Multinational Experience with a High-Density Grid-Style Catheter

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Introduction: A high-density grid-style mapping catheter received CE Mark in December 2017, followed by regulatory clearances in the United States and Japan later in 2018. It is a closed-frame, four spline catheter with electrodes configured in a grid pattern. Electrode spacing is equidistant along and across splines, enabling adjacent bipolar EGMs to be recorded in two dimensions simultaneously (HD Wave).

Methods: To characterize and compare the utilization of this high-density catheter and the HD Wave technology across multiple geographies with diverse patient demographics. Self-reported procedural data were collected in cases utilizing this high-density catheter during the initial phases of commercialization in the US, Europe, and Japan. Recorded procedural characteristics included electrode configuration and indication for mapping.

Result: Procedural data was collected in 1,537 cases across 178 centers in Europe, US, and Japan. A total of 13 indications for mapping were represented, including AF, VT, and atypical flutter (Table 1). The HD Wave technology, which exclusively samples data from electrodes with adjacent orthogonal bipoles, was used in 87.3% of cases in the United States; 58.1% in Europe and 88.1% in Japan.

Conclusion: Each geography reported utilization of this high-density mapping catheter in a wide variety of atrial and ventricular arrhythmias. Across all geographies, the majority of atrial and ventricular cases utilized a novel configuration which samples EGMs in two dimensions simultaneously.