

## **The Demand for Emergency General Surgery in Canada: A Public Health Crisis**

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**Background:** Emergency General Surgery (EGS) represents a significant proportion of general surgical care provided in Canada. However, a comprehensive understanding of the national burden of EGS is lacking. The aim of this study was to describe the volume of EGS care in Canadian hospitals, as well as provincial variation in epidemiology and outcomes.

**Methods:** This population-based cohort study used data obtained from the Canadian Institute for Health Information (CIHI) to identify adult patients admitted to hospital emergently for GS diagnoses from 2015 – 2020 in all provinces and territories except Quebec. Diagnoses were identified from a pre-defined list of ICD-10-CA codes, and were classified as: hepatopancreaticobiliary (HPB), upper gastrointestinal (UGI), colorectal, hernia, skin/soft tissue, vascular, general abdominal, and other. Data were obtained on demographics, procedures, comorbidities, complications, and mortality. Average annual incidence rate for all conditions was calculated and compared between provinces/territories. Descriptive analyses were completed.

**Results:** From 2015-2020, there were 1,199,045 patients identified, the majority of whom (64%) were treated in community-based centres. The mean age was 59.5 (20.0) and 49.3% were male. The average annual incidence rate was 873 cases per 100,000, with variability seen among provinces (range 809–1216/100,000), representing approximately 11% of annual hospital admissions. The most common diagnoses in the cohort were HPB conditions (26%), followed by UGI (24%), and colorectal (15%). There was less regional variation, with HPB conditions predominating across all jurisdictions except all 3 Territories where UGI was most common. Overall mortality rate for the study period was 2.4%, with variation between provinces (0.8 to 3.1%). Major complications occurred in 3.2% of patients, again with significant provincial variation (range 1.6-4.6%).

**Discussion:** The burden of EGS disease in Canada is substantial. Heterogeneity in disease presentation, severity and patient outcomes requires a systems approach to identify the ideal structural factors, processes of care, and patient partnerships to optimize outcomes for this diverse population.