)                   | 17.8% (23/ 129)    | 12.3% (119/ 968)   |

| FU duration  | Syncope or Pre-syncope<br>(N = 391) | AF patients<br>(N = 327) | Cryptogenic Stroke<br>(N = 121) | Other<br>(N = 129) | Total<br>(N = 968) |
|--|-------------------------------------|--------------------------|---------------------------------|--------------------|--------------------|
| Follow-up duration<br>[months, Median (QI-<br>QIII)] | 15 (10 - 23)                        | 16 (12 - 26)             | 13 (12 - 13)                    | 15 (12 - 24)       | 14 (11 - 23)       |

# 968 INSIGHT-XT patients for indication



*INDICATIONS for diAGNOSIS, ArrhytHMIA and MoniToring of Reveal XT*

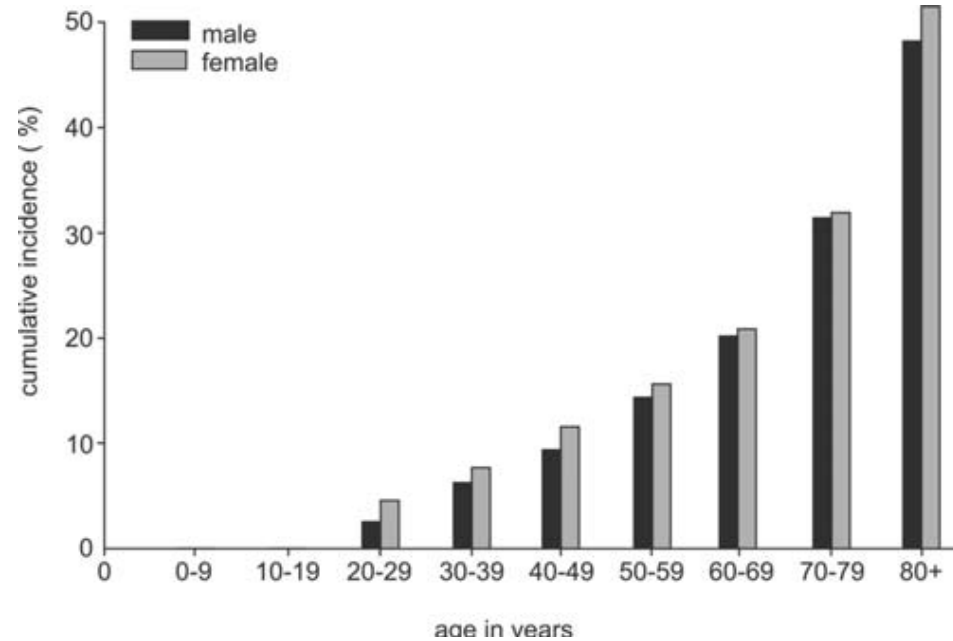
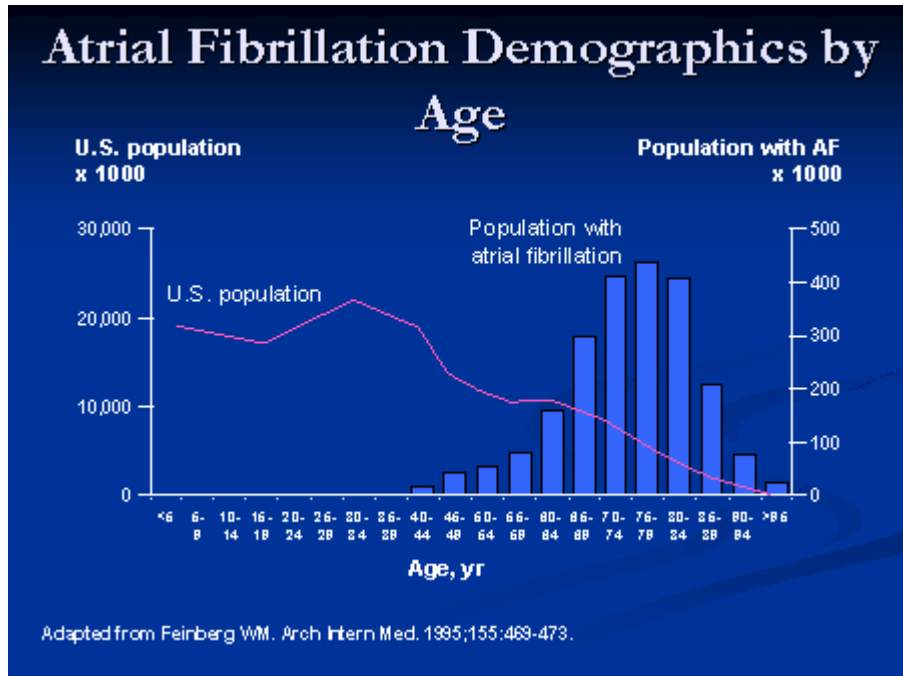
**INSIGHT-XT**

