(War)gaming the Pandemic

Agile Analysis in Time of Crisis

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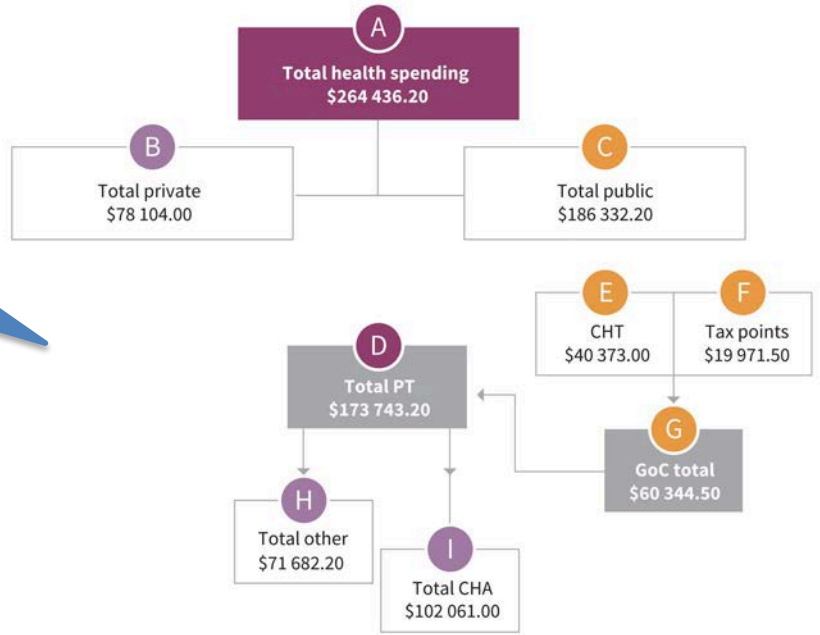
Healthcare in Canada

- Canada is a federal political system, consisting of ten provinces and three northern territories.
- Under the Constitution Act (1867) the provinces have responsibility for healthcare.

SOURCE: https:/https://en.wikipedia.org/wiki/File:Map_Canada_political-geo.png

Healthcare in Canada

The federal government funds c35% of provincial health expenditures and almost 60% of health spending is subject to the Canada Health Act.



- The Canada Health Act (1984) provides for federal funding of provincial health insurance programmes.
- Constitution also assigns to the federal government authority over “peace, order, and good government.”

Naylor, Boozary, and Adams, “Canadian federal–provincial/territorial funding of universal health care,” *CMAJ* 192 (November 2020). Expenditures indicated in thousands of $ CAD.

Healthcare in Canada

- The **Public Health Agency of Canada** (PHAC) is the federal government agency of the Government of Canada that is responsible for public health, emergency preparedness and response, and infectious and chronic disease control and prevention.
  - PHAC was formed in 2004 in the wake of the 2002-4 SARS crisis.
- **Health Canada** (the federal ministry) is responsible for approval of vaccines through the (independent) **National Advisory Committee on Immunization** (NACI).
  - But PHAC is responsible for guidance on their use, and other public health measures.
- **Public Services and Procurement Canada** (PSPC) is the department of the Government of Canada with responsibility for procurement for other government departments.
  - PSPC has been responsible for procuring Canada's COVID-19 vaccines (Canada has no domestic industrial vaccine production capacity).

The mission

- Canada's vaccine rollout had a few moving parts to consider:
  - The independent National Advisory Committee on Immunization had to advise Health Canada on the approval vaccines, PHAC had to make recommendations for their use.
  - PSPC had to let contracts with vaccine producers in the United Sates and Europe.
  - A military-led vaccine rollout task force (VRTF) was established under PHAC to manage the logistics at the federal level. When available, the vaccines had to be moved to Canada and then distributed to the ten provinces and three territories.
  - Those thirteen governments had to be ready to distribute and administer vaccines to their residents, each according to their own processes, policies and priorities enacted by their respective health ministries.
  - The federal government also had to make special arrangements for certain populations (federal prisoners, Canadian Armed Forces, Royal Canadian Mounted Police and some indigenous communities).
  - Local security responsibility is split between local police, provincial police (where they exist), RCMP, military and Federal intelligence community.

