

Horizon scanning and vigilance activities for the impact of emerging/re-emerging pathogens on the safety and sufficiency of blood products

May 20, 2026 11:25 – 11:45 Session 2: Redundancy in Blood / Plasma Donor Deferral and Testing: Transformational Changes Coming

Steven Drews PhD FCCM D(ABMM)

Medical Microbiology & Surveillance and Discovery Laboratory, Canadian Blood Services

Division of Diagnostic and Applied Microbiology, Laboratory Medicine and Pathology

Edmonton, AB, Canada



Disclosures

- Steven Drews: Danaher (Honoraria), Roche (Consultant/Advisory Board, Grant/Research Support)

Purpose

- To highlight different methodologies that national and international transfusion medicine practitioners can use to undertake horizon scanning for threats and opportunities that can impact the safety and sufficiency of the blood supply.
- By the end of this session participants should be able to:
 - Define horizon scanning and contrast how it differs from routine surveillance.
 - Describe how horizon scanning is essential for anticipating emerging and re-emerging pathogen threats that could affect blood safety and supply.
 - Outline how horizon scanning can be operationalized in a real-world blood system, using the Canadian Blood Services experience: team structures, workflows, tools, dashboards, protocols, and outputs.
 - Identify which horizon scanning components are feasible in your own organization

Three global pressures on health care

- There is a decades-long explosion of scientific information that overloads individual scientists, clinicians, and most importantly organizational decision makers and planners.
- We are also entering into a new era of infectious diseases driven by multiple factors including climate change, biological changes in microbes, and socio-economic factors.
- Health systems continue to face funding challenges following a surge in the early pandemic years.

What is “Pathogen X” or “Disease X”

- An emerging pathogen is an infectious agent (virus, bacteria, fungus, parasites, prion) that has not been described, previously in humans.
- A re-emerging pathogen is one whose incidence is increasing in an existing host population because of long-term changes in its underlying epidemiology.
- Emerging pathogens transmit to humans via animals (including insects and arachnids), the surrounding environment to human, and other humans.

Value proposition

- We need a structured approach to identify weak emerging infectious diseases signals in a vast sea of information as health care funding shrinks.

Horizon scanning and surveillance

Horizon scanning

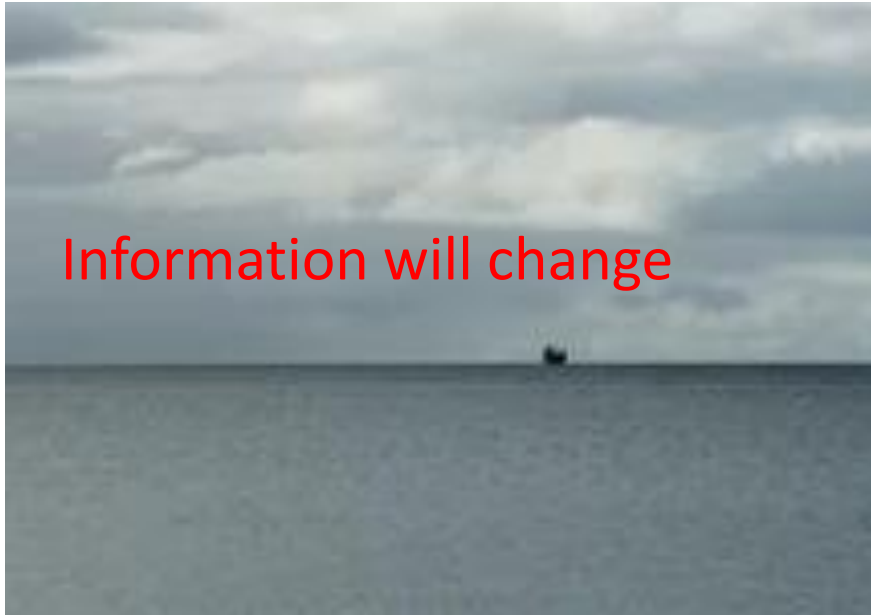
- Systematic proactive evaluation of information to identify **early** and **often weak** signals of
 - risks, emerging events
 - opportunities,
 - that impact decision making and preparedness

Surveillance

- Continued watchfulness over health-related problems through
 - systematic collection,
 - consolidation, and
 - evaluation of relevant data
- can serve as a source of information for horizon scanning.

Horizon scanning and surveillance

Horizon scanning



Our boat is damaged
Is that a ship?
Is it coming this way?
Will it hit us?
Will it tow us to a safe port?
Should we send up a flare?

Surveillance

PORTMIAMI

Home Customer Service Newsroom Parking Contact Us

Port Miami Daily Dock

This report will show all vessels docked at Port Miami in a specific time window.

