

Frequent attenders to multiple emergency departments in Singapore

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The problem of overcrowding, of which access block is one of the main causes, continues to plague emergency departments (EDs) worldwide.¹ Some of its negative effects include adverse impact on patient safety, medical errors and staff burnout. In addition, high volume of patients waiting to be seen (ED input) exacerbates overcrowding. Frequent attenders (FAs), defined as those having 4 or more visits to the ED per calendar year,² are known to utilise incommensurate amount of resources and drive up ED input.³ The recognition of this issue prompted The Royal College of Emergency Medicine in the UK to publish a best practice guideline and recommendations to manage FAs.⁴ Although numerous papers have been published from single-centre EDs to better understand the characteristics of these patients, several statewide studies highlighted the possibility for underestimation of the magnitude of the problem as FAs may have the propensity to visit multiple EDs in the same region.

In this issue of the *Annals*, Pek et al. characterised FAs at multiple Singapore public hospital EDs and compared them to those who only attend a single ED frequently.⁵ The authors benefited from Singapore being an island nation, which enabled a retrospective analysis of nationwide ED de-identified electronic health database between 2006 and 2018. This is the longest longitudinal study on FAs in Singapore conducted thus far from a large database. They introduced a novel concept of “mixed” FAs—those who attend single and multiple EDs in different calendar years. This categorisation was made to anticipate the likelihood of variability in ED attendance patterns among these patients—which were indeed shown in some of the results—versus FAs of multiple EDs and single ED. The authors discovered that about half of FAs visited multiple EDs (38.9%) or were mixed FAs (12.6%), who would have otherwise been missed out from single-centre studies. Notwithstanding trend data showing a decline in proportion of FAs from 19.8% in 2006 to 17.1% in 2018, the absolute number is still substantial and warrants attention. Among factors found to be associated with multiple ED and mixed FAs were younger patients, males, multiple comorbidities, and median triage class of higher severity. These patients were also much more likely to visit EDs more than 7

times per year, contributing to a considerable and disproportionate strain on ED resources.

Despite not directly studying appropriateness of ED attendances, the authors found that FAs of multiple EDs and mixed ED were less likely to be admitted to inpatient units for further management. Overall, only around 40% of FAs had an admission rate of 0.5 or more, with a significantly lower proportion among FAs of multiple EDs, suggesting some level of inappropriateness in their multiple ED attendances that may have been avoided and adequately managed in the community setting. They postulated that the younger age and greater mobility of these FAs may be reasons behind the results, a discovery corroborated by a recent Singapore multicentre study.⁶ However, the findings of more patients with multiple comorbidities and median triage class of higher severities among mixed FAs seem counter-intuitive to the lower admission rate, and require further investigation.

As with any other research using administrative databases, there will be limitations on the details of variables used for analysis. Quantifying the number of comorbidities rather than identification of specific comorbidities would likely limit its usefulness in understanding the reasons behind the differences between FAs of single ED versus multiple EDs or mixed FAs. Likewise, the broad categorisation of most common final diagnosis based on International Classification of Diseases codes, instead of specific conditions, hinders the ability for in-depth understanding of the ED attendance patterns of FAs. For example, the 2 main diagnosis categories of “respiratory system” and “symptoms, signs and ill-defined conditions” that were found in 41.6% of FAs of single EDs and 51.8% of mixed FAs are rather vague and not informative.

The efforts by the authors to approach this analysis from a nationwide perspective and comparing with single-centre ED FAs are both extremely important and commendable. A systematic review that evaluated effectiveness of interventions targeting FAs in reducing visit frequency and improving patient outcomes identified 24 out of 31 studies conducted at only a single institution.⁷ There is likelihood of overestimation of the interventions’ measured effectiveness in decreasing ED visits if these FAs visited other sites. Therefore, having

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all-encompassing data on FAs and perhaps other ED-related topics in the future could provide sound foundation for health services research to identify pertinent issues, and subsequently offer potential whole-system national approach to solutions rather than from individual institutions or healthcare clusters.⁸

Since EDs deal with undifferentiated patients coming through their doors, using a symptoms-based approach could be a viable alternative in dissecting diagnoses to more meaningful conditions, which may allow for planning of future interventions.⁹ This strategy is further supported by the finding that heterogeneity of presenting complaint, particularly with history of mental disorder, was found to be associated with further attendance in a UK study.¹⁰ The exclusion of patient visits to a specialised psychiatric facility in this study by Pek et al. restricts and potentially underestimates the rapidly increasing burden of mental illness among FAs. Overall, only 1.4% of FAs' reasons for visiting EDs were attributed to mental disorders, far lower than data published in the West where substance abuse and heavy drinking contribute significantly as reasons for visits to EDs by FAs.^{2,3} Data on mode of arrival and referral were also unavailable in this study. These additional factors could provide further insight into ascertaining the health-seeking behaviour and mobility patterns, especially among younger patients who were at higher odds of attending multiple ED and mixed FAs.

Generalisability to other healthcare settings may be limited due to the unique geographical nature and healthcare system of Singapore, integrated with cultural and health-seeking behaviour in the society. For instance, FAs to multiple EDs in England were older and more likely to be admitted compared to Singapore.⁸ Nevertheless, regions with similar electronic database capabilities could model after Pek et al.⁵ and perform suitable analyses to comprehend patterns of their own FAs. After identifying attendance patterns, qualitative studies may be carried out to better understand the clinical, psychological and social profiles of these patients to ascertain if they are psychosocially vulnerable and heavily utilise other primary care services.¹¹ Some of the possible interventions implemented in other regions include having ED care plans, case management, multidisciplinary team conferences, primary care involvement and psychological therapy for patients with medically unexplained symptoms.⁴

Looking from the perspective of a complex system comprising ED patients, their social networks, wider society, and the healthcare system, a study from 2 regions in the UK of over 3.8 million ED attendances advocates that FAs should be seen as part of a continuum of attendance rather than a discrete problem of individuals.¹² Burton et al. showed that ED attendances

follow a power law distribution and ED attendance patterns are stable at the level of the system, but unstable at the level of individual FAs. The consistency of their findings across a very socioeconomically diverse region suggests a generalisable process. These data further strengthen the argument that a whole-system view, together with individual solutions, would be required to evaluate interventions to reduce frequent attendances.

By 2023, 2 of the 3 health clusters in Singapore will be on board the Next Generation Electronic Medical Record, thus integrating ED datasets from majority of public institutions. This game-changing initiative would enable streamlined non-duplicative delivery of clinical care, which is particularly pertinent to multiple and mixed FAs. In addition, it could allow almost real-time monitoring of FA burden on a larger scale and effects of interventions that are instituted.

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