

CLyDRN Impact Evaluation

Final Report

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Executive Summary

Impact evaluation: Context

This report presents an impact evaluation of the Canadian Lyme Disease Research Network's (CLyDRN) activities since its inception in 2018, highlighting key contributions to the tick-borne disease research ecosystem, and providing insights to shape future priorities and initiatives.



Introduction to CLyDRN

CLyDRN is a pan-Canadian organization that builds national capacity for multidisciplinary research on TBDs, while also funding projects and fostering collaboration with patient representatives and diverse partners in Canada and beyond.



Impetus for this Evaluation

As CLyDRN comes to the end of its inaugural funding award in 2025, it requires an evaluation of impact across program activities to support future funding efforts, make the case to expand focus from LD to all TBDs and evolve to TickNet Canada.



Guiding Framework

This impact evaluation is guided by a tailored framework (next slide), structured around key enablers—research and training; knowledge mobilization; collaboration; patient engagement—and associated objectives that have helped advance CLyDRN's mission from 2019 to 2025.

Approach and evidence base informing this impact evaluation

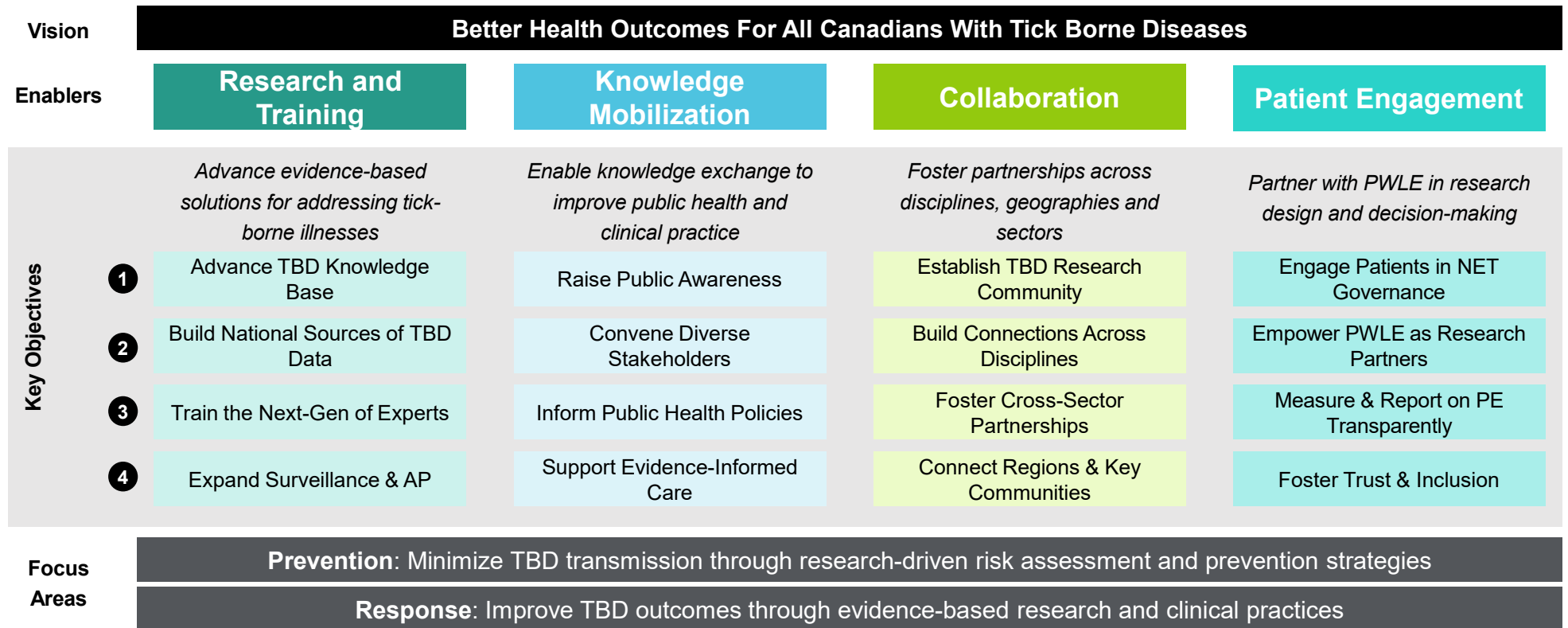
We leveraged diverse research methodologies and data in order to advance an impact assessment grounded in a custom framework, relevant metrics and evidence-based insights.¹



¹Detailed list of evidence sources (e.g. documents, reports, interviewees) can be found in the Appendix

²Details on methodology, key takeaways from consultations and metrics can be found in the Appendix

Impact evaluation framework



TBD: Tick-Borne Disease; AP: Applied Research; PWLE: People With Lived Experience; NET: Network; PE: Patient Engagement

Overview of evaluation metrics^{1,2}

Objective	Research and Training	Knowledge Mobilization	Collaboration	Patient Engagement
1	<ul style="list-style-type: none"> Number of publications Amount of additional grant funding Researcher perspectives on CLyDRN's research quality and its ability to enable advancements in TBD research 	<ul style="list-style-type: none"> Number and types of media outreach efforts through public platforms (e.g., interviews) 	<ul style="list-style-type: none"> Example of CLyDRN's activities that have strengthened the TBD community Number of members and stakeholders Avg. duration of member involvement Author mapping of CLyDRN publications over time 	<ul style="list-style-type: none"> Description of governance model alongside quotes from patient partners about their role Percentage of patients on Executive Committee Avg. duration of patient partner involvement
2	<ul style="list-style-type: none"> Example of CLyDRN initiatives that built national source/tools of TBD data (e.g., TickTool) alongside perspectives on usefulness/uptake of tool from researchers 	<ul style="list-style-type: none"> Example of CLyDRN initiatives that brought together diverse stakeholders (e.g., TickNet Canada Scientific Symposium) including number and diversity of stakeholders involved and their views on the engagement's impact 	<ul style="list-style-type: none"> Example of cross-disciplinary collaboration sparked by relationships developed through CLyDRN and corresponding results Overview of CLyDRN's interdisciplinary reach across various One Health domains 	<ul style="list-style-type: none"> Example of CLyDRN initiative that involved patient partners as co-researchers and its impact (e.g., Brokered Dialogue project) Testimonials from patient partners and researchers on the involvement of PWLE into research
3	<ul style="list-style-type: none"> Number of trainees associated with CLyDRN Current / recent trainee testimonials on research and mentorship experience 	<ul style="list-style-type: none"> Examples of CLyDRN-generated data informing public health policies / practices and HCP's clinical judgement and decision-making in daily practice Perceived usefulness of CLyDRN's annual events and other activities in informing public health polices and evidence-informed care 	<ul style="list-style-type: none"> Distribution of CLyDRN members by sector (e.g., academic, public health, government, hospital network) and examples of CLyDRN initiatives involving cross-sectoral collaboration Example of CLyDRN projects that involved different sectors and communities (e.g., Healthy Cities Project) 	<ul style="list-style-type: none"> Overview of how SPOR/GRIPP2 was integrated into projects, with an example of a CLyDRN initiative that applied it.
4	<ul style="list-style-type: none"> Example of CLyDRN initiatives that helped expand surveillance for TBD across Canada (e.g., CalSeN) along with its applications and impact 		<ul style="list-style-type: none"> Geographical spread of CLyDRN members Example of cross-geography and community collaborations sparked by relationships built through CLyDRN 	<ul style="list-style-type: none"> Description of approach taken to foster trust with PWLE Testimonials from patients and researchers on the trust they feel working together



¹For detailed methodology related to the above metrics, please refer to the appendix; ²A broad set of metrics was initially considered for each enabler, and after alignment with the network directors, those with available data, strong relevance and practical value were selected.

Research and Training: CLyDRN has elevated the profile, productivity and potential of Canada's TBD research community by strengthening national coordination, enhancing surveillance and training the next gen of TBD researchers



Advance TBD Knowledge Base

CLyDRN has **advanced TBD research in Canada**, generating critical insights in **epidemiology, risk factors, diagnosis, and clinical outcomes** – yielding over **146 publications** and **\$17M in funding**.



Build National Sources of TBD Data

As an example, CLyDRN supported development of TickTOOL, a **national tick prevention resource** that guides Canadians on **practical ways to prevent and manage tick bites**, while collecting region-specific real world data on tick bites to inform evidence-based prevention strategies.



Train the Next-Gen of Experts

CLyDRN played a pivotal role in **strengthening Canada's research capacity in TBDs** by offering **comprehensive training, mentorship, networking and leadership opportunities** to students and early career researchers.



Expand Surveillance & Applied Research

As CLyDRN's flagship initiative, Canadian Lyme Sentinel Network (CaLSeN) **unified jurisdictions to implement standardized tick surveillance** in all 10 provinces across Canada, producing timely, high-quality data through expanded sentinel sites and coordinated national efforts.

Knowledge Mobilization: CLyDRN transformed research into action by connecting diverse stakeholders, amplifying public awareness of the growing TBD threat, and informing evidence-based public health decisions.



Raise Public Awareness

CLyDRN members significantly elevated public awareness of the rising threat of TBDs at the local, national and international levels – contributing to **~275 interviews / articles** and organizing **~53 online webinars**.



Convene Diverse Stakeholders

As a key case study, CLyDRN's annual symposium, TickNet Canada Scientific Symposium, provided a platform for TBD knowledge exchange, **uniting trainees, patient partners, research staff, scientists and public health professionals from across 5 countries, ~67 institutions and >75 research areas**.



Inform Public Health Policies & Support Evidence Informed Care

The TBD research conducted by CLyDRN members has directly shaped evidence-based public health guidelines and policy. The network's tick surveillance data underpins **annual risk maps** produced by public health organizations, while their research has been integrated into **clinical practice guidelines** (Center for Effective Practice in Ontario) and recognized in the **Government of Canada's Climate Change Action Plan**.

Collaboration: CLyDRN has united >400 stakeholders across sectors, disciplines and regions to advance a pan-Canadian, One Health approach to TBD research



Establish TBD Research Community

Since 2018, CLyDRN has brought together >300 members across numerous disciplines, sectors, and geographies to form **an inclusive, coordinated TBD research community focused on driving patient-centered, intervention-driven innovations.**



Build Connections Across Disciplines

CLyDRN brought together microbiologists, social scientists, clinicians, and other experts, **advancing a transdisciplinary research approach** that integrates human, animal and environmental research alongside lived experience to deepen understanding of TBDs.



