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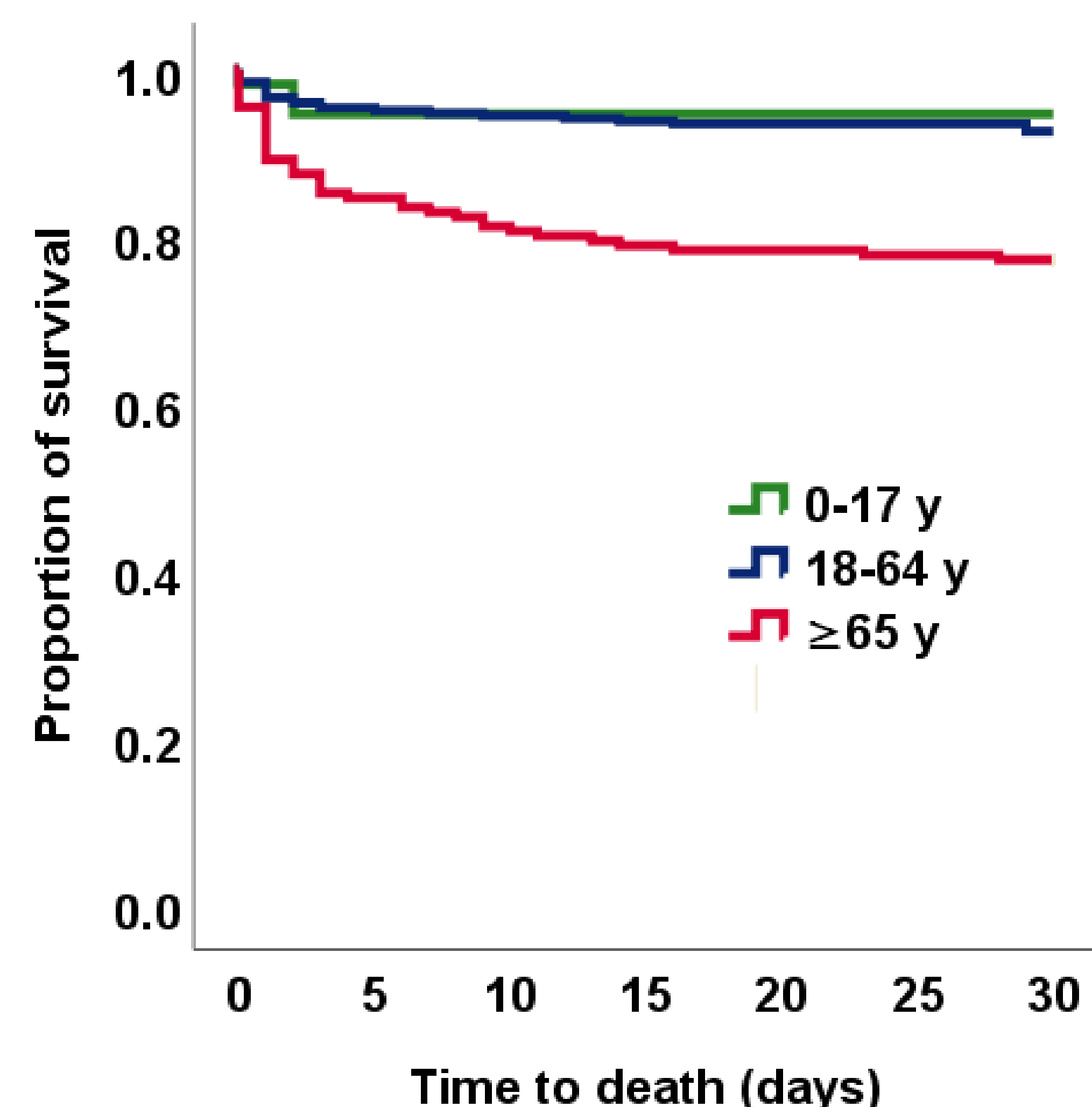
## Background & objective

In the wake of the COVID-19 pandemic, invasive group A streptococcal (iGAS) infections have surged globally. In Ontario, Canada, the resurgence began in late 2022. We assessed the epidemiology of iGAS infections in our population area in 2022 and 2023 and compared it to pre-pandemic data (2011-2013).

## Methods

The Toronto Invasive Bacterial Diseases Network has performed population-based surveillance for iGAS in Toronto/Peel Region, Ontario (population 4.5M in 2020) since 1992. Laboratories serving residents of the population area report GAS isolates from sterile sites to a central study office; trained staff perform chart reviews; Canada's National Microbiology Laboratory provides *emm* typing; Statistics Canada provides population data.

### Figure 3: Time to death after iGAS diagnosis, 2022-2023



## Conclusions

iGAS has recently resurged in Canada, showing distinct characteristics in pediatric and adult patients. Ongoing regional surveillance aids in monitoring incidence, identifying populations at risk, and tracking *emm*-type distribution.