*INdicationS for diaGnosis, ArrhytHmia and  
MoniToring of Reveal XT*

**INSIGHT-XT**

**Atrial fibrillation in patients implanted  
with Reveal-XT for Syncope**

# AF in Syncope - Background



Cumulative incidence of reflex syncope in the Framingham study. All participants in this study were older than 20 years and episodes of syncope were followed prospectively (revised after Soteriades et al.)

**In patients older than 50 the probability that these 2 clinical manifestations coexist is not negligible**

Soteriades et al, **INCIDENCE AND PROGNOSIS OF SYNCOPE**, N Engl J Med 2002;347:878-85

# Interaction AF and Syncope

1. Drop in BP at the onset of AF due to high ventricular rate.
2. Cardiac pause at the end of the AF episode.
3. AF onset triggering a vasovagal reflex.
4. AF onset triggered by vasovagal syncope.

# Materials and Methods

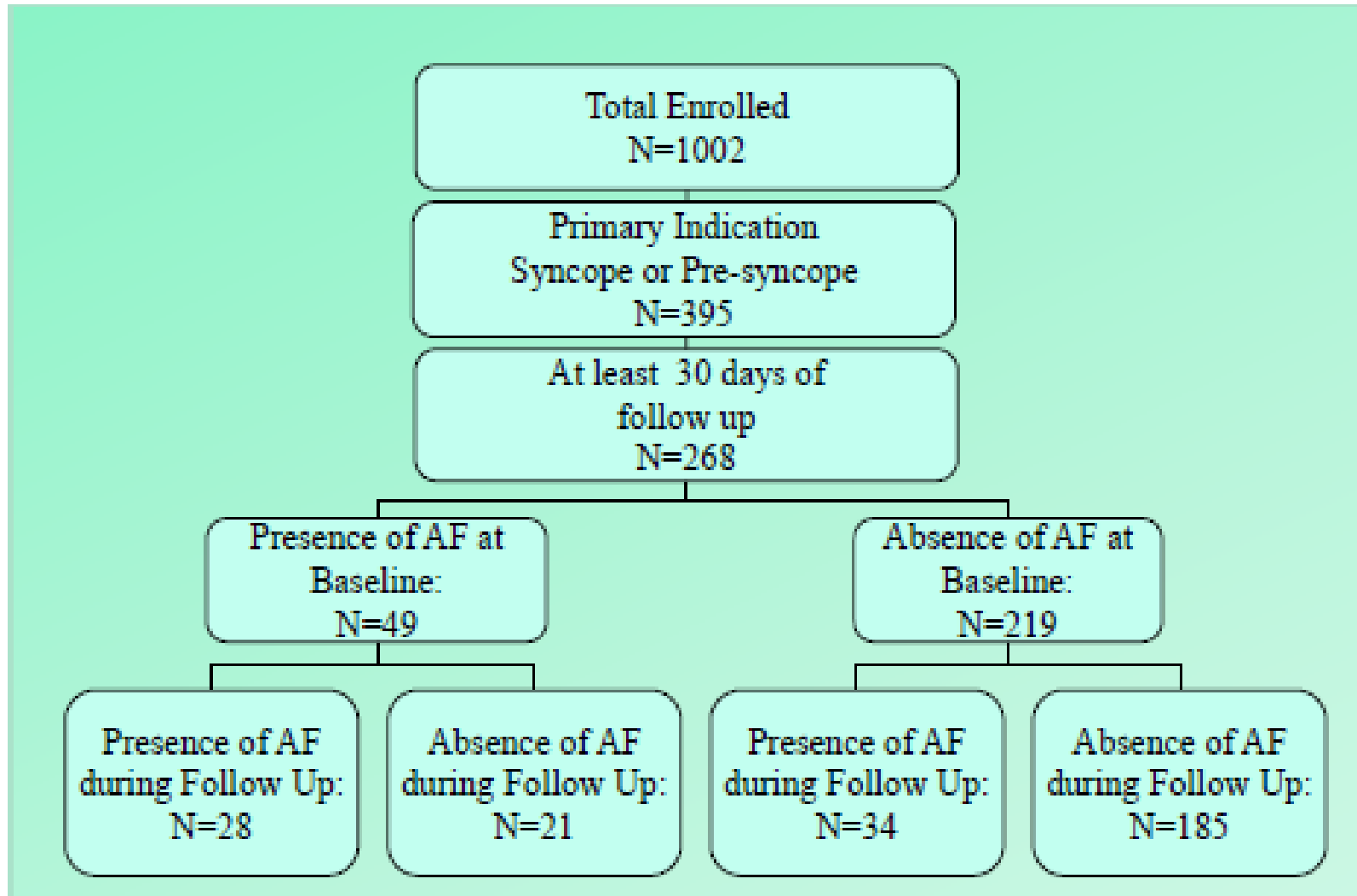
- 968 patients from 56 study sites
- Patients received Reveal XT (with AF detection capabilities) irrespective of the clinical indication
- **395 patients were indicated for continuous monitoring because of unexplained syncope**
- Primary indications and presence of atrial fibrillation were assigned by the investigators

