Developing an Interactive Provincial Surveillance Report for Health Care-Associated Infections and Hand Hygiene Compliance in Acute-care Settings

PICNet
PROVINCIAL INFECTION CONTROL NETWORK OF BRITISH COLUMBIA
A program of the Provincial Health Services Authority

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OBJECTIVES

- To develop a reproducible, interactive quarterly report for provincial surveillance of health care-acquired infections (HAIs) and hand hygiene compliance (HHC), which would replace the previous static PDF report
- To automate existing data flow processes, including data receipt and analysis, to develop the new quarterly surveillance report
- To enhance existing analytics (e.g. by providing regional-level indicators, and by making figures interactive)

METHODS

Collaboration

- Regional infection prevention and control (IPC) partners were consulted to select HAI indicators (provincial and regional) suitable for the new, interactive report.

Report Development

R programming software was used to:

- 1) Process, compile and clean incoming HAI data from regional partners
- 2) Create standardized scripts to analyze the data and produce the agreed-upon indicators for CDI, MRSA, CPO and HHC,
- 3) Generate an automated R-markdown script that compiled the analytic output into an interactive report, capable of being generated quarterly as new data is received.

Each quarterly iteration of the report is shared with internal partners for feedback prior to being posted to a public website.

RESULTS

- The new interactive report has provided several benefits including:
  - Reducing development time of each report iteration from a time frame of days/weeks to minutes/hours
  - Removing the resource requirement of an interdepartmental graphic designer (who would generate the previous static version of the report), via seamless generation of the report straight from R programming software
  - Allowing for increased flexibility in the possible types of analytics and visuals. For example, the new report includes toggles that allow users to select from a drop-down of figure options, such as choosing which region's data to display
- Preliminary feedback from regional partners indicates 100% satisfaction among respondents, who also noted the report is an improvement over the previous format.

Figure 2: A sample figure in the interactive report; this figure presents a map of regional CDI rates