Foster Cross-Sector Partnerships

Through initiatives like CaLSeN and The Healthy Cities Projects, CLyDRN united federal and provincial health authorities, genomic researchers, veterinarians, environmental agencies, and community partners, **breaking down silos in** TBD surveillance, risk mapping, and emerging disease response across Canada.



Connect Regions & Key Communities

CLyDRN has built a **network that spans the country and reaches key populations**—such as Indigenous communities—at high risk of TBD so that TBD research is coordinated and informed by experts wherever they reside.

Patient Engagement: CLyDRN set a new standard for patient engagement in TBD research by embedding PWLE voices in governance, research and other network activities



Engage Patients in NET Governance

CLyDRN integrated PWLE voices throughout network governance, granting them decision-making authority and oversight roles on the executive committee, establishing a meaningful model of patient engagement rarely seen elsewhere.



Empower PWLE as Research Partners

CLyDRN redefined the TBD research paradigm to yield more impactful research outcomes by engaging patient partners as co-researchers and positioning lived experience as essential data to guide research direction.



Measure & Report on PE Transparently

PWLE led implementation of the GRIPP2-SF checklist, helping CLyDRN initiate a clear, structured and transparent process for researchers to report on patient and public involvement in their work.



Foster Trust and Inclusion

CLyDRN provided the environment for strong relationships to be built between researchers and PWLE, transforming a historically distrustful space into one of open collaboration.

CLyDRN has expanded the TBD knowledge base, established an integrated interdisciplinary network and enabled meaningful engagement with PWLE, raising the profile and impact of TBD research in Canada

Research and Training

Expanded knowledge, capacity and data sources through interdisciplinary TBD research and training in Canada

Knowledge Mobilization

Enabled dissemination of evidence within the research, clinical and broader community settings to improve prediction, prevention and response to TBD

Collaboration

Built an engaged network that connects diverse sectors, disciplines, geographies and communities to share knowledge, drive research and contribute to health impact

Patient Engagement

Transformed the research paradigm by elevating lived experiences as critical data and empowering PWLE to contribute to research priorities and execution

Detailed Findings

Enabler 1: Research and Training

Advance evidence-based solutions for addressing tick-borne illnesses

Advance TBD Knowledge Base

Build National Sources of TBD Data

Train the Next-Gen of Experts

Expand Surveillance & Applied Research

CLyDRN has elevated Canadian TBD research impact, generating robust, Canada-specific data, publishing high-impact papers and attracting over \$15M in grant funding



Produced robust data on TBDs reflecting the Canadian context¹

- ◆ Generated Canadian data on TBD epidemiology, diagnosis and health / economic impacts.
- ◆ Strengthened the evidence base to guide future research, risk communication, and prevention strategies for Canada by utilizing a One Health approach that integrates social and behavioural science.
- ◆ Established national benchmark and research infrastructure for future TBD breakthroughs.



Secured funding and produced high-impact publications

- ◆ Attracted funding from academic, government (inc. tri-council), NGO and private sources to support network operations, research and training programs.
- ◆ Advanced scientific understanding of TBD through >146 high-impact research publications.

CLyDRN has made major contributions to TBD research¹

- ◆ **CaLSeN:** A pan-Canadian network conducting annual, active tick surveillance is generating standardized national data (see case study; slide 17).
- ◆ **Longitudinal Risk Study:** Provides Canadian data on epidemiological risk factors of LD
- ◆ **COHORT Study:** Tracks long-term health and economic impacts of LD
- ◆ **Diagnostic Testing:** Enhances TBD diagnostics by evaluating current test methods and expanding detection of other tick-borne pathogens

\$17.4M

Additional* Grant
Funding^{2,3}
(2018-2024)

146+

Publications
(2018-2025)^{2,4,5}

“There was no pan-Canadian research platform around TBDs, let alone LD, and there was a critical need for one... We’ve changed the quality of research that’s possible, moving from isolated efforts to an integrated, collaborative framework.”

- Executive Team

“They’ve been able to publish more powerful research by collating data across provinces... and the social science work on behaviour and environment is cutting edge.”

- International Collaborator



See Appendix for additional quotes

Sources: ¹Consultations with Internal and External Stakeholders; ²Annual Reports to CIHR (2019-2022); ³CLyDRN Year in Review Reports (2022-2024);

⁴Individual Member CIHR Progress Forms (2023-2024) ⁵Select CLyDRN Member CVs; *Funding acquired in addition to initial CIHR grant; ⁵Individual CIHR Progress (2023-2024)

TickTOOL: CLyDRN has supported development of TickTOOL, a national tick data platform that is raising awareness of TBD and how to prevent them

CASE STUDY

TickTOOL 

Collaborators:



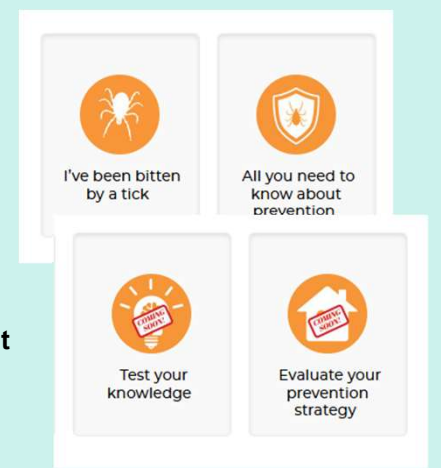
Université 
de Montréal



Overview: TickTOOL¹ is a national data resource offering practical **guidance on tick bite treatment and prevention**. It features interactive tools that walk users through personal **protection strategies**, as well as **safe tick removal**. Now integrated into eTick.ca, TickTOOL also supports nationwide tick surveillance by allowing users to upload tick photos for expert identification.

CLyDRN's contribution: With **direct funding** from CLyDRN, several **CLyDRN researchers co-designed TickTOOL** and continue to support its development and implementation in collaboration with diverse stakeholders, including patient partners.

Impact: Since its launch in 2024, TickTOOL has played a key role in **raising awareness about Canada's increasing risk of TBDs**. It is also driving research by enabling collection of real-world data via eTick.ca and **enhancing understanding of tick behaviour and regional distribution** to better understand spread of ticks across Canada. Since its launch in 2024, TickTOOL has been accessed by over 34,000 users, with new features planned for 2025.



Extract from TickTOOL Website

"TickTOOL offers practical, tailored advice to support users in adopting preventive behaviours that suit their individual needs and lifestyles, addressing a gap in existing public health resources."

- CLyDRN Trainee



See Appendix for additional quotes
Sources: ¹[TickTOOL](https://eTick.ca)

CLyDRN expanded national capacity in TBD research, equipping the next generation of experts with cutting-edge skills, leadership experience and strong networks



Equipped trainees with cutting edge research skills

- ◆ Provided trainees with exposure to interdisciplinary research and created opportunities to build valuable connections across the network.
- ◆ Introduced hands-on patient engagement training, offering trainees practical experience to apply in their own research.



Strengthened capacity and leadership in TBD research

- ◆ Significantly expanded Canada's expertise in TBDs – increasing number of trainees from a pool of ~30 in 2019² to 190 by 2024³, filling a critical gap in the field.
- ◆ Trained and empowered a new generation of highly qualified personnel, providing opportunities as network and pillar leads.

CLyDRN trainees* are building careers in academic and public health sectors in Canada¹

A Université de Montréal doctoral student investigating Canadians' perceptions of LD risks significantly **strengthened their research skills** as a CLyDRN trainee. CLyDRN provided them with exposure to **qualitative research methods** and a **leadership role** as a co-lead of TAC, fostering personal and professional growth and building confidence in stakeholder engagement.

A doctoral student in veterinary medicine at Université de Montréal shared how CLyDRN offered them **valuable opportunities to network with** diverse collaborators and fellow trainees, and build vital connections. As they **transition into a new public health role**, they plan to keep those connections long-term to **support future research and knowledge-exchange**.

Trainees Mentored by CLyDRN Researchers**



“The network has really helped the capacity building aspect in the Canadian research landscape...To see some of the trainees, who are now postdocs, leading their own projects in the network or are pillar leads themselves...it's been great from a capacity building perspective.”

- Executive Team



See Appendix for additional quotes; *CLyDRN trainees work on a project that is associated (i.e. funded/initiated/managed) with CLyDRN. They may or may not be directly funded by CLyDRN. **Trainee numbers was only documented starting in 2022. Sources: ¹CLyDRN's Community Stories Project; ²Annual Reports to CIHR (2019; 2022); ³CLyDRN Year in Review Reports (2023-2024)

CaLSeN: CLyDRN undertook a standardizing, multi-province tick surveillance effort, producing data that is unmatched globally

CASE STUDY

CaLSeN

Surveillance Sites^{1,2}

96

(2019)

214

(2024)



● Sentinel Regions (39)

Overview: CaLSeN is a **pan-Canadian network of sentinel regions** that have been conducting annual, standardized tick surveillance since 2019. It generates data essential to understanding and predicting TBD risk nationwide through integrated pathogen testing and consistent data collection methods. Between 2019 and 2024, CaLSeN **more than doubled the number of active surveillance sites nationwide** (see box on left).

CLyDRN's Contribution: CLyDRN **established the national infrastructure for tick surveillance**, by leveraging its research network's expertise and overcoming logistical barriers through collaboration with regional and provincial public health partners. CaLSeN now serves as a model that informs surveillance approaches for TBDs and other vector-borne diseases.

Impact: CaLSeN has enabled **detection of multiple tick-borne pathogens across Canada** (e.g., Babesia, Anaplasma, Powassan virus, in addition to LD).^{3,4} Data generated by CaLSeN has transformed public understanding of TBDs in Canada—from a distant concern to an urgent, present risk—and **strengthened coordinated action across jurisdictions**.

"Before CLyDRN, we didn't have a standardized way of collecting tick data. When they arrived, they developed, in collaboration with our group, a consistent approach to collecting and analyzing tick data across provinces."