Date Selection

From: 2025-08-27 12:00 AM

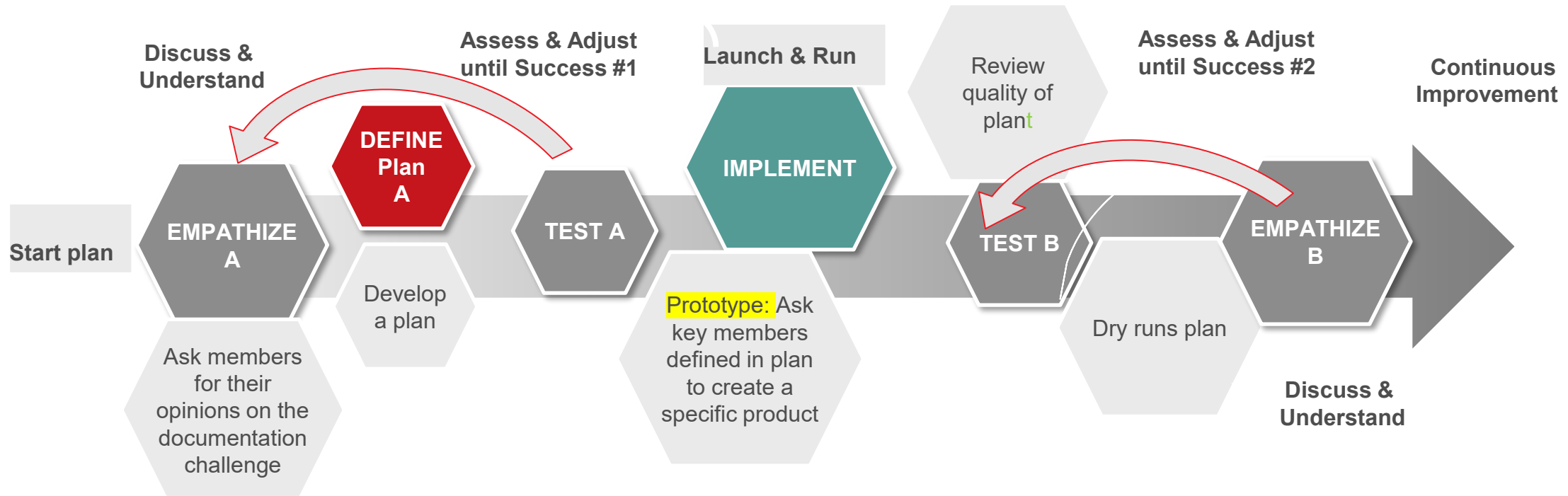
To: 2025-08-27 11:59 PM

Cruise Cargo All

Let's analyze all the damaged ships in the harbor this week

An agile approach to changing information sources at Canadian Blood Services

An agile team design for horizon scanning documents and approaches
We also created a SharePoint site for primary and supporting documents



What are some client needs (tangible and intangible)?

- A trusted source of information on consultation
- A briefing note on an emerging event
- A place to go for archived and trusted information
- A jumping off point to generate hypotheses for studies
- A gap analysis on new technologies
- A sense of being prepared

Horizon scanning foci that can support preparedness for emerging/re-emerging pathogens

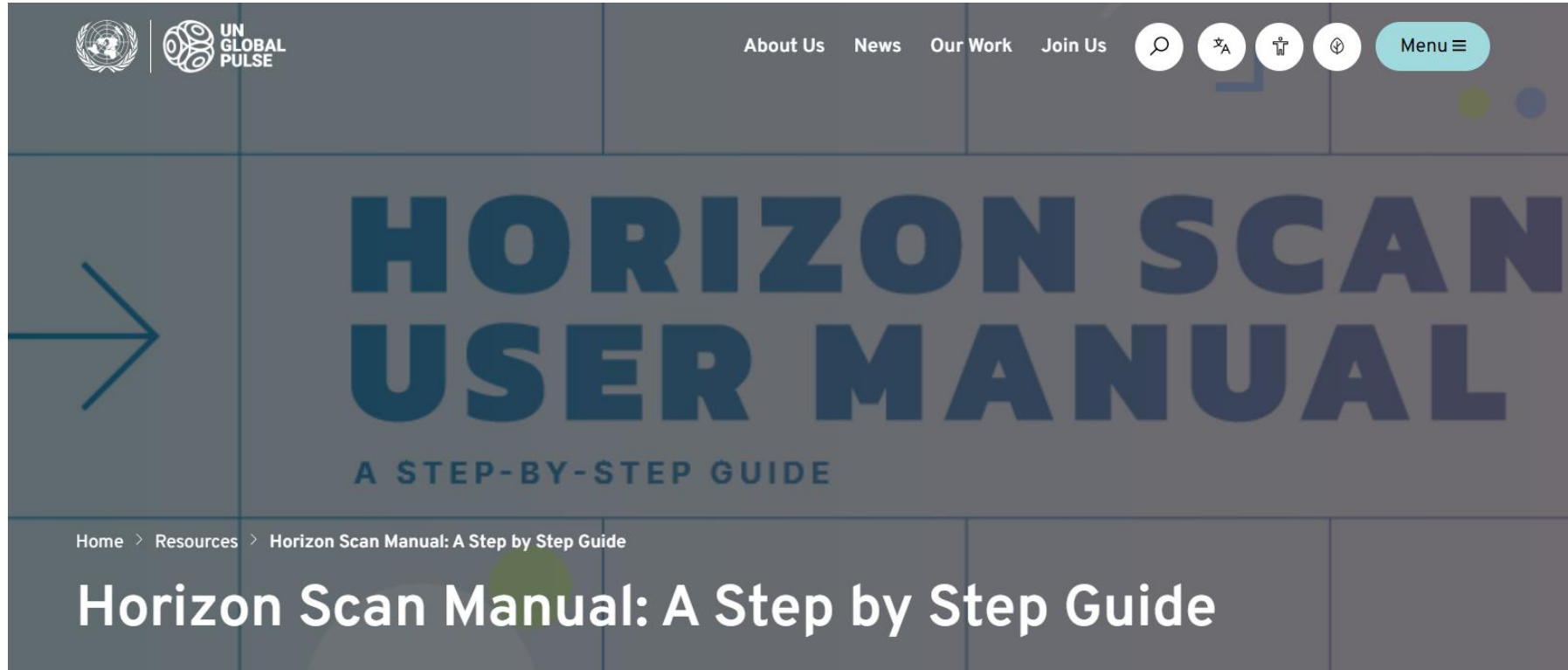
- new information on emerging/re-emerging pathogens
- new technologies
- new therapeutics
- new trends in health care delivery
- new trends in patient health outcomes
- new pressures on health care delivery costs

Trying a national approach

We also have a support team

- Chantal Pambrun – Sr. Medical Director, Innovation & Portfolio Management
- Laura Todd, Associate Director Innovation Initiatives
- Kaye Romans, Manager Innovation Initiatives
- Sheila O'Brien, Associate Director Epidemiology & Surveillance
- Information Technology
- Cybersecurity

But how organizations horizon scan?