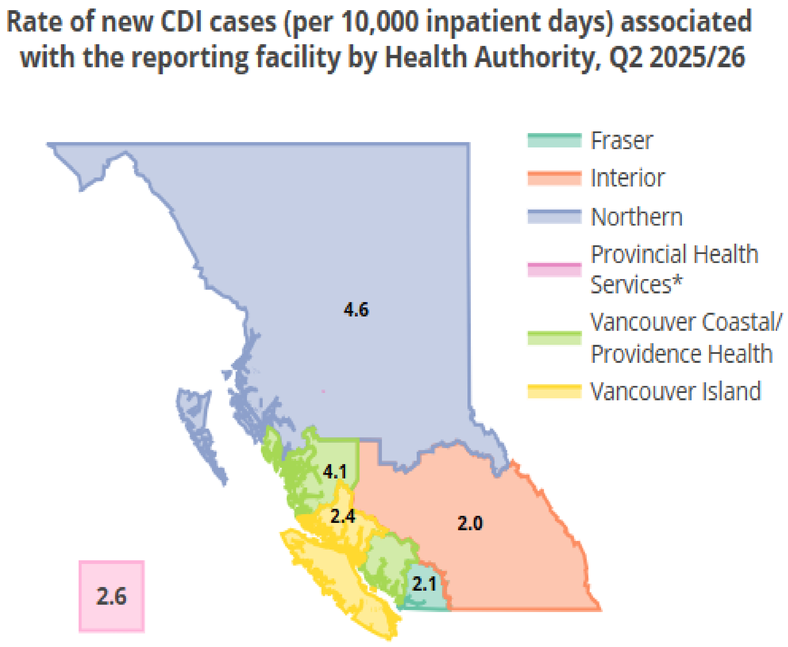
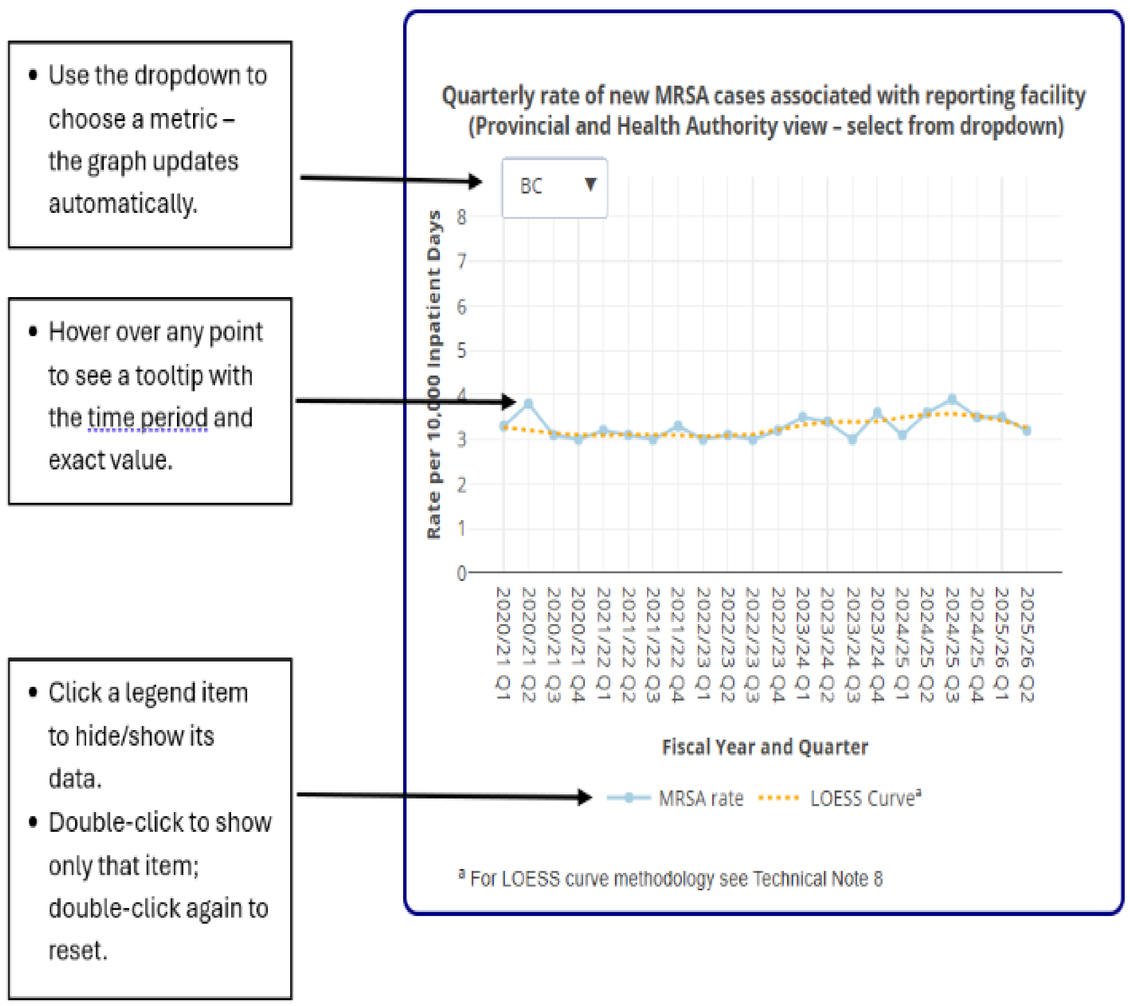


Figure 1: Navigating an interactive figure in the new surveillance report



As a provincial network, we operate on the unceded traditional and ancestral lands of First Nations. Our main office is located on the traditional and ancestral lands of the territories of the xʷməθkwəy̓əm (Musqueam), Skwxwú7mesh (Squamish), Stó:lō and Səl̓ílwətaʔ/Selilwitulh (Tsleil-Waututh) Nations.

CONCLUSIONS

- An automated, interactive report for quarterly HAI provincial surveillance has been developed to replace the previous static, PDF report
- This new interactive report has resulted in multiple improvements including
  - Reproducibility
  - Reduced time and resources needed for report generation
  - Enhanced analytics
  - Flexibility in types of analyses available to end users.
- Collaboration with partners will continue for the purpose of making ongoing improvements to the quarterly surveillance reporting of provincial HAIs and HHC

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