- Public Health Official

"Data produced by CaLSeN is unique in Canada and worldwide - such nationally coordinated field-based surveillance programs do not exist in other countries where TBDs are an issue... CaLSeN is a truly monumental cooperative achievement and a perfect example of successful application of One Health approach"

- Executive Team



See Appendix for additional quotes

Sources: ¹CLyDRN Year in Review Report (2024); ²Annual Reports to CIHR (2020); ³Consultations with Internal and External Stakeholders; ⁴CLyDRN Member Survey (N=51)

Enabler 2: Knowledge Mobilization

Enable knowledge exchange to improve public health and clinical practice

Raise Public Awareness

Convene Diverse Stakeholders

Inform Public Health Policies

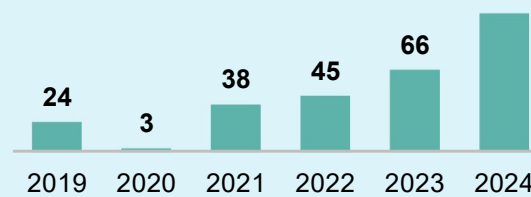
Support Evidence-Informed Care

Communicating through diverse media channels, CLyDRN researchers and trainees have significantly elevated public awareness of the rising threat of TBDs

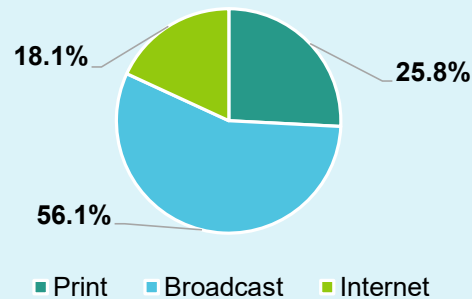
Amplified TBD awareness via multi-channel engagement

- ◆ Media coverage of CLyDRN researchers and students has raised awareness of the increasing prevalence of LD across Canada, the role of climate change and the need for better TBD diagnosis [Examples: [1](#), [2](#), [3](#)]
- ◆ Developed a surveillance system (CaLSeN) vital to informing messages to the public about TBD risks and prevention.
- ◆ By 2024, CLyDRN members had contributed to ~275 interviews and articles in local, provincial, national and international media channels.
- ◆ From 2021 to 2023, CLyDRN created and hosted ~53 Virtual LD awareness events held throughout Lyme Awareness Month (May)^{3,4}

Total No. of Media Interviews / Articles (2019-2024)^{1,2}



Types of Media Coverage by CLyDRN Members^{1,2}



Media Coverage Example



Dr. Kieran Moore, a founder of CLyDRN, speaks about the risk of TBD in Canada for national news article. [Source: [Global News](#), 2019]

"Because of good knowledge translation and local awareness campaigns, we're seeing early detection of Lyme disease, fewer complications like arthritis, and better clinical outcomes."

- Executive Team

"For Lyme Awareness Month., there were webinars, accessible to all, that were really well done and very informative"

- Public Health Official

TickNet Canada: CLyDRN organized annual symposia which served as national catalysts for change—bringing together all stakeholders involved in understanding TBD to convert research into tangible action

CASE STUDY

TickNet Canada Scientific Symposium

Attendees¹

110

79

(ON-2023) (BC-2024)

Past Sponsors²



Overview: The TickNet Canada Scientific Symposia, held in 2023 and 2024, were 2-day events that gathered scientists, HCPs, policymakers, patient partners, research staff, and trainees from across Canada and abroad. This **multidisciplinary forum involved experts from numerous fields including ecology, entomology, medicine, and public health**. Notably, it deliberately included viewpoints often missing from scientific conferences, particularly those of patients and their families. The next TickNet Canada symposium is planned for February 2-4, 2026 (Gatineau, QC).

CLyDRN's Contribution: The symposia were organized by CLyDRN members, comprising of researchers, trainees, research staff, and patient partners. The planning **process demonstrated the collaborative and inclusive nature of CLyDRN**, with patients playing a vital role in shaping the symposia's program alongside researchers.

Impact: Inclusive planning **brought diverse perspectives and encouraged meaningful dialogue**. The symposia were commended for showcasing varied research, fostering lasting connections, and enabling collaboration between researchers and public health experts³ – creating an environment which facilitated timely information sharing and **research that could guide policy-making decisions**.

“You can really get into great conversations and build connections... and then have those contacts to reach out to when something new comes up”

- Public Health Official

“My personal attitude shifted dramatically once I attended the first TickNet Canada conference and met the researchers and had a chance to speak with them. I felt heard and appreciated.”

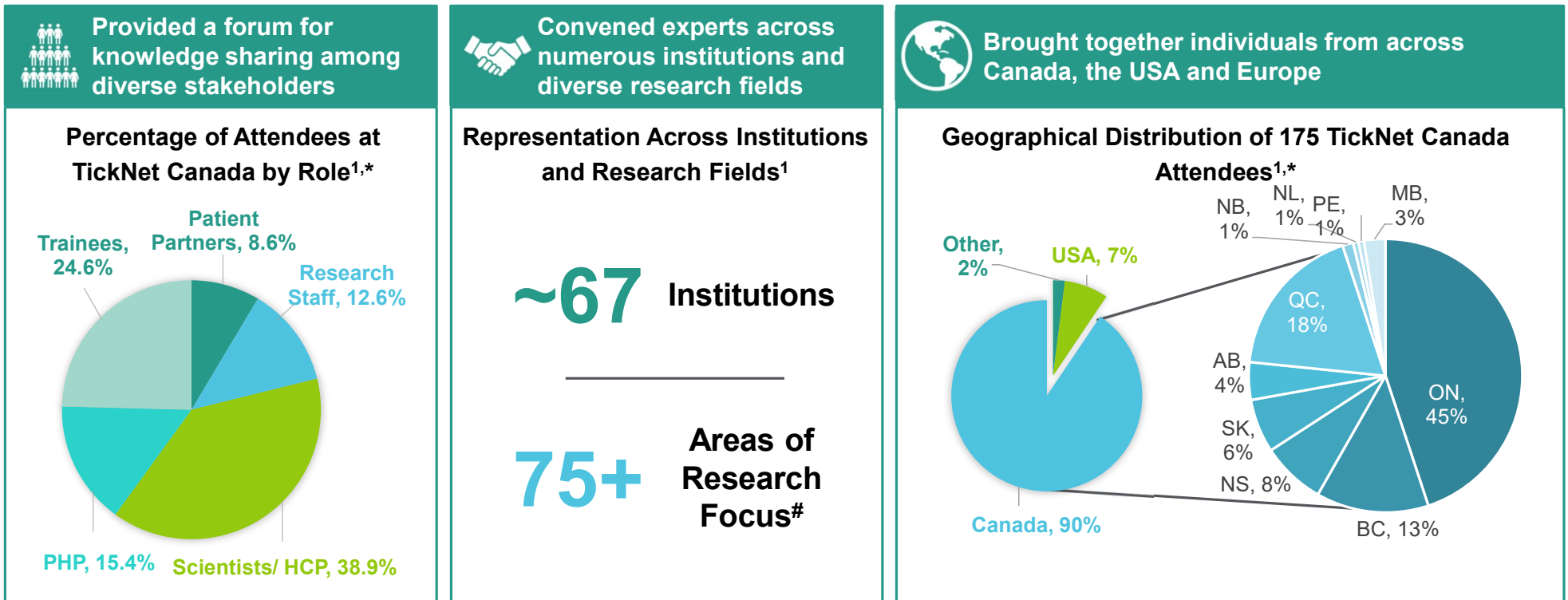
- Patient Partner



See [Appendix](#) for additional quotes and Excerpts from the TickNet Canada 2024 Symposium Program

Sources: ¹CLyDRN Year in Review Report (2023-2024) ;²TickNet Canada Symposium program 2024; ³Consultations with Internal and External Stakeholders

TickNet Canada created a powerful platform for knowledge exchange, uniting diverse stakeholders from around the world and from diverse disciplines



See Appendix for additional quotes; * Total of 175 Attendees Across Both 2023 and 2024 Symposia; PHP and Scientists were classified based on affiliated institution; #Self reported by attendees
 Sources: ¹List of TickNet Canada attendees
 HCP – Healthcare Professional; PHP – Public Health Professional; Other includes attendees from Italy, Scotland and Netherlands

CLyDRN's TBD research has shaped evidence-based public health action at every level, from frontline clinical tools to national climate resilience strategies



Expedited research findings into actionable public health policies

- Research and tools from CLyDRN have supported public health officials in: 1) generating public awareness (e.g., TickTOOL), and 2) creating or revising guidelines informed by recent, region-specific data (e.g., CaLSeN).
- In addition, symposiums such as TickNet Canada have created space for dialogue between researchers and public health organizations to increase knowledge exchange.

“Public Health Agencies have been somewhat dependent upon CLyDRN and their active surveillance as public health agencies have pulled out of it [surveillance] due to all the restraints and priorities within public health”

- Executive Team

CLyDRN's Impact on Public Health Guidelines and Policies



Surveillance Data Contributed to Annual Risk-Maps for the General Public¹: A key success has been the comprehensive tick surveillance approach (CaLSeN) and the integration of data by public health organizations, enabling more accurate data on TBD risk to be provided to the public.

- ◆ For instance, Public Health Ontario and public health offices in Quebec utilize these data to produce annual risk maps, demonstrating effective knowledge translation.



Research Findings Incorporated into Clinical Practice Guidelines¹: CLyDRN's research and surveillance efforts have contributed to ensuring that most updated information is available for healthcare workers to make more evidence-based decisions.

- ◆ For example, an early LD management tool was created for primary care providers through collaborations with the Center for Effective Practice in Ontario.



Research Activities Reinforced by Federal Climate Change Initiatives: CLyDRN has played a pivotal role in advancing the climate change and infectious disease research ecosystem, with a particular emphasis on tick-borne diseases

- ◆ CLyDRN's research and information exchange (e.g., TickNet Canada) activities were recognized in critical actions outlined in the National Adaptation Strategy for Climate Change's Action Plan:^{1,2}

Enabler 3: Collaboration

Foster partnerships across disciplines, geographies and sectors

Establish TBD Research Community

Build Connections Across Disciplines

Foster Cross-Sector Partnerships

Connect Regions & Key Communities

ClyDRN united stakeholders from diverse disciplines, sectors and geographies to build a coordinated and connected TBD research community



Formalized a collaborative and connected TBD research community¹

- ◆ Established a multidisciplinary network rooted in shared purpose, bringing together voices from research, healthcare, policy, PWLE and industry.
- ◆ Fostered interdisciplinary and cross-sectoral relationships that drive shared learning and fuel ongoing collaboration (e.g., Healthy Cities Project).

CLyDRN has built a large community of researchers

>300

Total Number of Members (2024)²

~408

Stakeholders involved in research (2024)^{2,*}

~5.5Y

Avg. duration of involvement of researchers³

ClyDRN strengthens the collaborative potential of the network by:^{**},1,2



Bringing together expertise across sectors, disciplines and geographies



Providing direct funding to support innovation and engagement



Enabling new collaborations that attracted additional funding



Integrating public health perspectives and expertise to tackle TBD challenges



Enabling One Health innovations by connecting human, animal and environment health sectors

“This has been an exceptional benefit of the Network. It brought people together who never collaborated before and fostered a truly interdisciplinary approach. Microbiologists, entomologists, veterinarians, social scientists, public health experts, patient partners have been working together in important ways and learning from one another.”