# Results - Baseline

| Baseline Characteristics of Syncope and Pre-Syncope Cohort |       |
|--|-------|
| N  | 395   |
| Male   | 50%   |
| Age, years   | 63±17 |
| History of Atrial Fibrillation                             | 19%   |
| Coronary Artery Disease                                    | 6%    |
| Prior Myocardial Infarction                                | 7%    |
| Prior CVA/Stroke   | 4%    |
| Valvular Disease   | 11%   |
| Heart Failure (NYHA ≥ II)                                  | 8%    |
| Hypertension   | 61%   |
| Diabetes   | 15%   |
| Statins  | 35%   |
| Beta Blockers  | 35%   |
| Other Antiarrhythmics                                      | 6%    |
| Antiplatelets  | 40%   |
| Oral anticoagulation                                       | 12%   |



# Results – AF prevalence



# Results – AF prevalence

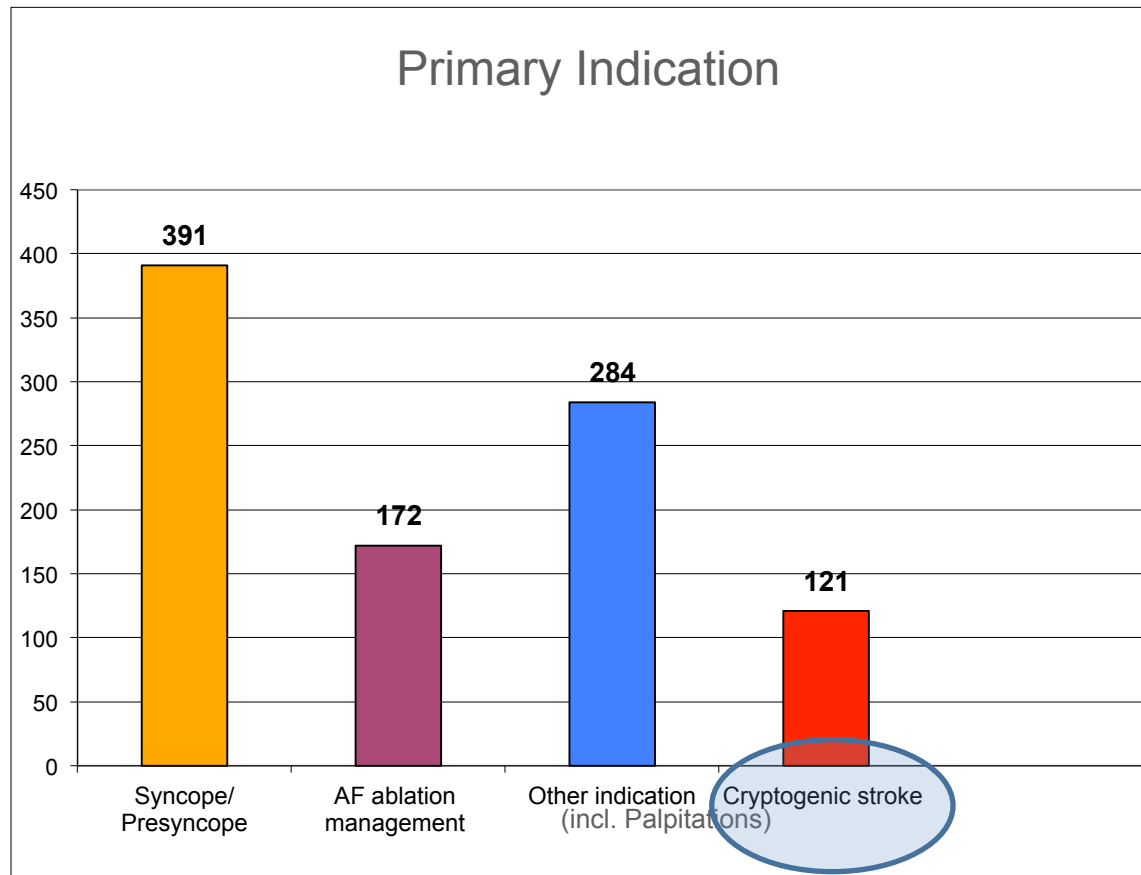
- **18% of the syncope patients had a history of AF at study enrollment and 57% (n=28) of these had AF during the study**
- **82% of the syncope patients had no prior history of AF at enrollment and 16% (n=34) of these had newly diagnosed AF during the study**

# Results – Follow up

**The mean follow up time was 12 months, during follow up:**

- **76 (19%) patients have had a therapeutic device implanted**
- **4 (1%) patients have experienced a stroke or TIA (in 3 of these AF was detected during follow-up and OAC was started)**
- **17 (4%) patients were started on OAC**

