CIHI’s Health System Capacity Planning Tool

Building on previous work and experience in forecasting demand for health system capacity, the Canadian Institute for Health Information (CIHI) has developed the interactive Excel-based Health System Capacity Planning Tool. The tool is designed to allow decision-makers to create their own scenarios to understand expected health resource demands and supply shortfalls related to the COVID-19 pandemic.

Overview of the planning tool

The tool’s foundation is a deterministic SEIR model that separates the population into susceptible, exposed, infected and recovered compartments, and then models the spread of the disease and the movement of the population among the compartments.

It predicts the number of new daily COVID-19 cases, the number of individuals requiring treatment in critical care and non–critical care beds with or without a ventilator, and the demand for health care resources and personal protective equipment required to treat these individuals.

The tool outputs information in tabular and graph formats on the duration and peak of the pandemic wave, potential demand for each resource, the gap between capacity and demand, the potential time when capacity will be reached, short-term projection of demand and other parameters.

By adjusting the input parameters, users can perform sensitivity analysis by creating their own scenarios of disease progression and sensitivity of expected resource demands.

Forward direction

CIHI is continuing to enhance the tool and calibrate it to reflect the most recent developments in disease progression and resource demands. We value your feedback, which will help us improve the tool.
Using the planning tool

The tool is available to provinces and territories, health regions and hospitals to support health system planning in response to COVID-19 and to inform decisions about planning for future waves of the disease. CIHI also works with users of the tool to support them. Providing the tool and client support is part of CIHI’s ongoing efforts to build capacity to use health system data.

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**Input parameters**

- **Epidemiological parameters**
  - Reproductive numbers, latent and infectious periods

- **Clinical parameters**
  - Proportion of patients hospitalized, in intensive care units (ICUs), on ventilators

- **Public health parameters**
  - Start day of mitigation measures and effect on reproductive number

- **Existing resource capacity**
  - Ward beds, ICU beds, ventilators, personal protective equipment (PPE), health care workers (HCWs)

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**Outputs**

- Duration and peak of the epidemic wave
- Potential demand for each resource
- Potential time when capacity will be reached
- Gap between capacity and demand
- Short-term projection of demand

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**About CIHI**

CIHI provides comparable and actionable data and information that are used to accelerate improvements in health care, health system performance and population health across Canada. For more information on how CIHI’s Health System Capacity Planning Tool can be used in your jurisdiction or organization, email help@cihi.ca.

For data-specific information: media@cihi.ca