- Network Researcher

“This is the most efficient use of our resources at a national level. By collaborating, we avoid duplication... making the best use of the expertise available across the country.”

- Executive Team



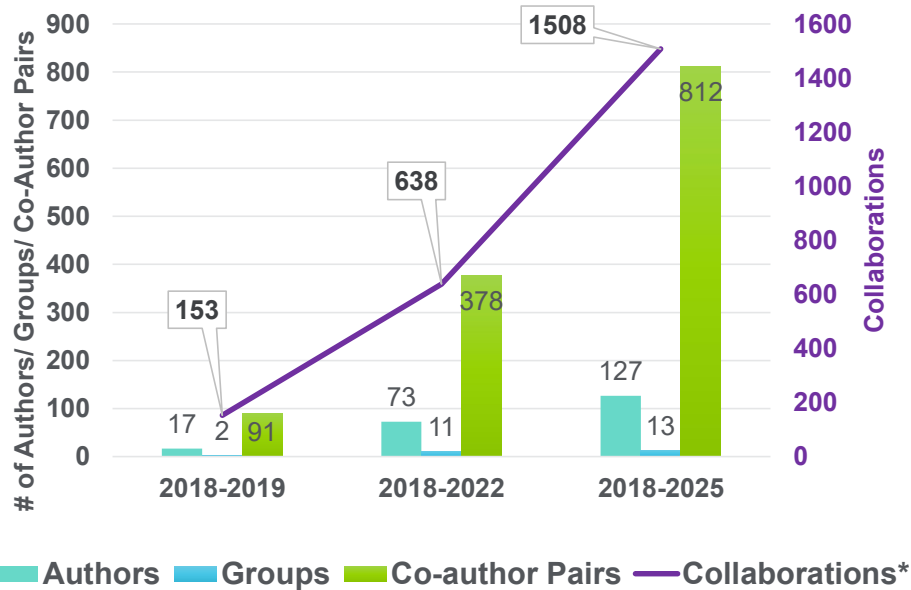
See Appendix for additional quotes; *Stakeholders involve researchers, students, trainees, patients, family caregivers, community partners, healthcare professionals, and any other stakeholders involved in network's activities; **See next slides for examples of these impacts.

Sources: ¹Consultations with Internal and External Stakeholders; ²CLyDRN Year in Review Reports (2024); ³CLyDRN Member Survey (N=51)

Since 2018, CLyDRN has enabled over 1,500 collaborations, propelling research and research that covers an increasing range of topics in TBD/LD



As CLyDRN's TBD network expanded, 812 co-author pairs have formed, leading to more than 1500 collaborations^{1,*}



Over time, CLyDRN's has produced research that covers an increasing breadth of topics.¹

2018-2019 2018-2022 2018-2025

Keywords** Commonly Occurring Across Publications



Key Research Areas** Across Publications



- TBD/LD in Canada
- Pathogen/Host-related
- Tick Surveillance
- Patient-focused
- TBD pathogen-related
- Patient/intervention-focused
- Animal host/reservoirs
- LD Risk & Prevention



*VOSviewer calculates the No. of time a co-author pair has published together. This is then summed across all co-author pairs in the Network to determine the overall collaboration value; **Keywords are automatically generated by VOSviewer based on publication lists and Research Areas are based on classification of these keywords

Sources: ¹Bibliometric Analysis of Publications using VOSviewer (detailed methodology in [Appendix Slide](#))

CLyDRN enabled researchers from a wide range of disciplines to connect, collaborate and tackle complex TBD research questions



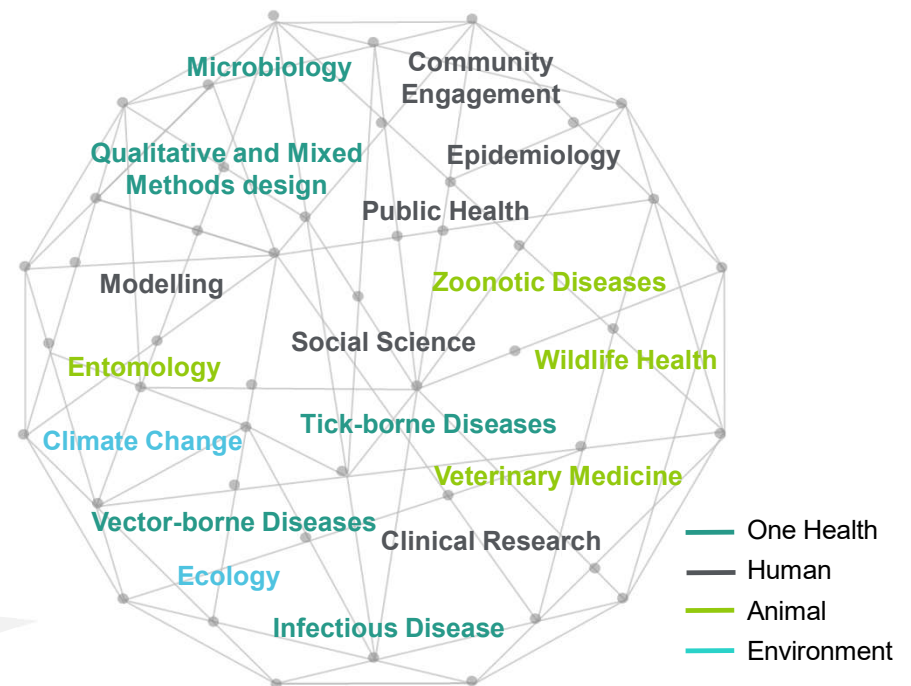
CLyDRN served as a platform to spark collaboration and enable interdisciplinary research^{1,2}

- ◆ Enabled collaboration across diverse disciplines, fostering a transdisciplinary research approach to deepen understanding of TBDs.
- ◆ Elevated the role of social science in TBD research, positioning social science as a vital contributor to understanding and addressing complex TBD related health issues.
 - ◇ For example, the Network enabled partnerships between Queen's University biologists and St. Michael's Hospital/Lakehead University social scientists, positioning them to pursue joint funding opportunities that integrate tick prevalence mapping, clinical data and lived experience.
- ◆ Directly funded the CLYME (Biobank) study that integrates clinical science into TBD research by collecting multiple biological specimens and related clinical data from LD and healthy control participants to support future studies.

"I've been involved in other research networks. Difference with CLyDRN is how wide the disciplinary range is. We all get along very well, and we consistently meet and discuss. It's a very different way of doing and thinking about science."

- Network Researcher

Examples of disciplines in which CLyDRN members conduct research (mapped across One Health domains)^{*,2}



See Appendix for additional quotes; ^{*}The list of disciplines displayed is based on CLyDRN Member Survey and is not exhaustive. Sources: ¹Consultations with Internal and External Stakeholders; ²CLyDRN Member Survey

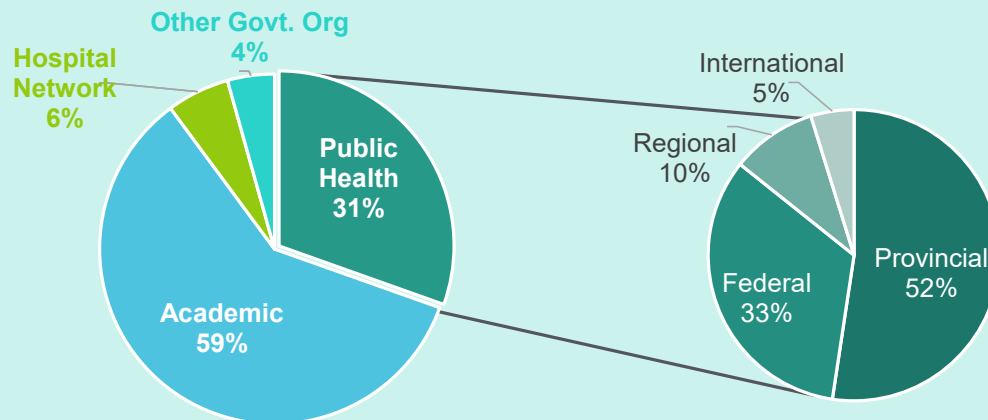
CLyDRN has strengthened ties between public health, animal health and environmental partners, helping to address the emerging threat of TBDs through a One Health approach



Strengthened ties across sectors to advance an integrated understanding of emerging TBDs

- ◆ Directly engaged federal and provincial public health authorities (e.g., PHAC, BCCDC, INSPQ) in surveillance and TBD research across Canada through the CaLSeN initiative and national symposiums.^{1,2}
 - ◇ CaLSeN further opened doors for a new partnership between CLyDRN and Genome BC to advance genomics-based TBD surveillance and deepen understanding of high-risk TBD areas.
- ◆ Brought together human, animal and environmental health sectors, breaking down silos and enabling a One Health approach to advancing understanding of emerging TBDs.^{1,2}
 - ◇ Partnered with provincial parks, conservation authorities, and community groups to share environment specific data on emerging LD risk areas in sentinel regions.
 - ◇ Launched a veterinary clinic TBD surveillance pilot project strengthening ties between human and animal health.

CLyDRN researchers span diverse sectors, with nearly one-third representing public health (2018-2024)^{*2,3,4}



“When you’re dealing with health issues, it’s critical to bring different expertise and perspectives to the table...and one of the strengths of CLyDRN has been its ability to coalesce a more informal network around LD and other TBDs.”

- Public Health Official



See Appendix for additional quotes; *The data is drawn from an analysis of 63 CLyDRN members which includes scientists and HCPs (excluding trainees and patient partners)—combining affiliation details from surveys and TickNet Canada symposium attendance records and is not exhaustive.
Sources: ¹Consultations with Internal and External Stakeholders; ²CLyDRN Member Survey; ³List of CLyDRN Members; ⁴List of TickNet Canada Attendees

Healthy Cities Project: CLyDRN mobilized communities across five municipalities to advance evidence-based LD risk management initiatives

CASE STUDY

Healthy Cities Project

Funding¹:

~\$20K

Collaborators²:



Université de Montréal



Sources: ¹CIHR – Institute of Aging; ²CLyDRN Year in Review Reports ; ³Consultations with Internal and External Stakeholders; ⁴CLyDRN Member Survey

Overview: The Healthy Cities Project convened a network of researchers and empowered both municipal stakeholders and citizens to **collaboratively design evidence-based interventions for managing local LD risk**. These interventions were tailored for local adaptation and supported by urban and peri-urban communities across four municipal corporations in Canada^{3,4}. The project tackled gaps in existing LD mitigation strategies, particularly those that citizens found too difficult or that municipal authorities found too resource-intensive.