The mission

- What could possibly go wrong?
- **The VRTF decided to run a (war)game to find out...**

PHAC and CAF had no clear initial conception on what this would look like or how it would be run. This was more of an asset than a liability in this case.

Design approach

- Rule #1 **Do No Harm***: The VRAT and other PHAC stakeholders were very busy working on critical tasks:
  - We had to design an approach that minimised impact on them.
  - However, they were the people who need to think the issues though – so they had to be engaged at some point for the outputs to have any credibility.
  - Our approach was to use non-PHAC Subject Matter Experts (SMEs) wherever possible, drawn from government and academia, as well as retired former officials.
- Also, given very tight timescales, everything would have to be done through structured judgement sessions.

* See: https://paxsims.wordpress.com/2020/03/18/gaming-the-pandemic-do-no-harm/

Architecture

Week 1

Independent Red Team

Week 2

Table Top Exercise

Week 3

Independent Red Team

Distribution Plan → Contingencies → Mitigating Courses of Action → Residual Risks

Week 1: Red Teaming

- The Red Team was established using the professional networks of the authors. These included:
  - Retired senior public servants, police officers and military healthcare experts
  - Academic Public Health experts
  - Foreign Service Officers
  - Researchers in social media/misinformation
- The team was taken through four sessions, each focusing on one of the four phases of the plan and challenged to identify things that could go wrong, how likely they were to happen, and how serious the consequences could be.

- Phase 1: Procurement of vaccines and delivery to Canada
- Phase 2: Distribution of vaccines to provinces and territories
- Phase 3: Ramping up vaccine administration
- Phase 4: Transition to steady state

Week(end) 1: Building the TTX

- The authors established a set of contingencies - exemplars of things that could go wrong – from the red team outputs.
  - A careful balance of likely and disruptive, rather than outlier “worst cases”.
- Materials were put together to give us four sessions – one per phase.
- In parallel, the VRAT were establishing participant lists from across the federal, provincial and territorial governments.
  - We had over 150* registrants from eight federal departments and agencies, all ten provinces, the three territories, and the Canadian Red Cross - and all spread over six time zones
- Each session was designed to have 2-3 contingencies for the players to react to.

*** This is a lot in Canada!**


LIVE
breakyourownnews.com
BREAKING NEWS
FIRE AT MADRID VACCINE FACILITY
17:59 FIREFIGHTERS EXTINGUISH BLAZE AT LABORATORIOS FARMACÉUTICOS ROVI


LIVE
BREAKING NEWS
NOT COLD ENOUGH?
20:53 DISTRIBUTION OF PFIZER VACCINE HAMPERED BY COLD STORAGE PROBLEMS


LIVE
breakyourownnews.com
BREAKING NEWS
HACKERS TARGET HEALTHCARE
14:57 PROVINCIAL GOVERNMENT DETECTS "UNAUTHORIZED ACCESS ATTEMPTS"


LIVE
BREAKING NEWS
MAKING US SICK?
14:11 QUESTIONS RAISED ABOUT VACCINE EFFECTS


LIVE
breakyourownnews.com
BREAKING NEWS
WHO WANTS A JAB ?
18:02 POLL SHOWS MANY CANADIANS STILL HAVE CONCERNS ABOUT NEW VACCINES


LIVE
AMBULANCE
BREAKING NEWS
BELGIUM PROBES VACCINE DEATH
21:05 OFFICIALS SAY "NO EVIDENCE YET THAT THE VACCINE IS RESPONSIBLE"


LIVE
BREAKING NEWS
FAIR SHARE?
21:50 SOME PROVINCES MAY WANT MORE, POINTING TO BACKLOGS AND INFECTION RATES


LIVE
breakyourownnews.com
BREAKING NEWS
MORE VACCINES FOR AMERICA
13:55 BIDEN ADMINISTRATION INVOKES DEFENSE PRODUCTION ACT


LIVE
BILL GATES'S
VACCINE MODEL
WILL CONTROL
CELLULAR
BREAKING NEWS
ANTI-VACCINE PROTEST CAMP
14:07 "WHY IS THE GOVERNMENT EXPERIMENTING ON US?" ASK PROTESTERS


