“Under the microscope”: Infective endocarditis in Poland — mind the gap

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“Under the microscope”: Infective endocarditis in Poland — mind the gap

**Short title**: The POL-ENDO: Preliminary data

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Infective endocarditis (IE) remains a significant public health challenge with an estimated incidence of 14 cases per 100 000 of the population each year [1]. In developed countries the epidemiology of IE has changed significantly, with an increasing use of intra-cardiac electronic devices (ICEDs), increasing life expectancy and increasing intravenous drug use [2, 3]. *Staphylococcus aureus* is now the most prevalent cause of IE (~25%–30%) followed by viridans group *streptococci* (~20%) and *enterococci* (~10%) [4]. Despite an increasing awareness of IE and access to advanced imaging modalities, mortality rates remain high at 30% at 30 days [5, 6].

In this issue of the *Polish Heart Journal*, Orzech et al. [7] compared data from 880 patients with IE recruited from 134 Polish hospitals between August 2022 and August 2023 (POL-ENDO registry), to 3116 patients from 156 hospitals in the European Endocarditis registry (EURO-ENDO)
[8]. There are several important findings from this work. Firstly, the authors observed that Polish IE patients were older, more co-morbid and had an increased rate intra-cardiac devices in situ. Secondly, native valve IE (NVIE) occurred more commonly (82.3% vs. 56.6%), and prosthetic valve IE (PVIE) less commonly (20.3% vs. 30.1%). Thirdly, there was increased reliance on ultrasonography to identify IE and its local complications in Poland with alternative imaging less often performed. Finally, recurrent IE was twice as common in Polish patients, heart failure occurred more frequently, in-patient surgery was less often performed (36.9% vs. 51.2%) and in-patient mortality was higher (21.0% vs. 17.0%) when compared to the EURO-ENDO registry data.

The authors should be congratulated on their efforts to understand the landscape of IE demographics and treatment outcomes across Poland when compared to other available cohorts of data. Notwithstanding some limitations which the authors acknowledge a few notable absences exist within the data presented that may shed some light on the differences observed.

In the management of patients with native heart valve disease there is now an established role for specialist heart valve clinics to provide surveillance and lifelong care to these patients. One of the functions of these clinics is to provide lifestyle advice and guidance pertaining to the prevention of endocarditis [9]. This namely being various red flag signs for patients to be aware of and the need for regular annual dental checks and visits to dental hygienists. As the role of specialist heart valve clinics has reached eminence in international guidelines for the treatment and management of heart valve disease, it is unknown whether patients who ultimately presented with NVIE in the POL-ENDO registry were under the preexisting care of a dedicated heart valve clinic before the index IE event. Given that 880 patients were reported in the registry from 156 hospitals (average of 6 cases per site) there is also likely to have been significant heterogeneity in native valve disease care and IE prevention advice prior to the IE episode. Furthermore, the current manuscript does not explore the potential reasons behind the higher rates of recurrent IE. Were patients seen in a specialist heart valve clinic for post-endocarditis surveillance at 1 month, 3 months, 6 months and 1 year and advice given regarding the use of prophylactic antibiotics for subsequent significant dental treatments?

It is altogether not surprising that transthoracic and transesophageal echocardiography were the principal imaging modalities used to detect endocardial involvement in in the POL-ENDO patients. Echocardiography along with microbiological and clinical examination remain the cornerstone of establishing a diagnosis of endocarditis [10–12]. Nevertheless, the rates of additional imaging use were less than in the EURO-ENDO registry [8] and the proportion of “possible IE” was high at almost 40%. With the current 2023 ESC Guidelines reinforcing the value of advanced imaging (computed tomography [CT] and 18F-fluorodeoxyglucose positron emission tomography [18F FDG-PET] — class 1B) [9] it is likely that a quicker and firmer diagnoses of IE would have been reached for a proportion of patients had this been accessible. Although access to 18F FDG-PET CT remains
challenging even in specialist centres, the early use of CT/magnetic resonance imaging for NVIE to evaluate for paravalvular complications, septic emboli, brain, and spinal involvement would perceivably have resulted in less uncertainty as to a diagnosis of IE [13, 14]. This in turn would have ostensibly facilitated earlier access to multidisciplinary team care, a reduction in complication rates, clearer guideline-based indication for surgery, earlier cardiac surgery, and a reduced mortality. As the authors highlight, the low rates of reported cardio-embolism (5.5%) were likely due to a failure to systematically detect sub-clinical events which may have been averted with a more systematic and liberal use of advanced imaging [9].

A worthwhile addition to the current work would have more crystalline data on the structure of IE care delivery in Poland. It remains uncertain as to how and if this was standardized, and whether the model of care utilised impacted on patient clinical outcomes. For instance, it is recommended that IE care should be coordinated within regions by a dedicated team that resides at a specialist centre [9]. This “Infective Endocarditis” team should be comprised of infectious disease specialists, cardiologists with a specialist interest in heart valve disease/cardiac imaging, cardiac surgeons, and cardiac device specialists. There should be ready access to advanced imaging with cardiac CT, magnetic resonance imaging, 18F FDG-PET and access to specialist spinal and neurosurgical teams to deal with relevant complications [9]. Although uncomplicated IE can often be managed locally, one would still advocate a discussion of all cases on a weekly basis with the specialist team to ensure appropriate antimicrobial therapy, its duration and the optimal timing of cardiac surgery where indicated. The current manuscript provides little insight as to how suspected or confirmed IE cases integrated into specialist regional centres. Were for instance all cases with complicated IE with *Staphylococcus aureus*, CIEDs, congenital heart disease, severe valve incompetence, structural destruction (abscess, perforation, or fistula formation), heart failure, culture negative endocarditis, and patients with embolic and neurologic complications transferred to a specialist endocarditis centre? If so in what time frame did this occur? In the absence of this data, it remains uncertain as to whether the model of care delivery could be enhanced to improve clinical outcomes. Easier access to advanced imaging and more regular specialist team discussions would otherwise be expected to enable a quicker confirmation of “definite endocarditis”, earlier guideline-indicated surgical intervention and an anticipated reduction in mortality of approximately 50% [15].

In conclusion, Orzech et al. [7] demonstrate the demographic makeup of patients who acquire IE in Poland compared to the rest of Europe. They also provide an invaluable snapshot as to management and differing clinical outcomes of these patients. These data provide a timely reminder to “mind the gap”. There is an emerging importance of a wholistic approach to IE management. This extends from patient education and preventative strategies in high-risk patients, to enhanced access
to imaging and structures of regional and national care that involve specialist endocarditis team involvement.

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