CLyDRN's Contribution: The strong relationship developed between CLyDRN researchers and patient partners was **leveraged to translate research into actionable interventions**. Patient partners served as vital liaisons, bridging network researchers with citizens and municipal authorities to ensure community voices shaped the outcomes. The project was brought out of CLyDRN's initial funding and eventually was leveraged to secure additional research funding.

Impact: The project united key stakeholders, including CLyDRN researchers, patient partners, municipal representatives, community members, and private businesses to: 1) create a map of citizens willing to participate in developing and implementing LD risk-reduction interventions; 2) conduct an environmental scan to identify high-risk areas for targeted, community-driven interventions; and 3) integrate scientific expertise with local knowledge to design tailored interventions for each municipality. These efforts **culminated in a two-day workshop that brought together citizens, municipal leaders, and researchers to drive collaborative action and develop an intervention plan**.

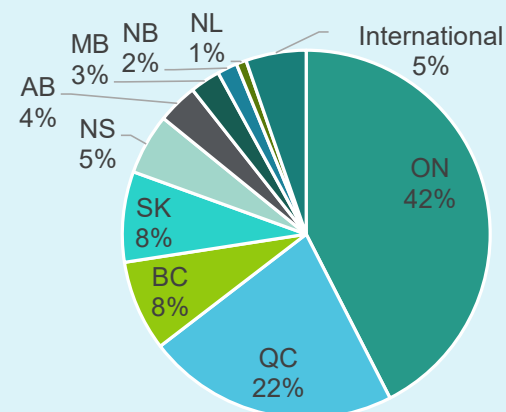
"it [Healthy Cities Project] couldn't have happened without CLyDRN... the patient partner on the ground piece was also key"
- Patient Partner

By connecting diverse regions and communities, CLyDRN has supported a more cohesive, pan-Canadian approach to TBD research and response

CLyDRN is Connecting Provinces, Countries and Communities

- CLyDRN has united TBD researchers across Canada:** Initiatives like CaLSeN and CLYME helped bring together scientists across regions and disciplines to build the current nationwide infrastructure for TBD research, setting the stage for future studies (e.g., to analyze tick genome and symptom pattern¹).
- CLyDRN partners directly with key populations and communities in Canada:** The partnership with the Huron-Wendat First Nation is a model of inclusive, community-led engagement – members of this Indigenous Community now conduct half of the tick surveillance in northeastern Quebec and retain data ownership to guide local TBD risk assessments.
- CLyDRN engages international TBD research experts:** CLyDRN enabled international collaboration, especially with U.S. partners like Johns Hopkins, shaping Canada’s biobank strategy and advancing surveillance and diagnostics.

CLyDRN members reside in nearly all Canadian provinces and select international jurisdictions (2018–2024; geographic representation by percentage)^{2,3,4,*}



“CLyDRN is the glue that keeps the researchers collaborating, coordinating, sharing best practices.. [CLyDRN] brought together all the experts in the country, and they’re connected internationally... That’s how we maintain resilience and adaptability to any new threat in Canada.”

- Executive Team

“Being based in Quebec, I think we have less access to the rest of Canada... but the networking aspect of being connected to other researchers and partners throughout Canada working on TBDs—for me definitely this was very valuable.”

- Network Researcher



See Appendix for additional quotes; *The data is based on analysis of 113 CLyDRN members between 2018-2024, which includes Scientists, HCPs, trainees and patient partners, combining affiliation information from surveys and the TickNet Canada symposium attendees, and is not exhaustive.
Sources: ¹Consultations with Internal and External Stakeholders; ²CLyDRN Member Survey; ³List of CLyDRN Members; ⁴List of TickNet Canada Attendees

Enabler 4: Patient Engagement

Partner with PWLE in research design and decision-making

Engage Patients in Network Governance

Empower PWLE as Research Partners

Measure & Report on PE Transparently

Foster Trust & Inclusion

CLyDRN has positioned PWLE as valued participants in governance and decision-making, setting the highest standard in patient partnership

Engaged PWLE in governance and decision-making¹

- ◆ Integrated PWLE into governance from the outset, ensuring their active role in decision-making across multiple committees, including the Executive Committee, as co-leads in every research pillar and committee, as program leads during scientific events and other strategic initiatives.
- ◆ Designed flexible governance roles that could accommodate PWLE's comfort and availability, enabling meaningful and sustained involvement.

Patient partners stay engaged for ~5 yrs, and 1 in 5 shaping decisions are leaders at CLyDRN^{3,4}

>35

Patient partners*

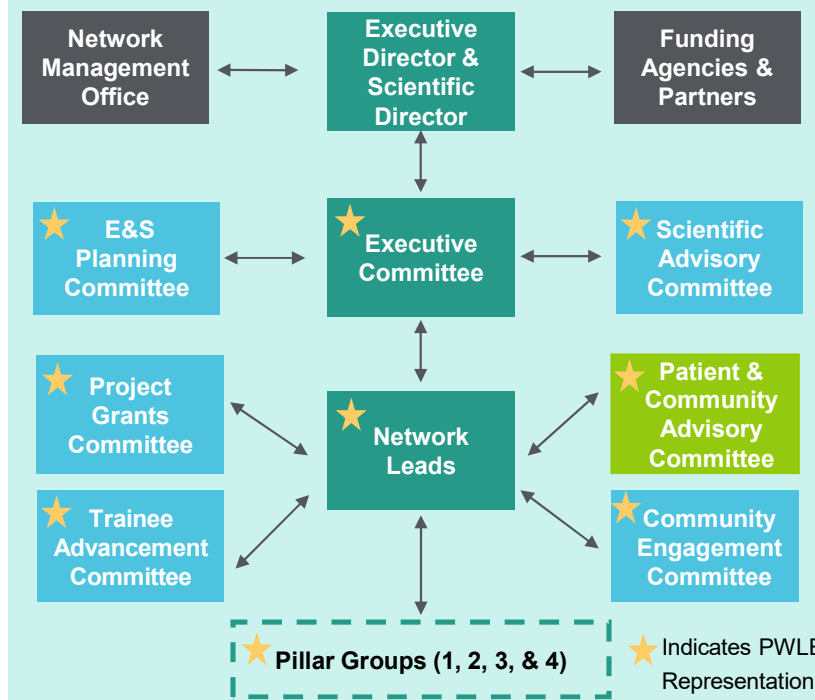
5yrs

Avg. duration of involvement**

20%

Held leadership roles**

CLyDRN's Governance Structure²



"They [patient partners] were instrumental at the highest level of the decision making... being part of the executive and leadership of every single pillar... it was essential to build trust, be accountable and have them fully integrated."

- Executive Team

"As a pillar co-lead, my involvement was as open and extensive as I was willing to make it. Any member of the network from the patient side can be as involved as they wish to... you are welcomed and your opinion matters."

- Patient Partner



See Appendix for additional quotes and further details on the governance structure; *Based on CLyDRN's member list; **Based on a survey of 15 patient partners
Sources: ¹Consultations with Internal and External Stakeholders; ²[CLyDRN's website](#); ³CLyDRN Member Survey; ⁴List of CLyDRN Members
E&S Planning Committee: Event & Symposium Planning Committee

CLyDRN redefined TBD research by positioning lived experience as credible evidence and empowering patient partners to shape research projects



Positioned lived experience as critical data informing and shaping TBD research

- ◆ Led a paradigm shift in TBD research by elevating patient partners to equal contributors to research and establishing lived experience as legitimate evidence, setting a strong precedent for meaningful engagement with PWLE.
- ◆ Empowered PWLE to shape research at every stage from defining research questions to interpreting results and co-authoring outputs through ongoing collaboration.
- ◆ Patients contributed to key LD research areas such as LD diagnostic testing, PWLE management practices for LD, HCPs diagnostic and treatment approaches for LD (see details in the right box).

“We are valued for our expertise and our own experience and the scientific work we do. We are never made to feel that because we’re not scientists, we have no expertise. Our experience is what we bring, and that’s the beauty of that transdisciplinary approach that attracted me to CLyDRN in the 1st place.”

- Patient Partner

“The way patient partners have contributed in such meaningful ways... Pillar 1 and the priority setting and all the work that went on...it’s a really exciting project that is patient-led, that’s informed by patients’ real passion for the priorities they have...that’s such a success story”.

- Network Researcher

Key CLYDRN Projects with Active Patient Partner Involvement^{1,2,3}



Pillar 1 Priority Setting Process: Patient partners **led priority-setting for Pillar 1** (Diagnostics), **identifying key research gaps** in LD diagnostic testing and establishing top patient priorities. They collaborated with scientists to **develop research goals, study design and methodology.**



Brokered Dialogue Study: A working group of patient partners and researchers (50/50) collaborated to **identify patient and caregiver practices in managing LD.** Patient partners helped **shape the research focus, study design, data interpretation and co-authored abstracts.** (See detailed case study on next slide.)



National Healthcare Practitioner (HCP) Study: The study examined **diagnostic and treatment approaches** for LD, including information sources used by practitioners. Patient partners supported **interviewee selection, refined the research framework, shaped interview questions and reviewed findings.**



See Appendix for additional quotes


Sources: ¹Consultations with Internal and External Stakeholders; ²CLyDRN Year in Review Reports (2021-2024); ³CLyDRN’s Community Stories Project

Brokered Dialogue Project: Patient partners co-led the project to explore patient and caregiver practices in managing LD, reshaping research and driving deeper, more meaningful insights

CASE STUDY^{1,2}

The Brokered Dialogue Project

 **5 PWLE co-led the project by:**

 **Defining Research Focus**

 **Designing the Study**

 **Interpreting Findings**

 **Co-Authoring Papers**

Overview: The Brokered Dialogue project investigates **patient and caregiver practices in managing LD**—from diagnosis through treatment to ongoing management of chronic sequelae, and how these practices intersect with those of clinicians, policymakers, and researchers. Phase 1 involved **interviews with 21 patient and caregiver participants** along with two representatives from other stakeholder groups. Insights from Phase 1 informed the design of filmed interviews for Phase 2.

Patient Engagement: The study is being led by a working group composed **equally of academic researchers and patient partners**, who collaboratively guide the **study’s design, implementation, and analysis**. Patient partners, including those from the PCAC, actively contributed to the research process by shaping the research question, informing project design, interpreting Phase 1 results and co-authoring conference abstracts. Patient engagement in the project is also being documented using the **GRIPP2-SF checklist**.

