

## COVID-19 existing resource response #4

(Last updated 26 March 2021)

### Question

What is the efficacy and effectiveness of available COVID-19 vaccines in general and specifically for variants of concern?

### Context for question

- Many groups are tracking studies of vaccine efficacy and effectiveness, as well as adverse events
- What is missing is a way to package the information that helps decision-makers understand the ‘bottom line’ for each vaccine and when new studies change this ‘bottom line,’ particularly for variants of concern, so that they can:
  - determine whether to adjust the distribution of purchased vaccines based on locally dominant variants of concern
  - adjust their messaging to citizens and healthcare workers about vaccine efficacy and effectiveness adjust their public-health measures and/or health-system arrangements to accommodate changes in vaccine efficacy and effectiveness

### What we found

- Four top evidence-synthesis teams are addressing questions about vaccine efficacy and they are each planning to address or considering addressing vaccine effectiveness by including ‘real-world’ observational studies, at least in some form
- All of them provide (or will likely provide) forest plots, evidence profiles, and summary of findings tables, like these for the [AstraZeneca vaccine](#)
- A summary of findings table provides the best statement of the ‘bottom line’ for each vaccine
- For such tables to be useful to decision-makers’ current needs:
  - they need to include observational studies that specifically examine effectiveness in general and specifically for variants of concern
  - they need to be updated frequently and shared immediately
  - ideally a synthesis-team member would be willing to respond to queries about whether a new trial/study garnering significant attention is likely to change conclusions

### **Box 1: Our approach**

COVID-END in Canada responds to requests for evidence syntheses about topics related to COVID-19 that are likely to be explicitly considered by high-level decision-makers in multiple Canadian jurisdictions. This includes conducting rapid evidence profiles, living evidence profiles, rapid syntheses and living evidence syntheses. Examples of these evidence products can be viewed [here](#).

Sometimes requests are submitted about questions that have already been addressed by one or more recently updated, high-quality evidence syntheses or will be addressed soon by work underway (e.g., through a rapid synthesis underway with or being planned by a Canadian team, registered synthesis protocol or CIHR funding to conduct a synthesis). In these situations, we prepare a response that profiles these existing resources. These responses are typically prepared by a combination of: 1) searching both the COVID-END domestic inventory and the COVID-END global inventory; and 2) contacting 40+ Canada evidence-synthesis teams to identify any additional resources or work underway that is relevant to the question posed in a request. Such an existing resource response is equivalent to a rapid evidence profile prepared with the same turn-around time.

We followed this approach to prepare this existing resource response, which was prepared in three-business days (and hence the equivalent to a three-day rapid evidence profile) to inform next steps in evidence synthesis, guideline development and/or decision-making related to the question that was posed.

- **In the short term COVID-END will:**
  - draft a framework (by Friday 2 April) that provides, for each of the four key vaccines on which Canada is relying and for each of the three current variants of concern:
    - the outcomes of key interest to decision-makers
    - the direct measures, proxy measures (e.g., viral load for transmission risk) and biomarkers for which data are or should be available
    - *Note that Jeremy Grimshaw will provide a link to insights from the new CIHR-funded variants network that may change the variants of concern that are being studied (and will organize a meeting with Marc-André Langlois who is heading this network)*
  - update the framework (as a living evidence synthesis) by midday every Friday (with the first draft by Friday 9 April) with any ‘bottom-line statements’ that can be made based on:
    - summary of finding tables from any of the four evidence-synthesis teams maintaining a living evidence synthesis of vaccine efficacy based on randomized controlled trials, which will be developed by David Tovey and Cristian Mansilla (from the COVID-END secretariat)
    - critical appraisals of observational studies (both published and unpublished), national surveillance reports and vaccine company media releases, which will be developed by Alfonso Iorio (from McMaster University) and Julian Little (from the University of Ottawa)
    - *Note that they will also flag any inconsistencies (e.g., in findings emerging from trials and observational studies and/or between two different observational studies) that can’t be resolved in that week’s living evidence synthesis*
- If Julian Little and Alfonso Iorio find out in June that they are successful with their CIHR grant submission (or are able to secure funding through the new variants network), they will transition to a more robust mathematical modeling approach that would allow them to make more explicit statements about certainty and uncertainty with their living evidence synthesis