I sent this to my Surveillance and Discovery Laboratory and Medical Microbiology team and challenged them to build a protocol to do this at Canadian Blood Services

Sources of new information

We surveyed a team of microbiologists, epidemiologists, scientists, and technologists (n=10)

- Where do you look for new information? Online (e.g., Pubmed, Medical news site) and personal contacts
- Then collated sources and then suggested additional areas.
- We also access an infectious diseases intelligence service.

 **bluedot**

What We Do ▾

Why BlueDot ▾

Resources ▾

About ▾

Careers

Log in

Book A Demo

Don't fight tomorrow's
outbreaks with
yesterday's tools

Infectious disease intelligence revolutionized with AI

What do I use- push vs pull

- Infectious Diseases Society of American (IDSA) News emailed to me (**pushed to me**)
- Center for Infectious Disease Research and Policy (CIDRAP) website (**I pull**)



IDSA
Daily News Briefing In affiliation with BulletinHealthcare
Good morning Steven Drews March 5, 2026

Editor's Note
IDSA Daily News Briefing is written and distributed by the editors of BulletinHealthcare, as a member benefit of the Infectious Diseases Society of America. The briefing's content is reflective of the news as reported across a variety of media outlets at the time of publication; readers are encouraged to review original study publications for a fuller understanding of their methodology, results, and conclusions. IDSA Daily News Briefing content does not reflect the official positions or views of IDSA, or imply IDSA's endorsement, promotion of, or agreement with a particular article or viewpoint.

LEADING THE NEWS
Flu Has Overtaken COVID-19 During Winter Respiratory Virus Season
The [Washington Post](#) (3/4, A1, Nirappil) reports that "for the second winter in a row, the United States has faced a punishing flu season, with COVID as a more muted threat." According to the Post, "COVID and influenza illnesses are becoming more similar, with a key difference: Coronavirus circulates year-round and ticks up in the summer, when flu is gone." Still, experts say it is "too soon to say" if this cycle will continue. This is because offering less protection has not been a severe illness moot

CIDRAP
Center for Infectious Disease Research and Policy



Vaccine Integrity Project kicks off evidence review of Tdap vaccine in pregnancy

Mary Van Besekom | March 4, 2026

RNA vaccine funding cuts threaten decades of scientific progress

Laine Bergeson | March 4, 2026
The relatively low-cost technology has saved millions of lives—and dollars.

Prepandemic respiratory illness tied to increased risk of long COVID

Laine Bergeson | Today at 8:23 a.m.
Roughly 6 in 10 people report eventually recovering from the condition, but millions remain affected.



NEWS BRIEFS

Metformin not effective in treating long-COVID symptoms, study finds

GARDP to explore animal antibiotic as a potential superbug treatment

CARE-X funds research into new approach for drug-resistant bacteria

Up to 56,000 people died from COVID-19 or RSV last year

Report: COVID survivors at nearly 5 times the risk for kidney failure

Legionella pneumonia tied to high death rates, especially in older patients with underlying conditions

[ALL NEWS](#)

We started building a horizon scanning protocol based on our needs and resources

Horizon Scanning

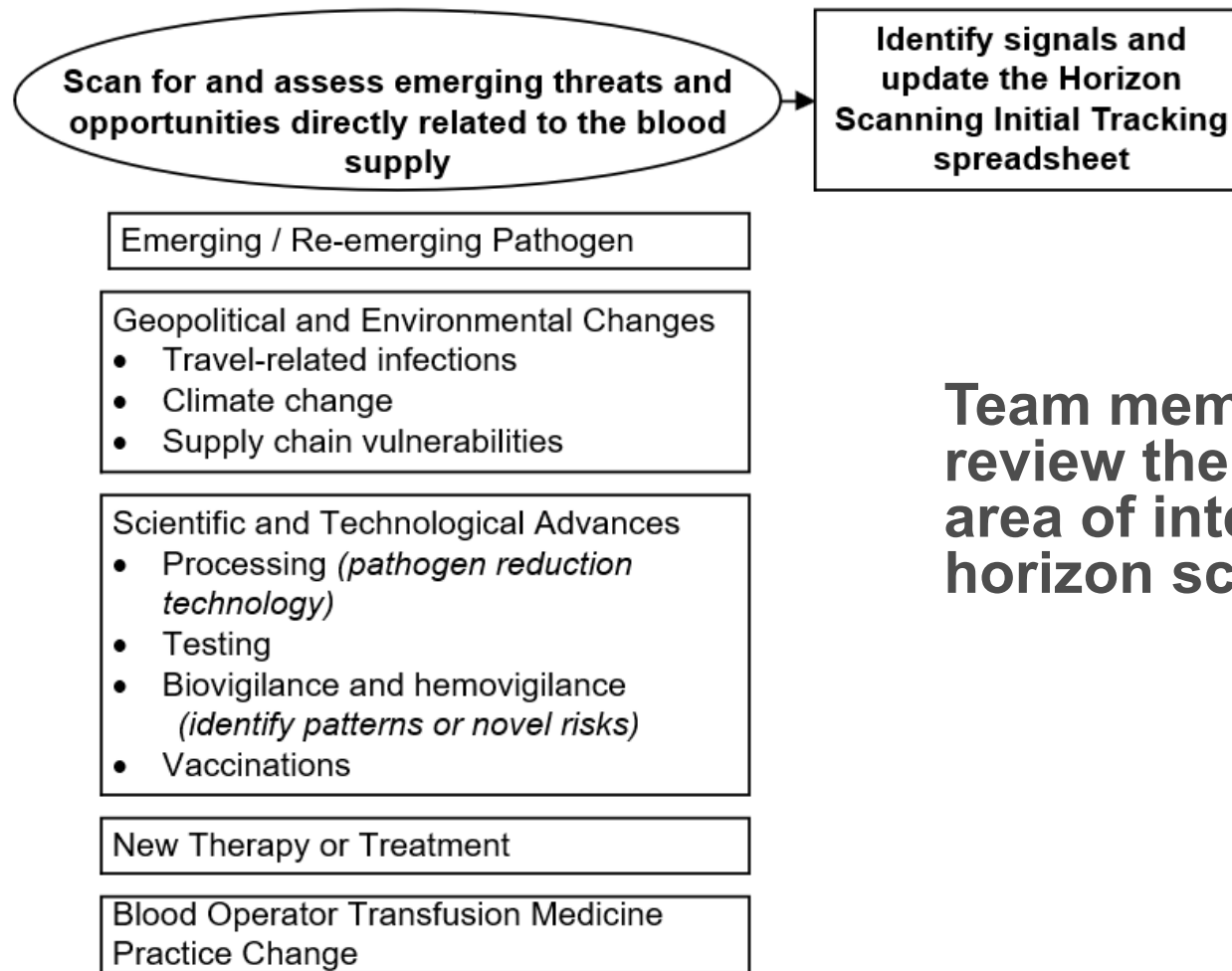
Emerging Threats and
Opportunities Directly Related to
the Blood Supply