Impact: Integrating patients as co-researchers—rather than solely as participants—**deepened data interpretation and enhanced the relevance and communication of findings**, supporting more informed healthcare practices.

“It was super meaningful to be able to join this project and offer a patient perspective when the team was designing this study. Helping ensure that patient voices are heard by HCPs and providing a platform that allows the complex health stories of LD patients to be heard and taken seriously will change the future of LD research, treatment, and, hopefully, quality of life.”

- Patient Partner

“As we designed the study together, the idea was that the voices of patients would be represented in a way that we actually consider how everybody is a practitioner in the LD space. The complexity we all bring to the table and being able to sit and deepen our understanding of how we should do this work thoughtfully and authentically is incredibly helpful.”

- Network Researcher



See Appendix for additional quotes

Sources: ¹CLyDRN Year in Review Reports (2021-2024); ²CLyDRN’s Community Stories Project

CLyDRN established a transparent patient engagement model that empowered PWLE to co-design engagement strategies and their reporting, ensuring meaningful and accountable involvement at every stage

Empowered patients to shape patient engagement strategy and reporting^{1,2,3}

- ◆ Applied the [CIHR's SPOR framework](#) to embed meaningful patient-oriented research within the Network, with patient partners actively involved in implementing the engagement strategy through PCAC.
- ◆ Patient partners led the implementation and evaluation of the [GRIPP2-SF checklist](#) across the network to report on patient and public involvement in research.



GRIPP2-SF Checklist	
<input type="checkbox"/> Aim	<input type="checkbox"/> Discussion
<input type="checkbox"/> Methods	<input type="checkbox"/> Critical Perspective
<input type="checkbox"/> Results	

Reporting patient engagement transparently through PWLE-led GRIPP2-SF implementation^{1,2,3}

About GRIPP2-SF: GRIPP2-SF is a **reporting checklist** designed to **improve the quality, transparency and consistency** of how researchers document patient and public involvement in research.

Implementation of GRIPP2-SF: At CLyDRN, patient partners have **led GRIPP2-SF implementation** to document how **PWLE contribute meaningfully across research activities**. The GRIPP2-SF checklist was piloted in Pillar 1, where patient partners **helped set research priorities**. A PhD student, mentored directly by patient and family partners with support from Pillar 1 and the PCAC, co-developed reporting materials—to document patient contributions throughout the research process.

Impact: CLyDRN has set a new **standard for transparency in patient engagement**—demonstrating that it is not an afterthought, but a **foundational element** of how research is conducted within the Network.

PCAC has been really developing these ways to assess the success of the research and formalizing some of those interactions like the GRIPP2 protocol...It's not just patient voices, but they're actually shaping and developing the network."

- Network Researcher

"We have pretty successfully integrated into the mindset of research community we are collaborating with that patient engagement is very relevant and part of legitimate evidence....making it unequivocal that better research outcomes happen when you take into account the patient experience. And that is a culture shift that's happening."

- Patient Partner



See Appendix for additional quotes

Sources: ¹Consultations with Internal and External Stakeholders; ²CLyDRN Year in Review Reports (2021-2024); ³CLyDRN's Community Stories Project

CLyDRN built strong relationships with PWLE, transforming a historically distrustful environment into one of open collaboration

Fostered trust and inclusion with PWLE ¹

- ◆ Engaged PWLE as true partners—prioritizing inclusion in all operations, valuing lived experience and accommodating physical, emotional, and socio-economic needs to foster sustained participation.
- ◆ Continuously evolved patient engagement through active listening and shared decision-making.
- ◆ Built mutual trust by equipping scientists with patient engagement strategies and skills, and orienting patients to scientific methods, creating a foundation for productive collaboration.

CLyDRN fostered a trusted, respectful partnership between PWLE and researchers¹



A **patient partner** shared that, from their first experience, CLyDRN provided concrete roles for PWLE—making **them co-leads on every pillar, seeking their input before project initiation, and having patients design entire session streams** at symposia. They described their **lived experience as being valued equal to scientific expertise**, with respect, accessibility, and equity at the core of how the network operated. For them, it's been about true partnership—being heard and having a seat at the table.



A **researcher** shared that, **without CLyDRN, they would have stayed in their silo never meeting as many patients.** Through CLyDRN symposia and committees, they heard patient stories making them evaluate how research could be more relevant to patient outcomes. They described how these discussions **built a mutual understanding**: academics listened more closely, and patients could see they were people who care. For them, CLyDRN **created a space to build trust on both sides.**

“There was a lot of tension between patients and researchers and a great divide. Taking the time to listen to each other, to see different perspectives, to learn from each other—it inspired a lot of goodwill.”

- Patient Partner

“The work we've done particularly around patient and community engagement—it's been very intensive. It's taken us quite a while to get to a point where we're really working extremely well together [with PWLE], with a lot of cohesion...and we're seeing the success and impact of it.”

- Network Researcher

Looking Ahead: Amplifying Impact

Acting as a catalyst for national collaboration, CLyDRN has established an evidence-based approach to addressing the growing threat of TBD in Canada, yet a few targeted opportunities exist to further amplify its impact



Expanding Focus on Diagnostics

CLyDRN's formative years overlapped with the pandemic, when resource diversion to COVID-19 and public health constraints slowed progress on patient-priority areas such as diagnostics; with those pressures now lifted, advancing diagnostics remains an important opportunity.



Greater Knowledge Mobilization

CLyDRN has generated a wealth of data and insights but hasn't had the capacity to fully mobilize this knowledge. With additional funding and time, this untapped asset can be leveraged to inform policy, enhance clinical and prevention practices and strengthen public engagement.



Engaging Clinicians and Professional Societies

Looking ahead, there's strong potential to amplify impact by engaging more clinicians and professional societies. These groups shape health education and practice, and their involvement could dramatically extend the network's reach.



Sustainable Models for PWLE Engagement

Stakeholders recognized the tremendous contributions of patient partners, often fueled by passion, while noting the emotional and logistical burdens involved. They called for more sustainable engagement models—such as fair compensation—to support long-term, equitable participation, which in turn will strengthen lived-experience data and patient-centered research outcomes.

Through its pan-Canadian, patient-focused approach CLyDRN has pioneered a powerful model for driving TBD research, enabling collaboration, propelling innovation, and establishing national surveillance infrastructure

Uniting stakeholders across Canada, CLyDRN has built a collaborative ecosystem vital for tackling TBD risks and positioning Canada to address the growing threat of climate-driven disease emergence. As it evolves into TickNet Canada with an expanded mandate encompassing all emerging TBDs, it should be sustained, strengthened, and scaled—building on its strong foundation—to unlock its full potential.



"It's the surveillance aspect that has been very impactful. And honestly, I'm a little concerned about what happens after this [funding cycle ends]."

- Public Health Official

"The relationships that have been fostered between all of us as researchers and the across the network...that's been really, really wonderful."

- Network Researcher

"They recognize the value of lived experience alongside scientific evidence... This is a core, core aspect."

- Patient Partner

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Appendix

Glossary

- ◆ AP: Applied Research
- ◆ CaLSeN: Canadian Lyme Sentinel Network
- ◆ GRIPP2-SF: Guidance for Reporting Involvement of Patients and the Public – Short Form
- ◆ HCP: Healthcare Provider / Healthcare Professional
- ◆ E&S Planning Committee: Event & Symposium Planning Committee
- ◆ LD: Lyme Disease
- ◆ NA: North America
- ◆ NET: Network
- ◆ NGO: Non-Governmental Organization
- ◆ PCAC: Patient & Community Advisory Committee
- ◆ PE: Patient Engagement
- ◆ PHAC: Public Health Agency of Canada
- ◆ PHI: Public Health Initiative
- ◆ PHP: Public Health Professional
- ◆ PWLE: People With Lived Experience
- ◆ RWD: Real-World Data
- ◆ SPOR: Strategy for Patient-Oriented Research
- ◆ TAC: Trainee Advancement Committee
- ◆ TBD: Tick-Borne Disease

Key Themes from Stakeholder Engagements

1. Research & Training

- ◆ Established a cohesive, pan-Canadian TBD research platform, unifying previously fragmented efforts on addressing LD and other tick-borne illness
- ◆ Generated significant data on epidemiology, risk factors, and clinical manifestations while expanding tick surveillance

5. Collaboration & Networking

- ◆ Built an integrated national network, uniting diverse stakeholders across research, healthcare, policy, and industry sectors
- ◆ Transcended geographical and disciplinary boundaries to accelerate breakthroughs in TBD understanding and management



4. Knowledge Mobilization

- ◆ Accelerated TBD detection and treatment through effective knowledge translation, including local awareness campaigns, clinician education, and national conferences
- ◆ Enhanced early detection and diagnostic accuracy, leading to timely interventions and reduced secondary complications associated with TBD










2. Incorporation of Lived Experiences

- ◆ Transformed TBD research through a paradigm shift that facilitates trust amongst patients and researchers and integrates patient perspectives across research study design, implementation, and outcomes
- ◆ Set an internationally recognized precedent by elevating lived experiences as critical data, creating a new model for meaningful engagement with people with lived experience (PWLE)

3. Public Health Policy

- ◆ Established open communication channels and enabled rapid data sharing across all gov't levels through CLyDRN's sentinel network, informing public policies on TBD
- ◆ Supported federal gov't in unifying siloed provincial tick surveillance into a standardized national system that incorporates citizen science platforms

Methodology for Quantitative Data (1/3)

Type of Data	Slide No.	Sources	Methodology
Publications (2018-2024)	15	  	<ul style="list-style-type: none"> For 2019 to 2022, publications were compiled from the CIHR annual reports. For 2023 and 2024, detailed publications were collected based on individual member CIHR annual progress report forms submitted to CLyDRN. This list was then supplemented by CLyDRN-related publications found in research CVs. The list of compiled publications were then examined and duplicates were removed. List is not exhaustive, as some member information may have been missing
Additional Grant Funding	15	 	<ul style="list-style-type: none"> Funding data was collected from CIHR annual reports from 2019-2022 and then CLyDRN Year in Review reports for 2022-2024 2023-2024 data was manually adjusted, based on discussion with CLyDRN Exec. Team, to remove duplicates
Number of Trainees	17	 	<ul style="list-style-type: none"> No. of trainees were only documented by CLyDRN from 2022. For 2022, the number of trainees were collected from the CIHR Annual Report For 2023 and 2024, the number of trainees was collected from the CLyDRN Year in Review Reports
CaLSeN Surveillance Data	18	 	<ul style="list-style-type: none"> Sentinel Regions were derived from the 2024 CLyDRN Year in Review Report Number of sites was derived from the 2020 CIHR report and 2024 CLyDRN Year in Review report