#### **Additional notes**

- We contacted the 40+ Canadian evidence-synthesis teams that are part of COVID-END in Canada and the 55+ global partners in COVID-END to ask whether any groups were addressing this gap or knew of groups addressing this gap, and no relevant work was identified
- We also examined possible alternative sources, such as:
  - PROSPERO protocols, however, only one is a living review (and it focuses on [trial participation by pregnant women](#), not outcomes) and the others are one-off reviews that focus on [ethnic groups](#), [patients with lupus](#), and [cost-effectiveness](#)
  - [Robert Koch Institute](#), however, we found no living evidence syntheses on their website
  - U.S. CDC’s [Advisory Committee on Immunization Practices](#) (ACIP), however, their evidence syntheses appear not to be living evidence syntheses
  - World Health Organization’s [vaccine landscape tracker](#), however, this does not incorporate any type of evidence synthesis
- COVID-END in Canada is supporting a living evidence synthesis on a related topic – what are the implications of SARS-CoV-2 variants of concern for public-health measures, including modifying approach to vaccination (e.g., using vaccines that offer greater protection against variants, using different vaccines for first and second doses and/or re-vaccinating those initially vaccinated with vaccines with limited efficacy for new strains), and for health-system arrangements? – however, the first edition won’t be delivered until Wednesday 28 April and the first update on Wednesday 26 May (as part of a bigger living evidence synthesis addressing variants of concern more generally, which is led by Janet Curran and colleagues in Nova Scotia).

	<a href="#">COVID-NMA</a>	McMaster / BMJ	<a href="#">Copenhagen trial unit</a>	<a href="#">PAHO / L*VE</a>
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Mapping of trials and observational studies	<ul style="list-style-type: none"> <li>• Yes – publicly available <a href="#">here</a></li> </ul>	<ul style="list-style-type: none"> <li>• Yes for trials</li> <li>• Need for observational studies/scope being assessed</li> </ul>	<ul style="list-style-type: none"> <li>• Yes for trials</li> <li>• Observational studies will be addressed but not as systematically as trials</li> </ul>	<ul style="list-style-type: none"> <li>• Yes for trials</li> <li>• Yes for observational studies</li> </ul>
Living evidence syntheses (LESs)	<ul style="list-style-type: none"> <li>• Yes – forest plots, evidence profiles and summary of findings are publicly accessible <a href="#">here</a> (with sub-group analyses planned for children, adults, and older adults and for immunocompromised patients and pregnant women)</li> </ul>	<ul style="list-style-type: none"> <li>• Not yet initiated, but secured funding to work on it</li> </ul>	<ul style="list-style-type: none"> <li>• First draft expected the week of 5-9 April</li> </ul>	<ul style="list-style-type: none"> <li>• Website not yet publicly available</li> </ul>
Include observational studies that specifically examine effectiveness in general and specifically for variants of concern	<ul style="list-style-type: none"> <li>• Planned for effectiveness in general – platform is being adjusted to accommodate these the week of 15-19 March</li> <li>• <b>TBD regarding variants of concern</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Need/scope being assessed</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Discussing how to address variants</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>TBD (but likely not in the near term)</b></li> </ul>
Frequency of updating LESs	<ul style="list-style-type: none"> <li>• Every week – new trials on Fridays and updated synthesis in first half of following week</li> </ul>	<ul style="list-style-type: none"> <li>• Daily for study identification and data abstraction</li> <li>• Dictated by needs of guideline developers, emergence of practice-changing evidence, or publication of key studies for</li> </ul>	<ul style="list-style-type: none"> <li>• Updates will depend on the significance of new trials/data but expect 3-4 updates/year</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>

		analysis, assessment of certainty of evidence, and summaries of findings		
Willing to share updates immediately	<ul style="list-style-type: none"> <li>• Not applicable since always posted immediately</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
Willing to respond to queries about whether a new trial / study is likely to change conclusions	<ul style="list-style-type: none"> <li>• Possibly (through David Tovey)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, likely through a steering committee involving Steven plus Allan Randrup Thomsen, Lehana Thabane, Janus C. Jakobsen, and Christian Gluud</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>

Lavis JN. COVID-END in Canada existing resource response #4: What is the efficacy and effectiveness of available COVID-19 vaccines in general and specifically for variants of concern?. Hamilton: McMaster Health Forum, COVID-END in Canada, 26 March 2021.

To help health- and social-system leaders as they respond to unprecedented challenges related to the COVID-19 pandemic, the McMaster Health Forum is preparing rapid evidence profiles like this one. This rapid evidence profile is funded by the Public Health Agency of Canada. The opinions, results, and conclusions are those of the McMaster Health Forum and are independent of the funder. No endorsement by the Public Health Agency of Canada is intended or should be inferred.



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