Increasing the granularity of the data collected increases the usefulness of the 2023 key incident monitoring and management systems (KIMMS) program

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Introduction

Feedback from KIMMS participants in the past has identified that insufficient data was collected to compare themselves against their peers adequately. The renewed RCPAQAP KIMMS program allows for further comparison by separating data into categories such as the patient source (Inpatient/Outpatient/Community/Emergency Department (ED)) and size of the reporting organisation (small: <100,000/medium: 100,000-500,000/large: >500,000 patient episodes per quarter). The program consists of four surveys per year, where participants submit incident totals that are converted into rates (incidents per 100,000 patient episodes), which are used to evaluate risk. We reviewed the performance of the 2023 KIMMS program to assess the value of the revised categories.

Method

The 2023 KIMMS program had 284 submissions, with 11,139 incidents reported per 100,000 episodes (rates). Rates of zero were removed from the analysis as these were interpreted as no risk. The rates were categorised into both organisational size and the source of patient episodes and then sorted into frequency ranges increasing by 10-fold (<1 incident per 100,000 requests, 1-10, 10-100, 100-1000, >1000) for each category. The top three highest rates for each source of the patient were also reviewed, as were the top three rates for who collected the episode.

Results

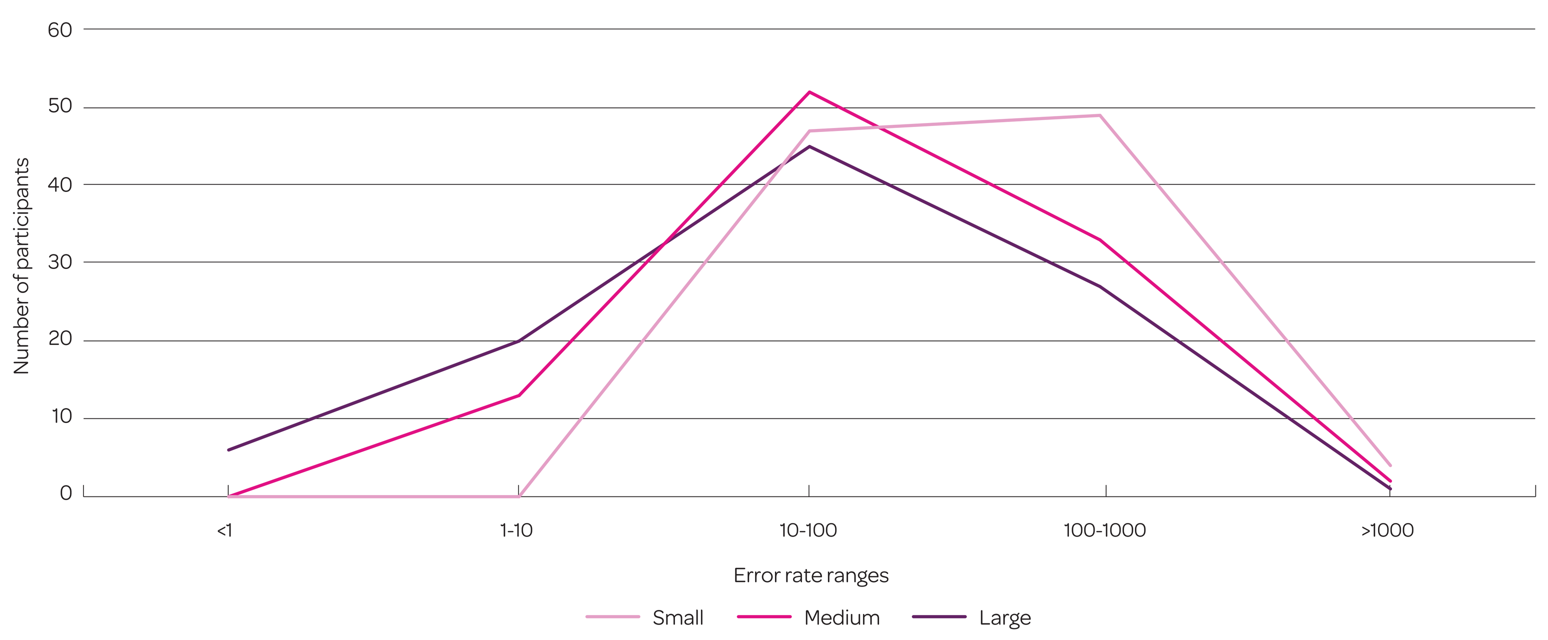

Figure 1 Error rates according to episode numbers

The error rates for medium and large laboratories were very similar (figure 1). Both had a peak at 10-100 episodes per 100,000 requests. Small laboratories showed a peak at 100-1000 episodes per 100,000.