LIVE
BREAKING NEWS
SHOULD FEDS STEP IN?
22:03 GROWING NUMBER OF GROUPS DEMAND NATIONAL STANDARD

Week 2: TTX Execution

- The TTX was run in a single day:
  - Four sessions were played – each looking at a different phase of the plan.
  - Some participants only attended some parts, so each session needed to be self-contained so as to accommodate newcomers.
- Participants were pre-assigned to one of four breakout rooms:
  - This gave us four different conversations around each phase.
  - PHAC staff were assigned to facilitate and to record discussion in each session.
- The event was 100% virtual and conducted over WebEx.
  - The hosting technical control team monitored progress and provided technical support via their own chat system.
  - Senior facilitators and observers moved between breakout rooms as required.

TTX Execution – turn structure

Introductory Context Briefs

15 mins

Rm 1: PHAC

Rm 2: Other Federal

Rm 3: Provinces and Territories

Rm 4: Mix of Everyone

45 mins

Outbriefs and Discussion

30 mins

Week 3: residual risk assessment

- A second red team, with many members common from the first, was convened the following week.
- They were asked to assess the likelihood of occurrence and the severity of impact of each contingency before and after the mitigations proposed by the TTX.
- Participants were provided with word ladders to help standardize responses and provided their assessments through polling tools:
  - Allowing the rapid collection of everyone's perceptions.
- The results, highlighting the residual risks after mitigation, were reported to PHAC.

Impact

- The execution of the TTX was announced in a **national press briefing** the following day.
- Within government, a summary report of issues identified was first briefed to **PHAC senior leadership** and then to the **Prime Minister and members of the Federal cabinet**.
- The vice-chair of the cabinet COVID-19 committee later requested a follow-up meeting with one of the TTX organizers to discuss key findings.

Met the federal government's urgent need to indicate to Canadians that planning was well in hand, amid growing media reports on Canada's "slow" vaccine preparation.

Maj.-Gen. Dany Fortin, Vice-President of Logistics and Operations at the Public Health Agency of Canada, speaks during a technical briefing on the roll-out of COVID-19 vaccines, in Ottawa, on Thursday, Dec. 3, 2020. THE CANADIAN PRESS/Justin Tang

Impact

CBC News, 3 December 2020

Fortin says military organizers have been working for months with government, scoping out the logistics that will be involved.

There have been discussions, "tabletop exercises," and he said his team now is looking to "identify risks, discuss mitigations, look at decision points, and look at ways to ensure that we deliver vaccines as effectively as possible, as rapidly as possible. And as safely, more importantly, as safely as possible to all Canadians, including up to the remote and isolated communities."

Toronto Star, 27 November 2020

"We know a lot about getting new aircraft and types of transport planes, trains and automobiles to these places, but doing it with vaccines that are somewhat fragile and need to be under certain conditions, warehousing them, making sure you're keeping track of who's getting it when, all of these things are things that right now are being laid out... They're rehearsing tabletop exercises what this will look like as soon as we have access," Lawson said.

CTV News, 28 November 2020

Fortin said there have been "tabletop" exercises to plan the distribution over the last weeks, including one on Wednesday that involved more than 150 people from all 13 provinces and territories, and eight federal departments and agencies.

The Canadian Armed Forces received formal orders last week to start planning for the distribution of COVID-19 vaccines, though the military's top commander says preparations have been under way for longer.

Canadian Press, 3 December 2020

Impact

- The risk assessment undertaken encouraged PHAC to formalize **an internal process for risk-based analysis**.
- The TTX enabled a **nation-wide dialogue** among public health officials on vaccine challenges.
- Public health officials were **“immunized” by pre-exposure to contingencies and challenges** in the vaccine roll-out.

The approach taken in the Red Teams and TTX (coincidentally) aligned with the preference of the Privy Council Office (cabinet office) for risk-based analysis.

Impact

The really fascinating thing is that we set the stage for a risk-based assessment of the entire rollout. We knew that there was appetite from this particular government for risk-based planning…. The stage that we set up through the Red team and then through the tabletop exercise resonated to the point where we continued to run those kinds of facilitated "what-if" discussions throughout the entire roll-out and we're still doing it.