[2026-01-05]

Internal (I)

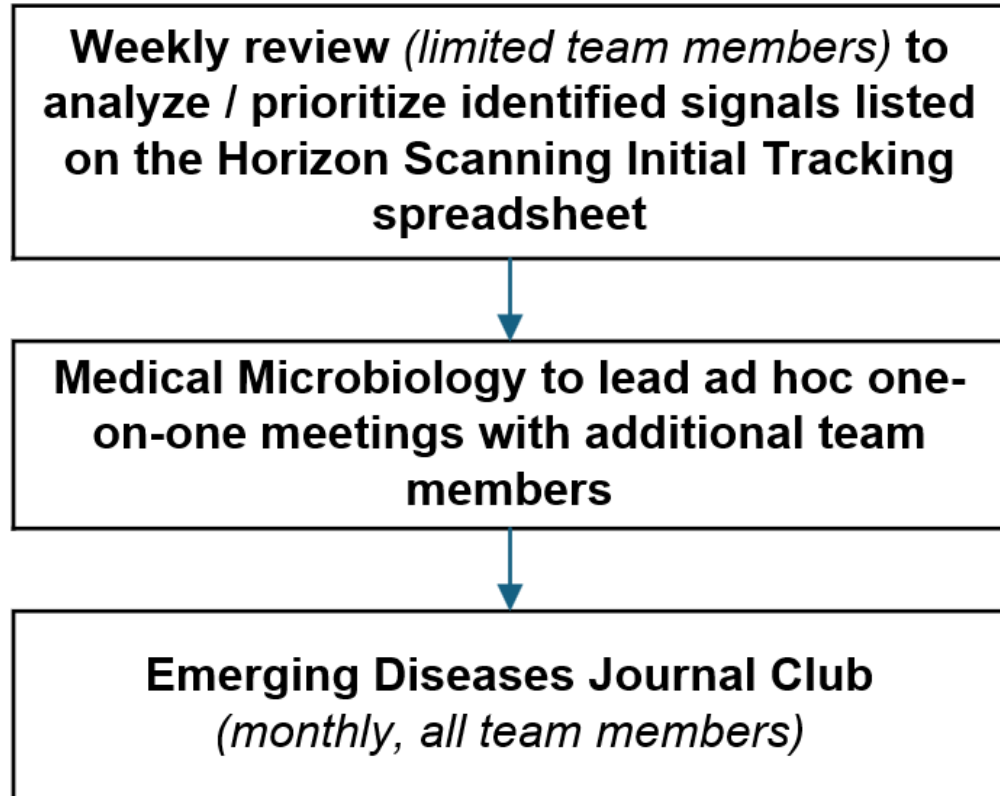


An information scanning and assessment roadmap

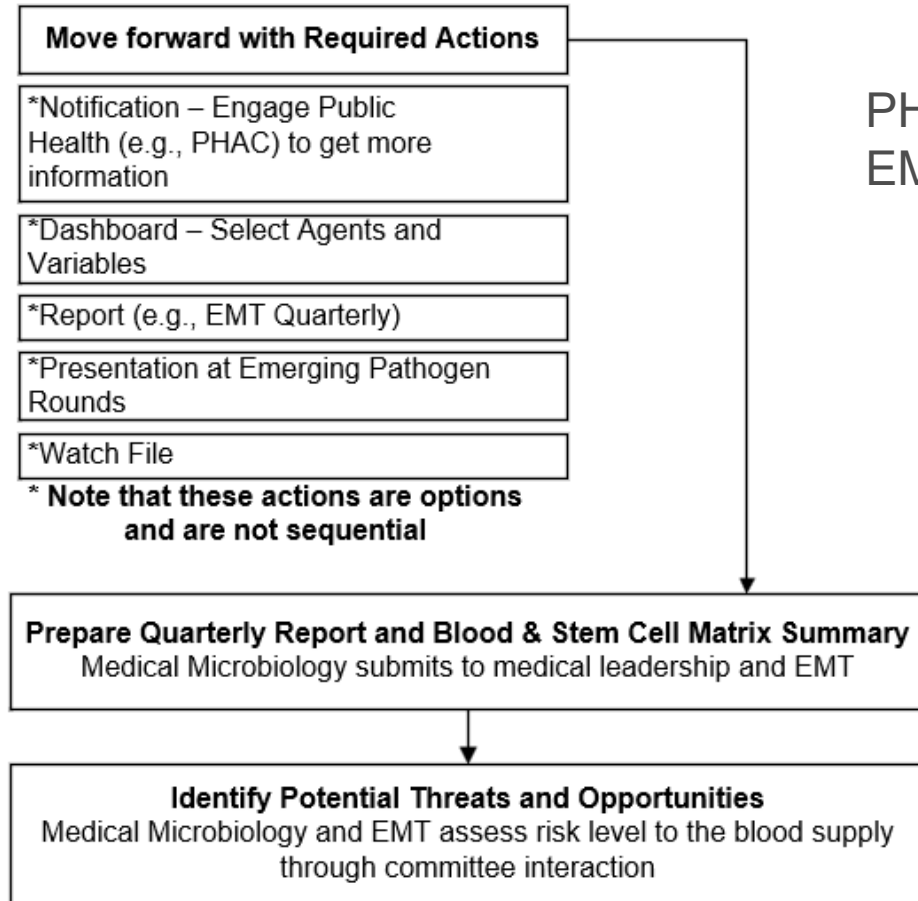


Team members are asked to review the roadmap and find an area of interest to undertake horizon scanning on.

Medical microbiology review and further actioning



Canadian Blood Services-specific knowledge translation activities involving internal and external partners



PHAC- Public Health Agency of Canada
EMT- Executive Management Team

Tracking tool

Fields

- Date
- Contributor
- Threat/Opportunity
- Category
- Signal Description (what is about and why is it important - relevance and what changes could result from it)
- Impact Rating (1-5) 1=low, 5=high
- Plausibility Rating (1-5) 1=low, 5=high (based on novelty, importance, concern)
- Sources - name the sources and/or publications (provide links if possible, note that 3 separate sources are required to corroborate findings)
 - 3 Separate Sources?
 - If "No" for 3 Separate Sources, Does this need to be Tracked for Further Corroboration?
 - Primary Sources Confirmable?
- Actions Required
- Additional Information
- Comments

Building an inward facing dashboard



Emerging Pathogens Dashboard: An Introduction

Welcome to the Emerging Pathogens Dashboard Portal

An emerging pathogen is an infectious agent (virus, bacteria, fungus, parasite, or prion) that has not previously been described as a disease, causing agent in humans. A re-emerging pathogen is one whose incidence is increased in an existent host population because of changes in its underlying epidemiology. Emerging pathogens as well as emerging knowledge can be disruptive to transfusion medicine. Disruptions include newly identified risks to the safety or sufficiency of the blood supply or may be favorable, contributing to the development and implementation of new technologies, or therapeutics, and improved health care delivery, which collectively benefit patient health outcomes. These risks and opportunities may be overlooked without a systematic approach such as horizon scanning.

Horizon scanning refers to the systematic proactive, contemporary, evaluation of information to identify early – and often subtle or conflicting – signals of emerging events, risks, and/or opportunities that impact decision making and preparedness. Horizon scanning is intended to:

- Detect gaps in knowledge
- Assess novel technologies
