

# ASSESSING CRITICAL CARE EPIDEMIOLOGY AND DELIVERY USING NATIONAL-LEVEL CENSUS DATA: A SOCIETY OF CRITICAL CARE MEDICINE SCOPING REVIEW

## The SCCM US ICU Registry Working Group:

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**OBJECTIVE:** Several nationwide specialty-specific databases are maintained in the United States (U.S.) and worldwide with the four-fold purpose of benchmarking, quality improvement, epidemiologic trend assessment, and research facilitation, that have enabled demonstrable improvements in care quality. Critical Care, however, currently lacks such a database. We conducted a scoping review of established national Intensive Care Unit (ICU) databases describing

patterns of critical care delivery worldwide and in the U.S., and evaluated commonly recorded data elements using consensus group methods.

**DATA SOURCES:** A systematic search and review of available literature was conducted. MEDLINE, Embase, and Web of Science were queried.

**STUDY SELECTION:** Projects describing nationwide critical care delivery (including any subspecialty) that have been published in English were included. Reviews, administrative, and ICU-subpopulation databases, as well as registries with episodes of care without an ICU admission were excluded. Titles, abstracts and full text manuscripts were reviewed independently by two team members for consideration for inclusion. Conflicts were resolved by a third reviewer.

**DATA EXTRACTION:** The number and type of ICUs in each national database, the year it was established, data entry methodology, the most recent available number of episodes of care, as well as recorded clinical data elements were extracted, as available, in duplicate.

**DATA SYNTHESIS:** Of the 24,003 abstracts screened, 131 manuscripts were eligible for inclusion. Sixteen countries were identified as having established nationwide adult, pediatric and/or neonatal ICU registries: Australia/New Zealand, Austria, Brazil, Canada, Denmark, Finland, India, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the U.S. These databases are most commonly maintained with a combination of automated data abstraction from electronic healthcare systems, as well as manual data entry, followed by independent validation. Frequent recorded variables include patient demographics; admission vital signs and laboratory data; comorbidities; admission source and diagnoses; ICU diagnoses, treatments and complications; illness severity scores; and clinically relevant outcomes (adjusted and crude), including discharge disposition, functional status, lengths of stay, and mortality.

**CONCLUSIONS:** With insights and experience gained from the study of mature nationwide ICU registries, an equivalent multidisciplinary program appears to be feasible and highly desirable in the US, aimed at benchmarking, needs assessment, quality improvement, and research facilitation. Future efforts will target development of Society of Critical Care Medicine (SCCM)-sponsored national U.S. ICU multimodal-data registry.