CIHR Annual Report (2019-2022)



Individual Member CIHR Progress Forms (2023-2024)



CLyDRN Year in Review Reports (2021-2024)



CLyDRN Member Survey (N=51)



TickNet Canada Attendee List







CLyDRN Member Information



CLyDRN Member List

Methodology for Quantitative Data (2/3)

Type of Data	Slide No.	Sources	Methodology
Media Campaigns	20	 	<ul style="list-style-type: none"> 2019 to 2022 campaigns were obtained from CIHR annual reports 2023 and 2024 numbers are based on individual member CIHR annual progress report forms submitted to CLyDRN. Analysis included Canadian, international and unclassified campaigns (print, broadcast and internet)
TickNet Canada Attendees	21		<ul style="list-style-type: none"> Attendance figures were directly obtained from 2023 and 2024 CLyDRN Year in Review reports
TickNet Canada Institutes & Areas of Focus	22		<ul style="list-style-type: none"> Attendee list was cumulative across the 2 TickNet Canada symposia Attendee list classified attendees as trainees, patient partners, research staff or Scientists/Healthcare/Public health professionals (PHPs). PHP and Scientists/HCP was differentiated based on affiliated institution. Research areas were based on self-reported fields by scientists, trainees, research staff and PHPs



CIHR Annual Report (2019-2022)



Individual Member CIHR Progress Forms (2023-2024)



CLyDRN Year in Review Reports (2021-2024)



CLyDRN Member Survey (N=51)



TickNet Canada Attendee List












CLyDRN Member Information



CLyDRN Member List


Methodology for Quantitative Data (3/3)

Type of Data	Slide No.	Sources	Methodology
CLyDRN Members & Stakeholders Overview	25	 	<ul style="list-style-type: none"> Total number of members and stakeholders based out of CLyDRN Year in Review Report from 2024 Average duration of involvement of researchers based on survey data, where respondents reported date of when they joined CLyDRN
Members Across Sectors	28	  	<ul style="list-style-type: none"> The data is drawn from an analysis of 63 CLyDRN scientists and HCPs found on CLyDRN's member list for which affiliation details were available from surveys or TickNet Canada symposium attendance records. List is not exhaustive. Affiliation details were then used to classify members by sector
Members Across Regions	30	  	<ul style="list-style-type: none"> The data is based on analysis of 113 CLyDRN members between 2018-2024 (found from CLyDRN's member list), which includes Scientists, HCPs, trainees and patient partners, combining affiliation information from surveys and the TickNet Canada symposium attendee data. It is not exhaustive.
Details on Patient Partners	32		<ul style="list-style-type: none"> Number of patient partners based on the CLyDRN Member Information Average duration of involvement and % on executive committee based on survey data, where respondents reported date of when they joined CLyDRN and what committee they participated in Not representative of all patient partners that have been/are affiliated with the network





 **CIHR Annual Report (2019-2022)**

 **Individual Member CIHR Progress Forms (2023-2024)**

 **CLyDRN Year in Review Reports (2021-2024)**

 **CLyDRN Member Survey (N=51)**

 **TickNet Canada Attendee List**

 **CLyDRN Member Information**

 **CLyDRN Member List**

Key quantitative data gathered from the CLyDRN Year in Review Reports

Sep 2021 – Aug 2022

301 Members
35 Patient Partners
18 CLyDRN Webinars
38 Publications
2 Books & Book Chapters
5 Reports & Technical Reports
2 Guidelines
46 Presentations
45 Interviews
74 Students & Trainees
\$1.18M New Funding
324 Stakeholders involved in various stages of Research Process

Sep 2022 – Aug 2023

333 Members
50 Patient Partners
21 CLyDRN Webinars
52 Publications
1 Books & Book Chapters
2 Reports & Technical Reports
79 Presentations
70 Interviews
162 Students & Trainees
\$1.47M New Funding
247 Stakeholders involved in various stages of Research Process

Sep 2023 – Aug 2024

>300 Members
>25 Patient Partners
1 Symposium
54 Publications
3 Books & Book Chapters
4 Reports & Technical Reports
53 Presentations
120 Interviews
190 Students & Trainees
\$9.39M New Funding
408 Stakeholders involved in various stages of Research Process

Examples of Media Coverage of CLyDRN's Research and Members



Source: [CIHR](#), 2023



Source: [CBC](#), 2024



Source: [Global News](#), 2024



Source: [Ottawa Citizen](#), 2025



Source: [CBC](#), 2019

Example Lyme Disease Awareness Month Webinar Schedule from 2021

Virtual 2021 Event Lyme Disease Awareness

May 1st-31st, 2021

Join us for our live and pre-recorded presentations on Lyme disease topics scheduled throughout the month.

Zoom Meeting: <https://zoom.us/j/7117307203> or
1-647-558-0588 (ID: 711-730-7203)





WEEK 1 AGENDA

Monday, May 3rd
1:00-2:00 pm (EST) **Presentation (pre-recorded)**
Lyme Carditis - Dr. Adrian Baranchuk

Tuesday, May 4th
1:00-2:00 pm (EST) **Panel Discussion (pre-recorded)**
What do COVID-19 and Lyme Disease have in common - Dr. John Aucott, Dr. Alan Barbour, Dr. Daniel Gregson, Derek Leslie, Dr. Sally Mavin & Dr. Mark Soloski

Wednesday, May 5th
1:00-2:05 pm (EST) **Presentation (pre-recorded)**
Tick Biology and Identification 101 - Dr. Katie Clow & Dr. Robbin Lindsay

Thursday, May 6th
1:00-2:00 pm (EST) **Presentation (pre-recorded)**
Tools for Bioinformatics - Dr. Amber Rose Paulson

Friday, May 7th
1:00-2:00 pm (EST) **Presentation (pre-recorded)**
Patient Engagement - Dr. Clara Juando-Prats, Dr. Janet Parsons & Tamara Rader

WEEK 2 AGENDA

Monday, May 10th
1:00-1:45 pm (EST) **Student/Trainee Presentations (pre-recorded)**
Understanding the perspectives, experiences, beliefs, and knowledge of health practitioners on the prevention, diagnosis, and treatment of Lyme disease in Canada - Madison Robertson (PhD. Student)

Discerning undiagnosed disease of self-reported symptoms while factoring latency and treatment delay among Tick-Borne Disease (TBD) patients in Eastern Ontario - Emilie Norris-Roozmon (MSc. Student)

Tuesday, May 11th
1:00-2:00 pm (EST) **Presentation (pre-recorded)**
Modeling the Spread of Ticks and Tick Pathogens - Dr. Isabelle Couloigner & Dr. Olivia Tardy

Wednesday, May 12th
1:00-1:45 pm (EST) **Panel Discussion (pre-recorded)**
Lyme Disease and Lyme Arthritis in the Paediatric Population - Dr. Kirk Leifso, Dr. John Miller, Dr. Elizabeth Stringer & Terrie Wainwright

Thursday, May 13th
1:00-1:45 pm (EST) **Student/Trainee Presentations (pre-recorded)**
Unbiased metagenomic analysis of Ixodes scapularis microbiome in the Kingston-Frontenac region - Dr. Amber Rose Paulson (Post Doctoral Fellow)

Evaluating the adaptation of the Canadian population to Lyme disease using a One Health approach, to inform a preventive intervention -Natasha Bowser (PhD. Student)

WEEK 3 AGENDA

Monday, May 17th
1:00-2:10 pm (EST) **Panel Discussion (pre-recorded)**
Relevance and Value in Lyme Disease Research - Twylla Bird-Gayson, Dr. Lisa Dias, Dr. Rylan Egan, Dr. Billie-Jo Hardy, Dr. Clara Juando-Prats, Derek Leslie & Dr. Janet Parsons

Tuesday, May 18th
1:00-2:00 pm (EST) **Presentation (pre-recorded)**
Healthcare Practitioners Perspectives on Diagnosis and Treatment - Angela Coderre-Ball, Dr. Rylan Egan, Emilie Norris-Roozmon & Madison Robertson

Wednesday, May 19th
1:00-1:45 pm (EST) **Presentation (pre-recorded)**
Public Health Data Access and Use - Dr. Marion Ripoché

Thursday, May 20th
1:00-1:45 pm (EST) **Presentation (live)**
What we have learned in the last two decades on Lyme Disease in BC - Dr. Muhammad Morshed

WEEK 4 AGENDA

Tuesday, May 25th
1:00-1:45 pm (EST) **Presentation (pre-recorded)**
Lyme Treatment Foundation Inc. - Wendy Phillips

Wednesday, May 26th
1:00-1:45 pm (EST) **Presentation (live)**
Lyme Carditis: Update 2021 - Dr. Adrian Baranchuk & Dr. Chang (Nancy) Wang

Thursday, May 27th
1:00-1:45 pm (EST) **Student/Trainee Presentations (live)**
Isolation and strain-typing of Borrelia burgdorferi from ticks on dogs - Grace Nichol (MSc. Student)

Assessing the spread of the blacklegged tick, Ixodes scapularis, and the agent of Lyme disease, Borrelia burgdorferi, in Ontario, Canada - Emily Robinson (MSc. Student)

Friday, May 28th
1:00-1:45 pm (EST) **Presentation + Open Forum (live)**
Canadian Lyme Disease Research Network (CLyDRN) - Veronica Harris-McAllister

EVENT WRAP-UP

Monday, May 31st
1:00-1:45 pm (EST) **Presentation + Draw (live)**
Illness Uncertainty and Psychosocial Well-being in Chronic Lyme Disease - Maddie Gravelle (Incoming MSc. Student)

Draw for 1 of 4 \$25 gift cards. Winners will be announced.