# 968 INSIGHT-XT patients for indication

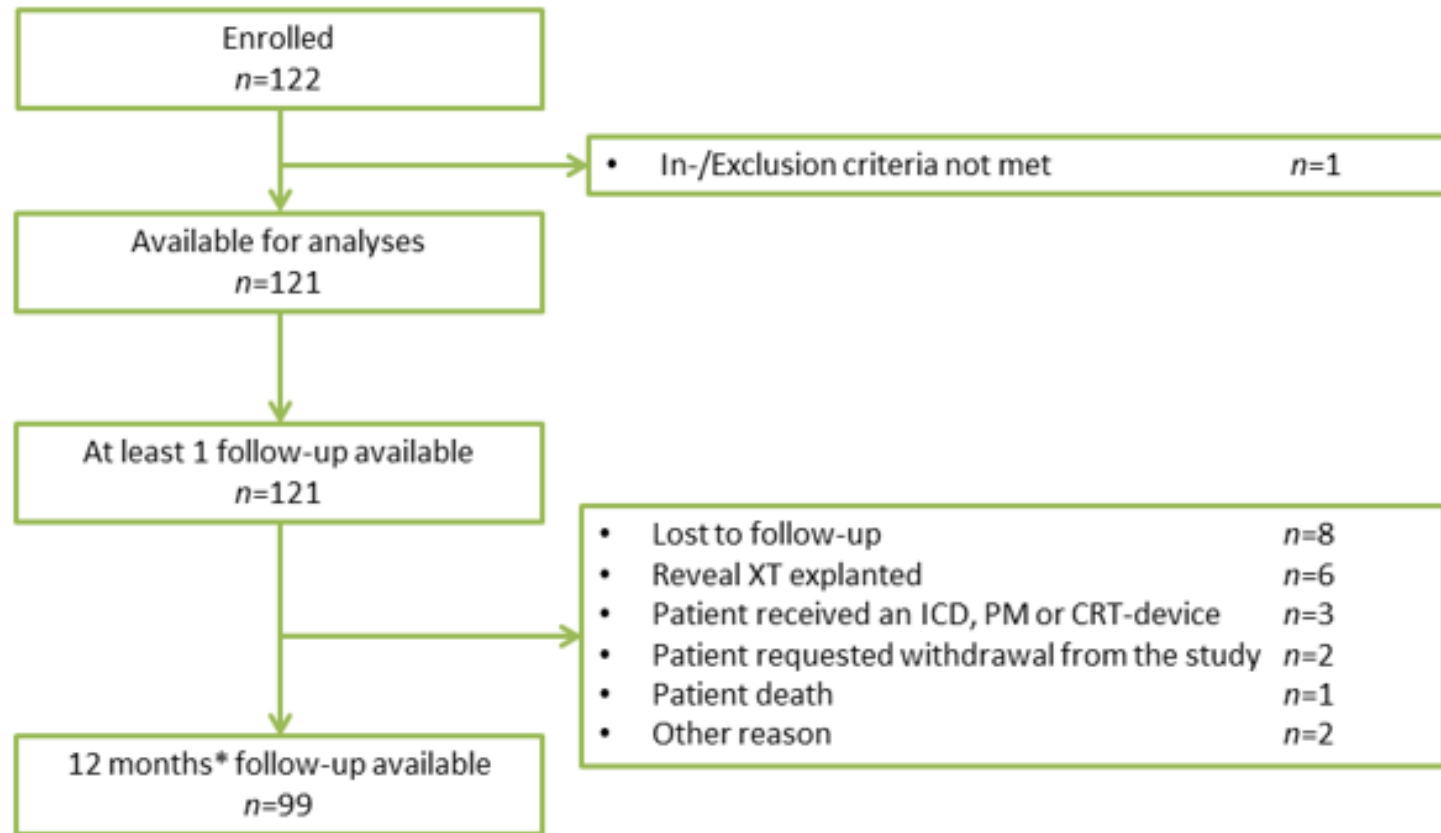


*INDICATIONS for diAGNOSIS, ArrhytHMIA and MoniToring of Reveal XT*

***INSIGHT-XT***

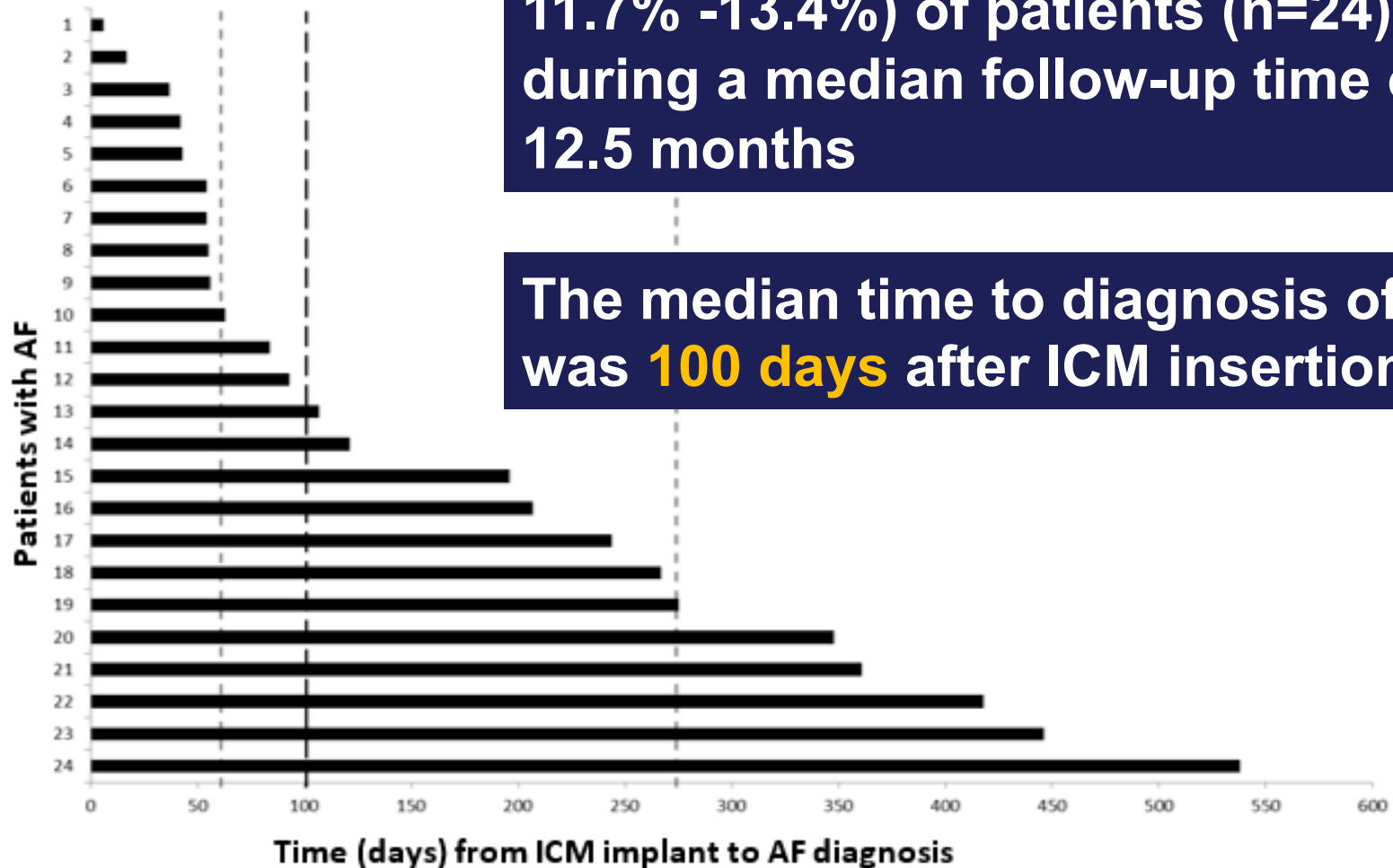
# Managing cryptogenic stroke patients using insertable cardiac monitors: Results of the **INSIGHT XT** study

Figure 1.



\* More than 300 days

# Managing cryptogenic stroke patients using insertable cardiac monitors: Results of the **INSIGHT XT** study



AF was observed in **19.8%** (1Q-3Q: 11.7% -13.4%) of patients (n=24) during a median follow-up time of 12.5 months