## Results

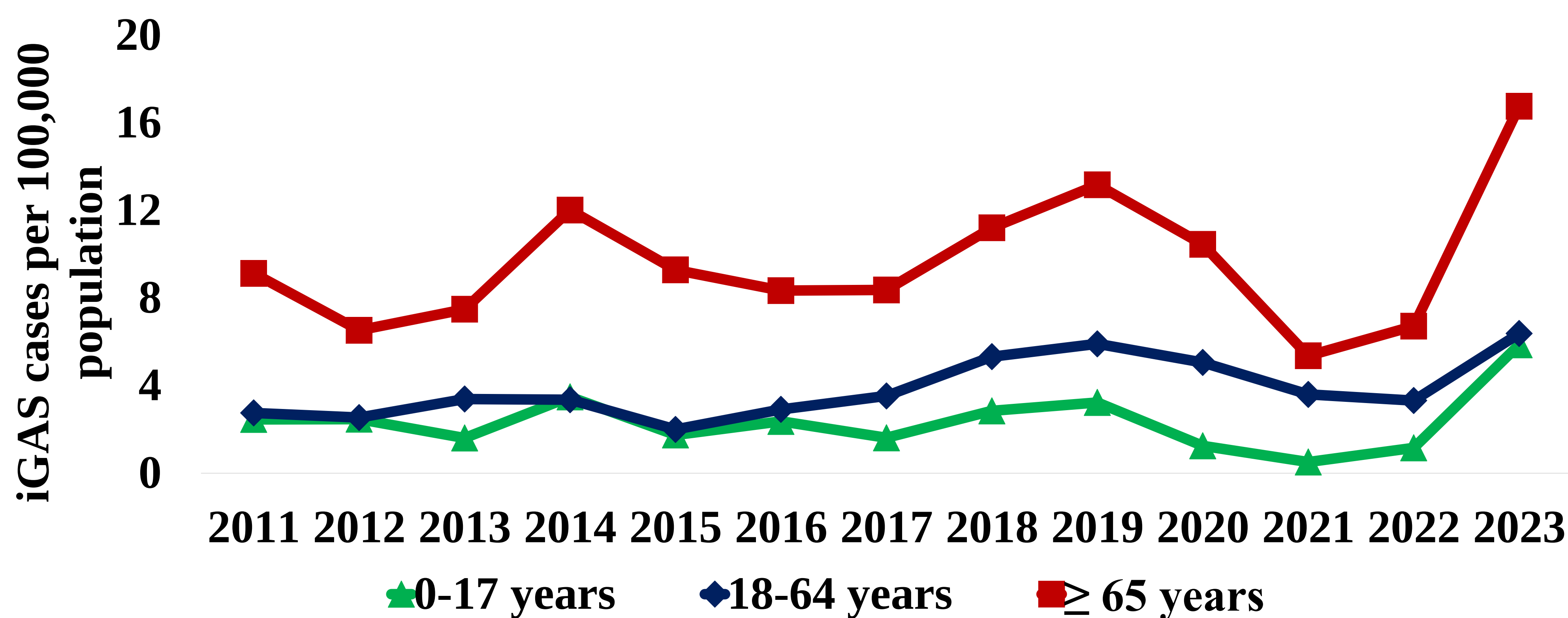
Overall, 553 iGAS cases were identified in 2022/23, 10% (56) were in children (<18y). Median age was 54.1y (IQR 35.8-69.9); 64% were male. The increase in iGAS incidence in 2023 is illustrated in Fig 1.

The most frequently reported presentation was soft tissue infection: 36% in children and 55% in adults. In children, pneumonia (23%) was also common. Overall, 63% of all patients had comorbidities; 20% had recent trauma; 13% had respiratory viral co-infections and 19% of the adults were homeless.

Blood cultures were positive in 415/511 (81%) cases. In children, the most common *emm* types were 1 (49%) and 12 (31%); in adults, the most common were 12 (14%), 49 (14%), 1 (13%), and 82 (12%). M1UK comprised 62.4% of *emm1* cases. The distribution of *emm* types over time is shown in Fig 2.

Toxic shock syndrome (TSS) occurred in 13% and necrotizing fasciitis (NF) in 7.1%, with no difference in proportion in adults and children. The case fatality rate was 12% (Fig 3). M1UK infections were not associated with TSS, NF or death. Pneumonia was more common pre-pandemic (2011-2013) (16%), and in 2023 (12%); compared to 2022 (6%), [p 0.01 and 0.03 respectively]. The proportion of cases with STSS and NF and the CFR did not differ in the three time periods.

**Figure 1: Incidence of iGAS infections in south-central Ontario, 2011-2023, by age group**



**Figure 2: The distribution of the most common *emm* types in south-central Ontario, 2011-2023**