- Support the development of preparedness drills/exercises based on different threats, with a view to evaluate the impact on healthcare services.

Separately, it can be used to identify opportunities to improve health care service delivery and/or efficiency.

This dashboard is a knowledge translation tool for emerging pathogen horizon scanning at Canadian Blood Services Medical Microbiology.

Components

Overview



Individual Pathogen Pages

Note: Not included in the individual pathogen summaries page is information on how climate change, conflicts and other factors may create risks or opportunities for blood operators.

Displayed Characteristics

- Type of Pathogen
- Agents
- Epidemiology
- Transmission
- Consequences of Infection

Next Steps for Emerging Pathogen Dashboard



Continue to improve the process which allows multiple users to provide information on new emerging/re-emerging pathogens.



Engaging Data and Analytics team to grow the dashboard to support the addition of new pathogens.

Trying another approach

A workable approach to horizon scanning

We know people are busy



The search activity should take no more than 5 minutes



The search activity should engage people with multiple skill sets



Humans should define what search variables are important

Variables we would want search for new information with a specific time variable

What other variables?

Other iterations of regional clusters?

Search terms (Group 1: Theme)

- Emerging pathogen
- Re-emerging pathogen
- Toxin
- Amyloid
- Prions
- Bacteria
- Virus
- Fungus
- Antimicrobial
- Vaccine

Search terms (Group 2: Transmission)

- Blood borne
- Respiratory
- Transplant
- Transfusion
- Zoonotic
- Human-to-human
- Environmental

Search terms (Group 3: Region)

- Americas & Caribbean
- Europe
- Australia
- Pacific
- SE Asia
- Asia
- S Asia
- Africa
- Middle East

Start simple, cluster terms to split workload
Start with English only sources and then build out

Approach for running a search on Google (or MS365)

Search for (January 1, 2026-April1, 2026) + (new information) + (Emerging pathogen OR Re-emerging pathogen) + (Toxin) + (Amyloid) + (Prion)+ (Bacteria) + (Virus) + Fungus) + (Antimicrobial) + (Vaccine) + (Stem cell transplant OR Transfusion) + (Zoonotic OR Human-to-human OR Environmental)



Add a regional cluster to search:

Group 1: + (Americas & Caribbean)

Group 2: + (Europe)

Group 3: + (Australia AND Pacific AND SE Asia)

Group 4: + (Asia AND S Asia)