The median time to diagnosis of AF was **100 days** after ICM insertion

## Baseline demographics, medical history

|   | All<br>(n=121) | no AF<br>during study<br>(n=97) | AF during<br>study<br>(n=24) | p-<br>value |
|---|----------------|---------------------------------|------------------------------|-------------|
| Demographics                                      |                |                                 |                              |             |
| Age (years), <u>mean±SD</u>                       | 62.4±13.1      | 61.5±13.5                       | 65.8±11.5                    | 0.3         |
| Male, n (%)                                       | 64 (52.9%)     | 52 (53.6%)                      | 12 (50.0%)                   | 0.8         |
| Medical history                                   |                |                                 |                              |             |
| Diabetes, n (%)                                   | 14 (11.6%)     | 11 (11.3%)                      | 3 (12.5%)                    | 1.0         |
| Heart failure, n (%)                              | 1 (0.8%)       | 1 (1.0%)                        | 0 (0.0%)                     | 1.0         |
| Hypertension, n (%)                               | 75 (62.0%)     | 56 (57.7%)                      | 19 (79.2%)                   | 0.053       |
| CHADS <sub>2</sub> , mean (SD)                    | 2.9 (0.8)      | 2.9 (0.8)                       | 3.1 (0.7)                    | 0.2         |
| CHA <sub>2</sub> DS <sub>2</sub> -VASc, mean (SD) | 4.0 (1.3)      | 3.9 (1.3)                       | 4.5 (1.1)                    | 0.032       |
| <u>Valvular</u> Disease, n (%)                    | 7 (5.8%)       | 6 (6.2%)                        | 1 (4.2%)                     | 1.0         |
| History of palpitations, n (%)                    | 15 (12.4%)     | 9 (9.3%)                        | 6 (25.0%)                    | 0.076       |

**IndicationS for diaGnosis, ArrhytHmia and MoniToring of Reveal XT**

**INSIGHT-XT**

## Anti-thrombotic medication

|                                       | All<br>(n=121) | no AF<br>during study<br>(n=97) | AF during<br>study<br>(n=24) | p-<br>value |
|---------------------------------------|----------------|---------------------------------|------------------------------|-------------|
| Anti-thrombotic medication            |                |                                 |                              |             |
| Anti-platelets only, n (%)            | 113 (93.4%)    | 92 (94.8%)                      | 21 (87.5%)                   | 0.2         |
| OAC only, n (%)                       | 6 (5.0%)       | 4 (4.1%)                        | 2 (8.3%)                     | 0.3         |
| Both anti-platelets and OAC, n (%)    | 1 (0.8%)       | 1 (1.3%)                        | 0 (0.0%)                     | 0.8         |
| Neither anti-platelets nor OAC, n (%) | 3 (2.5%)       | 2 (2.1%)                        | 1 (4.2%)                     | 0.5         |

