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Editorial

Stronger together — The power of combining existing registry data

Patients with psychiatric disorders have a significantly higher risk of cardiovascular disease and sudden cardiac arrest than the general population, and this study by Barcella et al. has demonstrated that patients with a psychiatric disorder were twice as likely to die as a result of out-of-hospital cardiac arrest (OHCA).[1] By combining individual-level data from seven Danish databases they have uncovered a particularly vulnerable patient group in the Danish OHCA population, and produced robust estimates of the survival impact of individual OHCA characteristics in this cohort.

There are two main reasons why this study is important. Firstly, psychiatric disorders affect approximately 16% of the world population. Therefore while these findings relate directly to the Danish OHCA population, it is highly likely a similar cohort of patients is 'hidden' in the OHCA population in other countries, and most likely suffering poorer outcomes than OHCA patients without psychiatric disorders.

Poorer outcome following OHCA for patients with a psychiatric disorder unfortunately makes clinical sense. Even though patients with a psychiatric diagnosis tended to be younger and were more likely to be female, they had twice the likelihood of chronic obstructive pulmonary disease and previous stroke, a five-fold increase in the incidence of dementia and a seven-fold increase in the likelihood of liver disease and epilepsy. Excess mortality in patients with a psychiatric disorder is understood to be closely associated with physical illness therefore it is not surprising that patients who tended to be sicker were less likely to survive an event as severe as OHCA. This cohort of patients was also more likely to be socioeconomically deprived and associations with lower socioeconomic status and poorer OHCA outcomes are known.[2,3] Add to this the potential for negative interaction between psychotropic drugs and metabolic function, and the reasons for poorer outcomes for patients with a psychiatric disorder become increasingly apparent. This study provides a clear signal that primary prevention through the promotion of better cardiovascular health and an improvement in socioeconomic circumstances are likely to be critical in decreasing death from OHCA in patients with psychiatric disorders.

Equitable patient treatment when OHCA occurs is equally necessary. Characteristics that are predictive of survival such as witness status, presence of a shockable rhythm, bystander defibrillation and the presence of ROSC upon hospital arrival were less favourable for patients with a psychiatric disorder. These characteristics may be influenced by greater social isolation and the presence of co-morbidities that increase the chances of an initial shockable rhythm, and this means these characteristics are difficult to directly modify for this patient cohort. However, in the group of patients who had a witnessed event, bystander CPR was also lower in patients with a psychiatric disorder, and there is no clinical reason for this inequity. The influence of immediate, good quality bystander CPR on the subsequent links in the Chain of Survival should not be ignored, and any actions that address inequity in the provision of bystander CPR should be considered.

Secondly, this study is a gold standard example of how data from multiple registries containing different data can be combined to enhance our understanding of the OHCA population and to further explain variation in OHCA survival. It is of particular importance to note that all of the data used in this study was from existing sources and no novel data collection was required. It is of equal importance to acknowledge that it was the quality of data contained in each existing database that enabled successful data linkage.

In any study, whether observational or interventional, the robustness of results and conclusions drawn is directly related to the quality of data used in the analysis. Quality is a function of data attributes including comprehensiveness and accuracy, and this study shows that the ability to link different data sources can increase comprehensiveness and breadth of the OHCA dataset, which in turn adds to our understanding of variation in OHCA outcomes. Data linkage can also improve the accuracy of OHCA data, as previously shown by Rajagopal et al.[4] By linking data from the UK Out-of-Hospital Cardiac Arrest Outcomes (OHCAO) study with information from the National Health Service and the Office of National Statistics, they retrieved data for 72.7% of cases with missing demographic data, and reduced unknown survival status from 46.1% to 8.5%.

In terms of the ability to link data, Denmark is at an advantage over many other countries due to the universal use of a Civil Personal Registration Number and a high degree of data organisation at national level. However, there is nothing uniquely 'Danish' about the type of data that was used in this study. Most data items used are routinely collected in most countries for the purposes of individual patient care and for the administration of health and other population-based services. This study demonstrates that improving the quality of OHCA data collection is not necessarily about increasing the number of data fields in an OHCA registry, but rather high quality data collection can be achieved by linking existing high quality data sources. Additionally, while there is a legal and ethical requirement to respect individual privacy and autonomy, Barcella et al. have shown that individual-level data can be processed and analysed in a manner that does not compromise autonomy, but rather serves the population-

level need for reliable information in this important area of public health.[5]

The usual limitations of observational studies apply, but this study stands out as an excellent example of how the quality of national OHCA data collection was improved without collecting a single additional data item. As discussed above, the data used was routine and already collected for OHCA patients. The only question that remains is — if 'they' can do it, why can't we?

Conflict of interest statement

No conflicts of interest to declare.

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