Group 5 + (Africa AND Middle East)



Run a Google AI search and get summary



Dump into Word file

You can save links highlighted from a subscription services (e.g., bluedot) you can also PDF print summaries and then scan with MS365

This takes a few minutes to run, can be automated and can be run by a coordinator

Reports can be circulated to team members and externals for review, comments, and addition of other information

Google AI Mode – Google Search - Example



+ (January 1, 2026-April 1, 2026) + (new information) + (Emerging pathogen OR Re-emerging pathogen) + (Toxin) + (Amyloid) + (Prion) + (Bacteria) + (Virus) + Fungus) + (Antimicrobial) + (Vaccine) + (Stem cell transplant OR Transfusion) + (Zoonotic OR Human-to-human OR Environmental) + (Americas & Caribbean) X AI Mode

Google Search I'm Feeling Lucky

AI Overview

Based on information available between January 1, 2026, and April 1, 2026, the infectious disease landscape in the Americas and Caribbean has been characterized by emerging zoonotic risks, re-emerging vaccine-preventable diseases, and novel findings regarding pathogen-induced toxins and environmental impacts.

Emerging and Re-emerging Pathogens

- **Bacteria (Re-emerging):** A major multi-state outbreak of **Shiga toxin-producing *E. coli* (STEC) O157:H7** in the U.S. has been linked to raw dairy products (raw cheddar cheese and milk) produced by Raw Farm, LLC, with cases reported into March 2026.

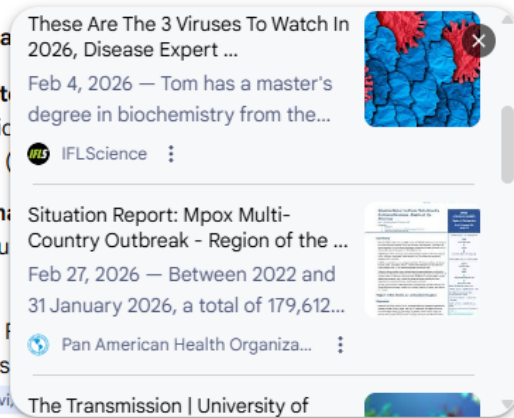
Show more

Sources are listed for all displayed information, specific articles may be viewed for a “deeper dive”.

- **Dengue:** Although cases declined in early 2026 compared to 2025, dengue continues to pose a significant threat with all four serotypes circulating.
- **Yellow Fever:** Sustained transmission of yellow fever, including cases in non-human primates, was reported in South America (e.g., Trinidad), highlighting the risk of zoonotic spillover. Gavi, the Vaccine Alliance +9

Transmission Dyna

- **Zoonotic & Vect** include biting mid... mediated rabies (IFLScience)
- **Human-to-Hum** and Brazil without chains. Situation Report: Mpox Multi-Country Outbreak - Region of the ... Feb 27, 2026 — Between 2022 and 31 January 2026, a total of 179,612... Pan American Health Organiza...
- **Environmental:** risk, with officials symptoms. Gavi, The Transmission | University of




Google AI Mode – Google Search - Example

Dive deeper in AI Mode

After viewing the AI Overview, the “Dive deeper in AI Mode” is used as an advanced extension for research-intensive tasks that crawls hundreds of sites to generate detailed, cited reports.

Key Differences Summary

Feature 	AI Mode (Standard)	“Dive Deeper” / Deep Search
Primary Goal	Quick, comprehensive synthesis	Thorough, expert-level research
Depth	Medium to High	Extremely High
Output	Summary + Some links	Full report, extensive citations
Search Volume	Multiple related searches	Hundreds of searches
Best For	Daily complex queries	Deep, long-term research
Access	Labs / Public in U.S.	Google One Subscribers

The “Ask anything” tool may be used as an additional search aid to dive even deeper into a specific topic.

Ask anything



An example of an automated report

Emerging / Re-emerging Pathogen Summary by Geographic Region for 2026 (Jan 1 to Apr 1)

1. Americas and Caribbean:

In early 2026, several emerging and re-emerging pathogens are being closely monitored in the Americas and Caribbean due to new variants, shifting transmission patterns, and evolving medical countermeasures.

Emerging Viral Pathogens

- Influenza A (Subclade K): A newly identified subtype, referred to as "superflu," has driven a record surge in cases across the United States and Canada as of January 2026. New York and Colorado reported record levels, with 44 jurisdictions showing high activity.
- Avian Influenza A(H5N1): Scientists are monitoring for human-to-human transmission in 2026 following widespread cow-to-human cases in the U.S. in 2024. Current vaccines offer limited protection against this strain.
- Oropouche Virus: Originally confined to the Amazon, this insect-borne virus (carried by midges and mosquitoes) is expanding across South America, Central America, and the Caribbean. Outbreaks are expected to continue affecting travelers in the Americas throughout 2026.
- Mpox (Clade I): Four cases were reported in the U.S. as of early 2026 in individuals with no travel history to Africa, suggesting local transmission of the more severe Clade I variant.
- Canine Coronavirus (CCoV-HuPn-2018): This strain, previously found in Asia, has been detected in patients with respiratory illness in Arkansas, demonstrating its circulation in the Americas.

 Gavi, the Vaccine Alliance +3

Prions and Amyloids

- Chronic Wasting Disease (CWD): Research in March 2026 highlights an emerging risk at the vampire bat–prion interface. CWD-positive cervids (deer) in Mexico and the Southern U.S. are now in contact zones with common vampire bats, which are predicted to colonize further north, potentially acting as a vector for prion spread.
- Amyloid Transmissibility: Recent studies continue to explore the "prion-like" mechanism of systemic amyloidosis, suggesting some forms of amyloid diseases may be transmissible.