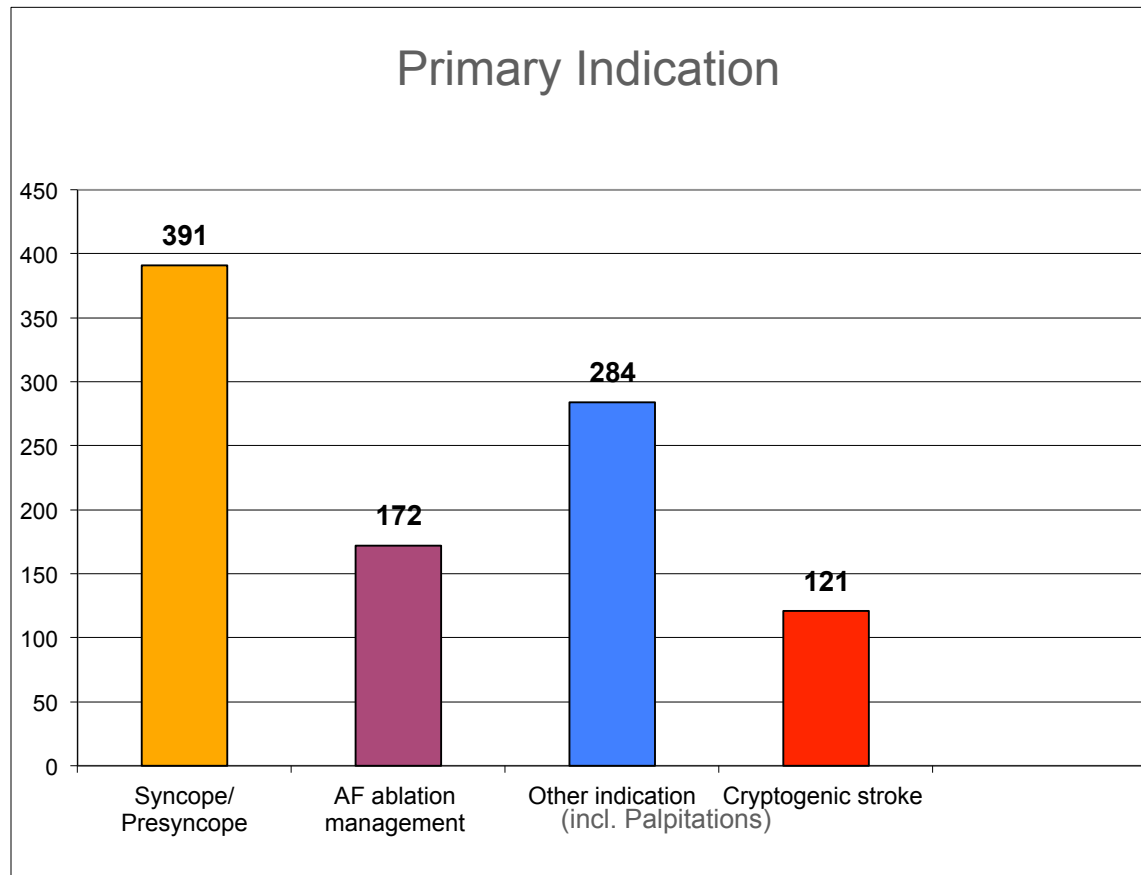


## Anti-thrombotic medication at last follow-up in patients diagnosed with AF

| Anti-thrombotic medication, n (%) | Patients with AF (n=24) |
|-----------------------------------|-------------------------|
| Anti-platelets only               | 7 (29.2%)               |
| OAC only                          | 13 (54.2%)              |
| Both anti-platelets and OAC       | 4 (16.7%)               |
| Neither anti-platelets nor OAC    | 0 (0.0%)                |

**OAC therapy was started in 62.5%** of the patients who were diagnosed with AF during the study and **all** patients with AF received some type of anti-thrombotic medication

# 968 INSIGHT-XT patients for indication



*INdicationS for diaGnosis, ArrhytHmia and MoniToring of Reveal XT*

**INSIGHT-XT**

**INSIGHT-XT**

**Preliminary data on diagnosis in total population**

**DIAGNOSIS**

1. VT
2. AF/AFlutter (incl. AF, AFlutter, Brady-Tachy)
3. AT (incl. AT and AVNRT)
4. Sinus Tachycardia
5. Sinus Arrest/Bradycardia
6. Higher grade AV block (incl. 2nd and 3rd degree AV block)

# INDICATIONS for diAGNOSIS, ArrhythMia and MoniToring of Reveal XT

## INSIGHT-XT

### Preliminary data on total population

| Patients with diagnosis by reveal-xt |                           |   |                               |   |                         |