A lot of the risks that we identified at the very beginning through the red team were mapped out into a series of eight slides of collective risks…. When all of those things came to fruition, because we had the really solid discussion at the red team level, and then working it through at the table level in the TTX, we already had the risk statement, the clear risk identification, the potential mitigation measures, and then the "so whats?" for the mitigation-which I think are the pieces we would have taken a lot longer to get to…. Had we not done it in a really controlled fashion before the doses hit the ground, when it all got really muddy—had we not done that before then, I think we would have been in a much more challenging space.

I think what the red team allowed us to do was shine a light in some dark corners that maybe we wouldn't have gone to if we hadn't identified risks that were not within mainstream.

PHAC official

Impact

So, when people were saying "OK but what is this risk analysis based on?" I said, "Here, in the wargame." When people anchored that to the wargame they said "OK, that's good, that means this has been discussed, there's been a lot of eyes on this."

[The wargame and the brief] kickstarted a process… it became a weekly occurrence. They brought all of the other [Associate Deputy Ministers] in on that.

When we moved to the second phase, "The wargame was really good, it really let us visualize the plan, it really let everyone understand what was going on from all the different parts, so let's do it again."

The Red teaming portion of it was greatly [appreciated]. Everyone liked that, not because of any specific revelation… but because it seemed a good vector check by outside agents…. This is a good way to assure we're not falling for some sort of confirmation bias…. That was appreciated by a lot of the seniors.

CAF planner

Impact

Because as a red team we had talked through and identified those as real risks and then at the tabletop exercise we've gone through with the stakeholders … what that did was allow us to set the stage that people didn't have to go through… certain stages of grieving when your plan doesn't work.

We didn't have to deal with that as much because they had already seen the risks that could come. And then as we hit the risks, it's like crap. Well, there it is. We talked about it now let's move on and do something about it, and so I think in that sense it was invaluable….

PHAC official

Impact

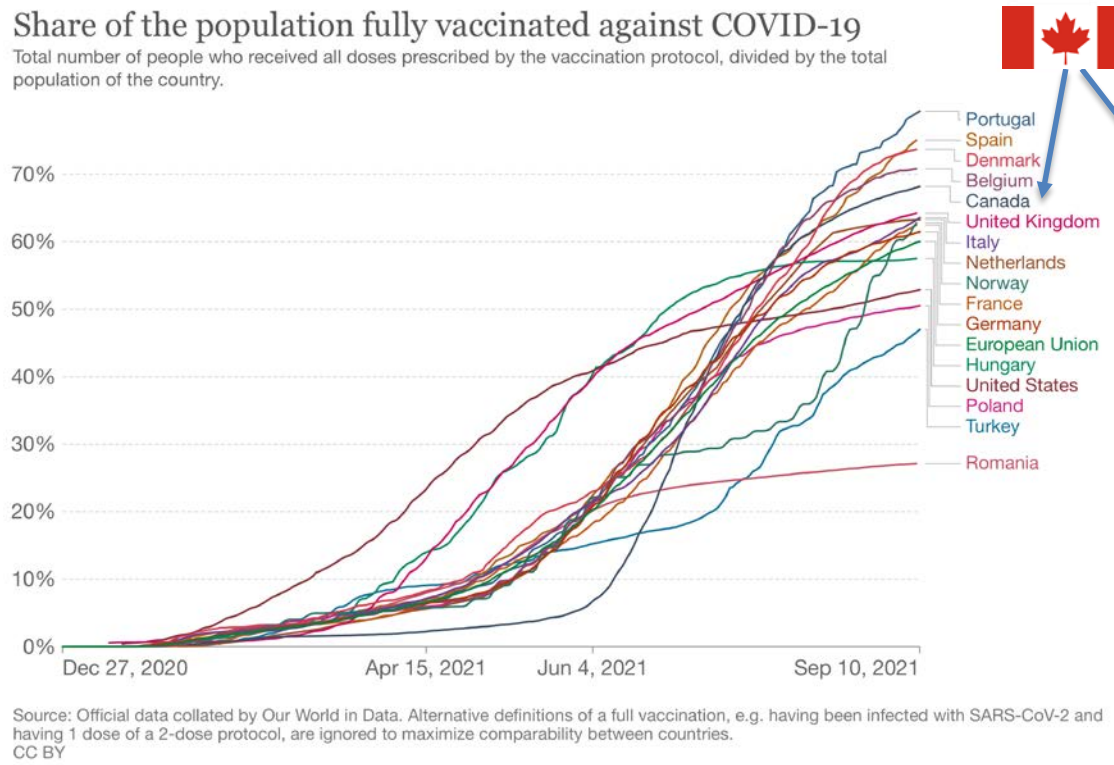
[Public health officials] are used to seeing tabletop exercises, but they're not used to seeing it in the kind of fashion that you put it forward and where you saw the increase in numbers in the PT [provincial/territorial] engagement—and not just in the numbers, but in the pure engagement and how much they wanted to talk, And how much they wanted to delve into some of the subjects—I think speaks to the fact that they didn't see it as a regular federal-provincial engagement….