 Oxford Academic +1

Bacteria, Fungi, and Antimicrobials

- Antimicrobial Resistance (AMR): Public health efforts in 2026 are focusing on "ESKAPE" pathogens (e.g., *S. aureus*) and *M. tuberculosis* through the development of targeted vaccines to reduce antibiotic reliance.

Files Captured and Scanned Using AI

- M365 Copilot is set up to crawl through email data from subscription services and IT co-developed media alerts.
 - *Emails are forwarded with the title “scan it all” to allow for select scanning of information.*
- Linked articles and web URLs are scanned to generate a report (e.g. Weekly Emerging Pathogen Watch List).
- Source links are contained within the generated report, to allow verification of information.

M365 Copilot Report with Source Links

Weekly Emerging Pathogen Watch List

Week of April 11–17, 2026

Note: Select **Ctrl+Click** to access source, example view provided at end of report.

1. Snowshoe Hare Virus – Pediatric Neuroinvasive Cluster

- **Pathogen Status:** Previously under-recognized human pathogen
- **Pathogen Type:** Virus (orthobunyavirus)
- **Transmission:** Zoonotic; mosquito-borne
- **Blood System Relevance:** Potential viremic window; neuroinvasive disease raises donor deferral and surveillance considerations
- **Signal Type:** Case report / cluster investigation
- **Geography:** Whistler, British Columbia, Canada

Source signal: Pediatric meningoencephalitis cluster attributed to Snowshoe Hare virus, reported as an unusual neuroinvasive presentation in children [\[scan it all | Outlook\]](#)

scan it all

Summary by Copilot

Steven Drews
To: Leisa Brunau

Secretaría de Salud reporta 99 casos sospechosos de virusno bartenador en humanos
Honduras reporta 99 casos sospechosos de virusno bartenador en humanos - Noticias Prensa Latina
Honduras battles increase in screwworm infestations
Interview: Everything you need to know about new world screwworm in cattle - Americas

Emergencia de salud pública: Sedes reporta un fallecido por fiebre amarilla
Emergencia de salud pública: Sedes reporta un fallecido por fiebre amarilla
La fiebre amarilla mata después de años de silencio: Epidemia en Costa Rica - Portada
Ministerio de Salud y Deportes de Bolivia - SALUD INSTA A INTENSIFICAR LA VACUNACIÓN OPORTUNA CONTRA LA FIEBRE AMARILLA. UNA DOSIS CONFIERE INMUNIDAD DE POR VIDA
Ministerio de Salud y Deportes de Bolivia - ANTE PRESENCIA DE 2 CASOS DE FIEBRE AMARILLA SALUD RECOMIENDA BLOQUEO EPIDEMIOLÓGICO Y DESCARTA UNA EPIDEMIA
Epidemiological Alert: Yellow fever in the Americas Region - 11 March 2026 - PAHO/WHO | Pan American Health Organization

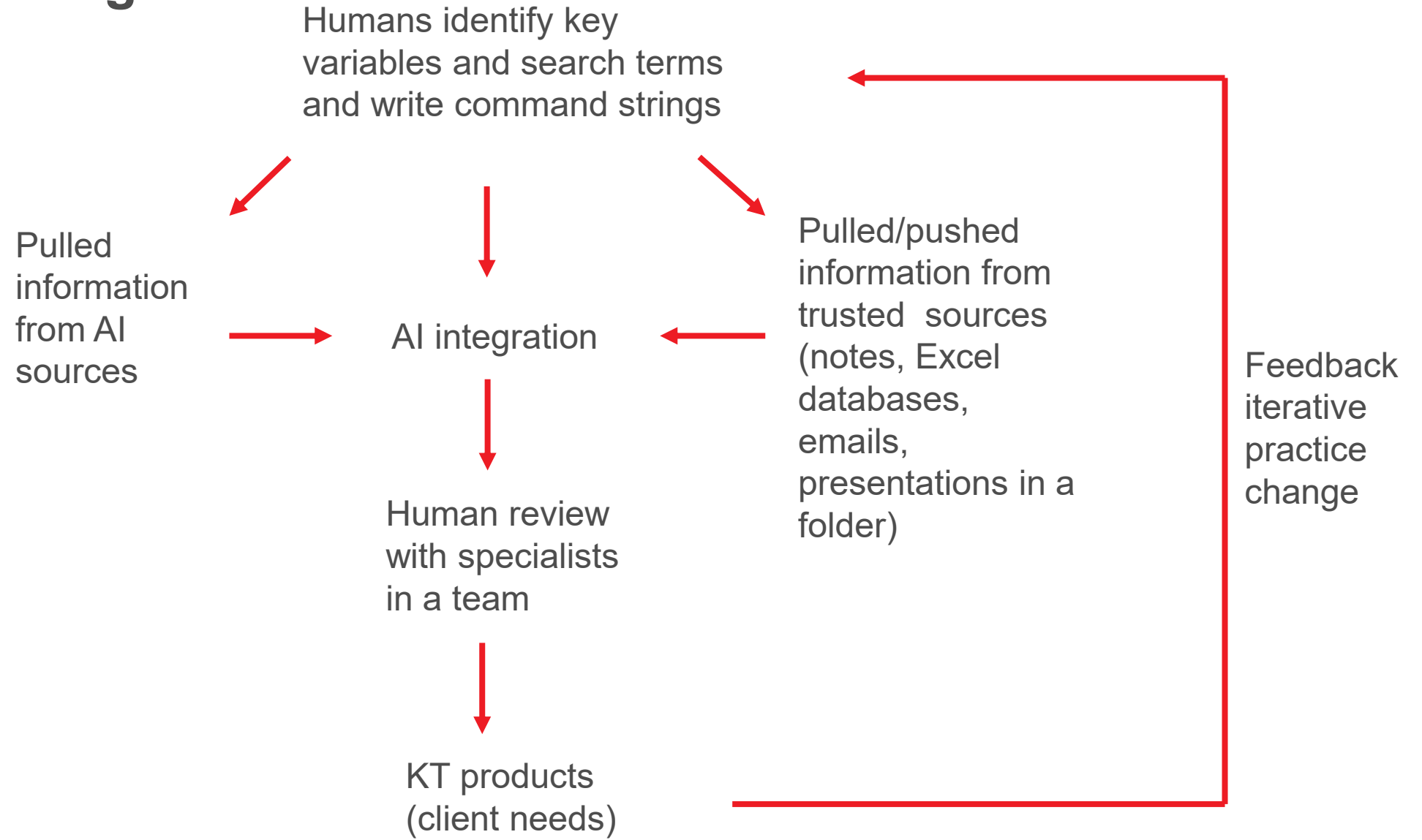
Circulation du Chikungunya - la Haute Autorité de Santé recommande deux vaccins à la Guyane
Chikungunya - point de situation | Agence nationale de santé Guyane
Haute Autorité de Santé - Avis n°2026.0022/AC/SE/PEV du 9 avril 2026 du collège de la Haute Autorité de santé portant sur les vaccins IXCHIQ et VIMQINYA dans un contexte de réémergence du chikungunya en Guyane