|--------------------------------------|---------------------------|---|-------------------------------|---|-------------------------|
|                                      | Overall<br>% (n)<br>N=968 | Syncope or<br>Pre-syncope<br>% (n)<br>N=391 | AF patients<br>% (n)<br>N=327 | Cryptogenic<br>Stroke<br>% (n)<br>N=121 | Other<br>% (n)<br>N=129 |
| No diagnosis during FU               | 36.9% (357)               | 36.6% (143)                                 | 27.5% ( 90)                   | 62.8% ( 76)                             | 37.2% ( 48)             |
| At least 1 diagnosis during FU       | 63.1% (611)               | 63.4% (248)                                 | 72.5% (237)                   | 37.2% ( 45)                             | 62.8% ( 81)             |

In **63.1%** of patients enrolled Reveal-XT obtain **clinical useful** data for the management of the patients

1. ILR indication in **real life** are Syncope, AF management, Cryptogenetic stroke and anti-arrhythmic drug management
2. In **Syncope** patients AF was newly detected in 16% of patients in one year follow-up
3. In **Cryptogenetic** stroke incidence of AF was 19.8% during a year follow-up
4. In **63%** of the patients clinical management changes after ILR-related diagnosis
5. Insight-xt showed real life **clinical usefulness** of ILR



**Thank you for your attention**