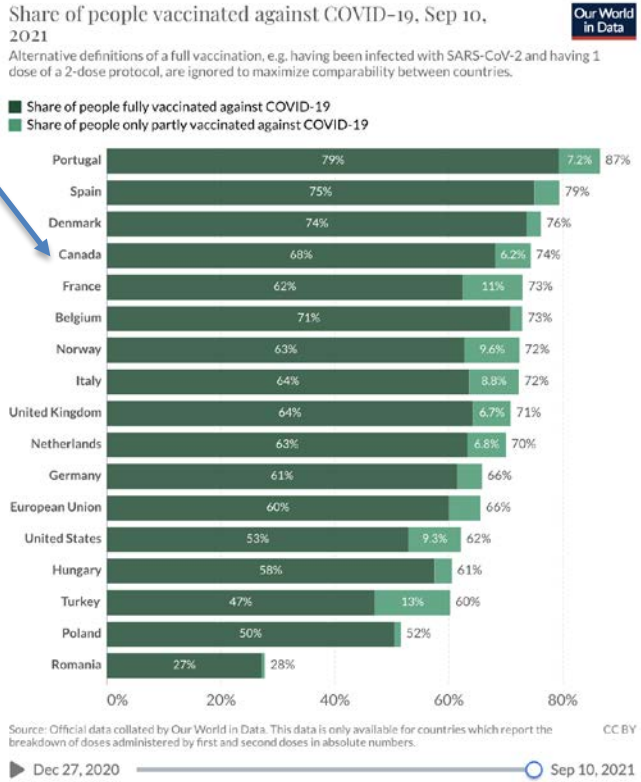
We gave them, through the tabletop exercise and the planning and the documents, an opportunity to have those kinds of discussions that they never they've never had before, and then trickling down from that. What we've seen, and it's been interesting, the number of people who've commented on it: the level of collaboration.

PHAC official

Reflections

- Six months is often a short time in defence analysis, but it is a very long time when dealing with COVID-19!
- In the past six months Canadian perceptions have shifted from deep concerns about how Canada is lagging, to recognition that the vaccine rollout has generally been a success – although it could never be as fast as everyone wanted.
- The only significant development in Canada with respect to the COVID-19 vaccination rollout that was not foreseen by the red team has been the rise of the variants of concern and the potential for the virus to mutate so as to escape the vaccines.
    - Everything else of any significance has been an instance of one of the contingencies identified by the red team.
- There are also some contingencies that we were concerned about, but which haven't manifested to any significant degree:
    - Ultra Low Temperature distribution and storage.
    - Direct action by anti-vaccination groups.
    - Cyber disruption of healthcare systems.
    - Criminal exploitation of black market or counterfeit vaccines.





SOURCE: https://ourworldindata.org/coronavirus

Lessons for Analysts

- The design, preparation, execution and reporting of all of the work described in this brief took place in a one month window.
- Success was built upon four key foundations:
  1. Having a "warm base" of tools and techniques to run virtual events.
  2. Senior staff having extensive personal networks and so able to reach the expertise needed very quickly.
     - Even the tasking to conduct the work was the result of an informal approach
  3. Having a strong team with good interpersonal dynamics and a willingness to step up and get the job done.
  4. Having senior leaders prepared to let us run with this without bureaucratic oversight.

How does one promote "networked informality" in formal, hierarchical organizations?

Retired senior civil servants and officers proved to be a very valuable red teaming resource

Questions