¿Qué es el nodavirus? El virus acuático que puede dejarlo ciego | El Norte de Castilla
An emerging human eye disease is associated with aquatic virus zoonotic infection | Nature Microbiology

Limitations Using AI

- AI requires human verification, being used only to potentially streamline and enhance the horizon scanning process.
- AI reports do not replicate, even with identical Boolean logic string searches.
- AI creates new text each time, varying structure / emphasis / content based on dynamic retrieval and context.
- Studies indicate that AI-generated data is random, with less than a 1% chance of producing the same item twice, although the underlying facts should remain consistent.

Bringing it all together



External facing knowledge translation

Special project

Public Health Alerts

Published by *NEJM Evidence* in collaboration with CIDRAP, Public Health Alerts are brief reports that inform public health officials, clinicians, policymakers, and the public of important and emerging health issues. Freely available on both the [NEJM Evidence](#) site and here, these reports are published on a rapid review track in support of efforts to make timely decisions for the medical community and public health.

For more information, read the [news release](#) and *NEJM Evidence* [editorial](#) on the launch.

To receive notice of new reports on the day they are published, sign up for our Daily News Headlines newsletter [here](#).

[SUBMIT A PUBLIC HEALTH ALERTS REPORT](#)

Latest Reports



[Seasonal influenza activity, vaccination rates, and pediatric influenza mortality, Massachusetts, 2024-2025](#)

The percentage of visits for influenza-like illness peaked at almost 12% in early February, a record high, and deaths totaled 441 for the season, including 10 deaths in children. (Jan 16, 2026)



[Detection of community transmission of clade 1b mpox virus in the United States](#)

In October 2025, clade 1b mpox virus infection was confirmed in 3 unvaccinated hospitalized men in California who had not traveled internationally. (Dec 17, 2025)



[CURRENT ISSUE](#) [RECENTLY PUBLISHED](#) [AUTHOR CENTER](#) [ABOUT](#) [Q](#)

Author Center

[SUBMIT A MANUSCRIPT](#)

[MANUSCRIPT SUBMISSIONS](#)

[Introduction](#)

Article Types

[Peer Review & Publication Process](#)

[Author Permissions](#)

[Presubmission Inquiries](#)

[Editorial Policies](#)

[Author Frequently Asked Questions](#)

Article Types

Article type guidelines below provide an overview of initial submission requirements for *NEJM Evidence*. Most article types are subject to peer review, and certain article types — such as reviews and editorials — are usually solicited by *NEJM Evidence* editors, though unsolicited submissions may be considered. If a paper is selected for review and potential acceptance for publication, *NEJM Evidence* will likely request updated materials that adhere to stricter guidelines.

When submitting new manuscripts or presubmission inquiries to *NEJM Evidence*, all authors must meet the [criteria for authorship](#) established by the International Committee of Medical Journal Editors (ICMJE) and the manuscript must be classified as one of the article types listed below.

Manuscript word-count limits include all information from introduction through conclusion or discussion. They exclude abstracts, figure legends, and table notes. Manuscripts far exceeding word-count limits will be returned unread.

Regardless of setting, you can build defined outputs

- Presentations at our emerging pathogens rounds
- Development of a dashboards
- Summary webpages
- Quarterly emerging pathogens report to our medical leadership
- Ideas for studies, abstracts, and manuscripts

Questions to attendees

- What activities listed here are compatible with your current practice?
- Are there any practices listed here that are compatible with your setting?

Acknowledgements

- Leisa Bruneau, Canadian Blood Services Surveillance and Discovery Laboratory
- Cynthia Cranney, Canadian Blood Services Surveillance and Discovery Laboratory
- Kaye Romans, Project Manager, Canadian Blood Services Surveillance and Discovery Laboratory
- Carmen Charlton, Medical Microbiology, Canadian Blood Services Surveillance and Discovery Laboratory
- Sandra Ramirez, Medical Microbiology, Canadian Blood Services Surveillance and Discovery Laboratory
- Sheila O'Brien, Epidemiology & Surveillance, Canadian Blood Services
- Laura Todd, Innovation and Portfolio Management, Canadian Blood Services
- Karima Khamisa, Donation Policy and Studies, Canadian Blood Services
- Chantale Pambrun, Innovation and Portfolio Management, Canadian Blood Services