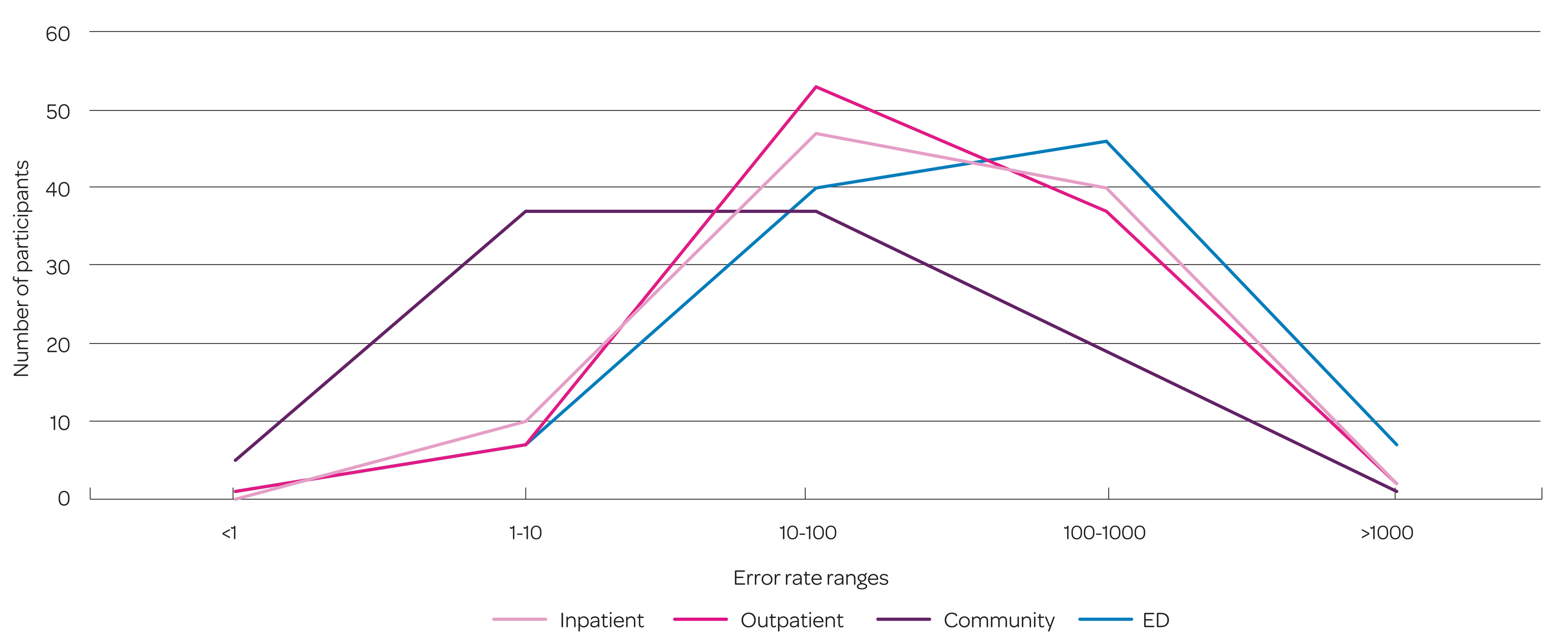

Figure 2 Error rates according to the source of the patient

Figure 2 shows that the number of laboratories in each rate range was also very similar for Inpatient and Outpatient patient sources. Along with medium and large laboratories, all had a peak number of between 45 and 52 laboratories in the 10-100 incidents per 100,000-episode range and similar-shaped curves.

Small laboratories and ED also showed a similar peak (45-50 laboratories at 100-1000 incidents per 100,000 episodes). A review of the size of ED departments showed a mixture of Small, Medium and Large numbers of episodes, so the reason for the higher peak range was different from the size of the ED department. Notably, due to the calculation of the rate, a small laboratory of <10,000 episodes per quarter would show a rate of 10 with only one incident.

Community-sourced patients had the most difference, with the peak of 38 laboratories occurring in the 1-10 incidents per 100,000 range.

The top three highest rates for each source of the patient and the top three rates for who collected the episode are shown in tables 1, 2 and 3.

Table 1 Average rates of the top three incidents by the source of the patient

Incident	Inpatient	Outpatient	ED	Community	Mixed
Specimen haemolysed	11024		30469		
No specimen received	21702	19013	9464	4285	3160
Specimen clotted or other clotting issue	32749	10938	10117		
Unlabelled specimen or request		10234		3886	
ID mismatch between specimen and/or request				4498	
Insufficient patient ID on specimen and/or request					1478

Table 2 Average rates of the top three incidents by the type of collector

Incident	Yours (76-100%)	Mixed (26-75%)	Others (0-25%)
Specimen haemolysed	11602		36850
No specimen received		23206	28452
Specimen clotted or other clotting issue	7361	16614	31248
Insufficient specimen	15524	3786	

Table 3 Average rates of the top incidents by source of the patient and type of collector

Patient source – Type of collector	Incident	Rate
ED – Other	Specimen haemolysed	22156
Inpatient – Other	Specimen clotted or other clotting issue	18084
Inpatient – Other	No specimen received	13337
Outpatient – Mixed	No specimen received	11143
ED – Other	Specimen clotted or other clotting issue	8817

Discussion

The 2023 KIMMS data shows that participating laboratories fall into all the categories provided in the KIMMS program. The results also show that while there were similarities between error rates in medium and large laboratories, e.g. any with >10,000 episodes per quarter, it was difficult to compare small-sized laboratories with these. There were differences in rates between Inpatient and Outpatients compared to Community and ED. Differences in the type of incidents across both the source of the patient and the type of collector were also evident.

It is no longer possible for KIMMS to calculate the risk of the incidents as this is dependent on an individual organisation's ability to detect an incident when it occurs. It should be possible to relate the rate of incidents to the probability of occurrence, though this needs to be done with the size of laboratories in mind, i.e. the lowest rate for a small laboratory is 10, while that for a medium laboratory is one, and a large laboratory is 0.1.

Conclusion

The breakdown of data into laboratory size, the source of the patient, and the type of collector are all worthwhile. Laboratories can compare themselves to similar laboratories, and over time, some statistically valid KPIs should be possible.