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Excerpts from the TickNet Canada 2024 Symposium Program (Oct 28th – Oct 30th, 2024)

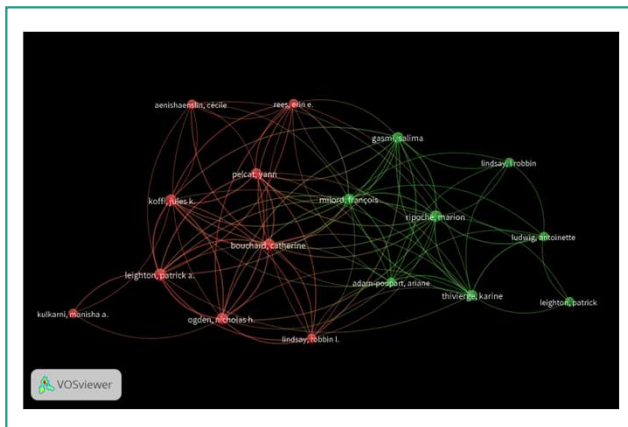


<p>Welcome...</p> <p>Thank you for attending this year's TickNet Canada Scientific Symposium</p> <p>Symposium Planning Committee</p> <p>Dr. John Aucott Dr. Raphaëlle Audet-Legendre Dr. Adrian Baranichuk Tayla Bird-Guyon Dr. Catherine Bouchard Dr. Natasha Bowser Dr. Heather Coatsworth Dr. Susan Cook Stephanie Cooper Antonia Di Casti Dr. Ariane Dumas Dr. Erin Fraser Veronica Harp-McAlister Stefan Iwaszawa Dr. Manisha Kulkarni Dr. Patrick Leighton Nami Machoui Kirsten Nothe Dana Palamides Molly Priest Dr. Allison Retman Lara Simard Quinn Stewart Pamela Scott-Croce Terrie Wainwright Dr. Jenny Wachter</p>	<p>AGENDA October 29, 2024</p> <p>8:00 am-9:00 am MERC Animal Health Canada Morning Munchies <i>Registration and Breakfast</i></p> <p>9:00 am-9:15 am Opening Remarks - Dr. Patrick Leighton</p> <p>9:15 am-10:00 am Plenary Speaker - Dr. Jean Tsao - <i>Studies on the ecology of tick-borne diseases vectored by a generalist tick with a huge geographic range: why?</i></p> <p>Session Chair: Dr. Catherine Bouchard</p> <p>10:00 am-10:30 am MERC Animal Health Canada Mocha Meetup <i>Morning Coffee Break</i></p> <p>10:30 am-11:45 am Oral Presentations Session 1: Biology of Ticks: Genetic Diversity and Distribution</p> <p>Session Chair: Dr. Jenny Wachter</p> <ul style="list-style-type: none"> Examining morphometric and genetic diversity in Eastern Ontario's Ixodes scapularis populations (Daman Bourne) How genetically diverse are subdominant blacklegged ticks (Ixodes scapularis) in Saskatchewan? (Neil Oshon) Environment and descriptive models of Dermacentor species in southern British Columbia, Canada (Grace Nichol) Distribution and descriptive models of Dermacentor spp. occurrence in western Canada, based on active sampling (Shaun Dergouet) Current and future ecological niche of Dermacentor similis in western North America (Grace Nichol) <p>11:45 am-12:15 pm Speed Oral Poster Presentations Session 1</p> <p>Session Chair: Dr. Ariane Dumas</p> <ul style="list-style-type: none"> Poster #1: Twenty years of tick and tick-borne disease surveillance of companion animals in British Columbia, Canada (Quinn Stewart) Poster #2: Illness Uncertainty and Psychosocial Well-being in Chronic Lyme Disease (Madeline Gravelle) 	<p>12:15 pm-1:30 pm MERC Animal Health Canada MIDDAY MUNCHIES <i>Lunch Break</i></p> <p>1:30 pm-2:30 pm Panel Discussion - <i>Futureproofing: Innovation and Risk Reduction for Tick-borne Diseases</i></p> <p>Brief Description: This panel discussion focuses on discussing the development, evaluation, and improvement of tools, methods, and strategies to efficiently prevent and control tick-borne diseases. Experts will explore emerging innovations aimed at reducing tick populations, interrupting disease transmission cycles, and minimizing human exposure. They will evaluate the effectiveness of current tools, such as vaccines, tick repellents, and environmental interventions, while also discussing new technologies and methodologies for risk reduction. The panel will highlight the need for adaptable, scalable solutions to future-proof public health efforts against the growing risk of tick-borne diseases.</p> <p>Co-Moderators: Dr. Catherine Bouchard & Kirsten Nothe</p> <p>Facilitator:</p> <ul style="list-style-type: none"> Dr. Sean Li, Research Scientist, Health Canada Olivia Godwin, Graduate Student, Simon Fraser University Dr. Manisha Kulkarni, Full Professor, University of Ottawa Dr. Patrick Leighton, Professor, University of Montreal Dr. Jean-Philippe Rochéaux, Adjunct Professor, University of Montreal 	<p>2:30 pm-3:00 pm Speed Oral Poster Presentations Session 2</p> <p>Session Chair: Stefan Iwaszawa</p> <ul style="list-style-type: none"> Poster #10: Trends in Active Blacklegged Tick Surveillance: Kingston, Frontenac, Lennox and Addington 2023-2024 (Kirsten Nothe) Poster #11: Spatial and temporal genetic diversity in recently established populations at the distributional limits of Dermacentor variabilis in Saskatchewan (Ariane Dumas-Sanchez) Poster #12: Frontiers of chance at the northern edge: Transboundary transmission of microbiota in Dermacentor variabilis and progression during embryogenesis (Neil Oshon) Poster #13: Genetic diversity of Dermacentor nitens (Acari: Ixodidae) collected on horses from Western Cuba (Neil Oshon & Ariane Dumas-Sanchez) Poster #14: Ticks impact Canadians in a multitude of ways beyond infection with a tick-borne disease: Results from a national survey in 2023 (Natasha Bowser) Poster #15: The effect of Borrelia burgdorferi infection on the skin microbiome of lab mice (Stephanie Cooper) Poster #16: Preliminary Findings: A case-control study in two Canadian regions on the knowledge, attitude, and practices (KAP) related to Lyme disease (Dany Szarot) Poster #17: Leveraging community science to monitor blacklegged tick population emergence: An analysis of iClick.ca data and the socio-ecological determinants of submission rates in Quebec (Ariane Dumas) Poster #18: First Detection of Babesia microti and Anaplasma phagocytophilum pathogens as well as Babesia eschscholzi and a unique Borrelia strain in British Columbia Ticks (Stephanie Cooper) Poster #19: L'écologie au coin et la question de la compétence de la maladie de Lyme au Québec: entre équilibre et santé et stigmatisation des patients (Kirsten Nothe, Adjunct Professor, University of Montreal) <p>3:00 pm-3:30 pm MERC Animal Health Canada Mocha Meetup <i>Afternoon Coffee Break</i></p>	<p>3:30 pm-4:15 pm Oral Presentations Session 2: Tick-borne Disease Prevention and Environmental Risk Reduction</p> <p>Session Chair: Dr. Catherine Bouchard</p> <ul style="list-style-type: none"> A systematic review of the effectiveness and utility of Lyme disease prevention measures including tick and wildlife host control strategies to reduce the risk of Borrelia burgdorferi (s.l.) transmission (Katarina Ost) Novel recombinant vaccinia virus vaccine affords complete protection against homologous Borrelia burgdorferi infection in mice (Anastasia Thekkai) Reducing tick density along recreational trails in Ottawa, Canada: preliminary results from an ecotone modification study using treated and untreated woodchips (Katarina Ost) <p>4:15 pm-5:00 pm Oral Presentations Session 3: Tick-borne Pathogen Diversity</p> <p>Session Chair: Kirsten Nothe</p> <ul style="list-style-type: none"> The role of wild small mammal hosts in the epidemiology of anaplasmosis in southeastern Canada (Raphaëlle Audet-Legendre) Strains of Borrelia burgdorferi differ in pathology and the induced antibody responses in lab mice (Marina Voorpostel) The distribution of Babesia microti in Ixodes ricinus ticks in Canada: Implications for One Health surveillance (Catherine Bouchard) <p>5:00 pm-6:00 pm Poster Session Walk Around</p>
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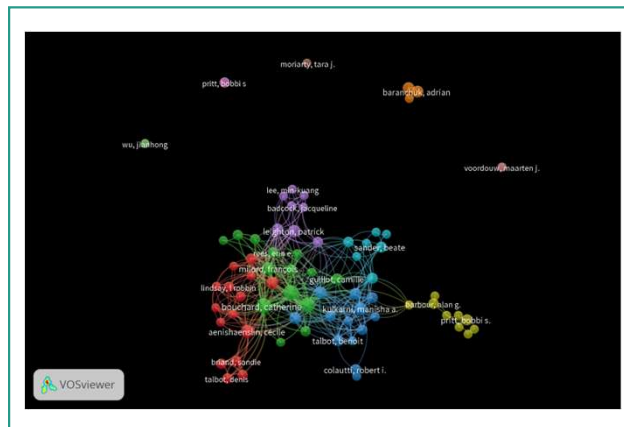
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Bibliometric Analysis – Co-Author Pairs



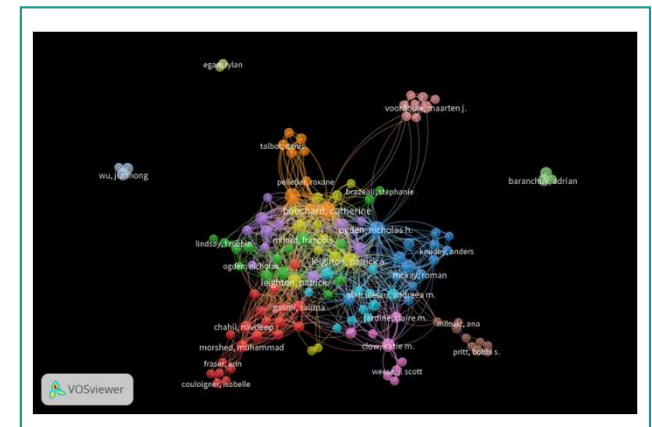
2018 - 2019

- 17 authors
- 2 clusters
- 91 links
- 153 total link strength



2018 - 2022

- 73 authors
- 11 clusters
- 378 links
- 638 total link strength



2018 - 2025

- 127 authors
- 13 clusters
- 812 links
- 1508 total link strength

- ◆ Bibliometric analysis was conducted based on 146 publications associated with CLyDRN with VOSviewer
- ◆ Based on the software specifications, the following VOSviewer terms can be classified as following:
 - ◆ Clusters – Groups based on research areas, institutes or geographical areas
 - ◆ Links – Co-author pairs
 - ◆ Link strength – No. of times 2 authors have published together
 - ◆ Total Link Strength – Overall collaboration, (i.e., sum of the link strengths across all co-author pairs)

CLyDRN Governance Structure: Committee Descriptions

- ◆ Executive Committee: Provides administrative and financial oversight including decisions regarding scientific direction, allocation of funds, revisions to annual operating plans, new partnerships, final approval of all projects, and programmatic changes to the Network.
- ◆ Scientific Advisory Committee: Reviews the annual progress report (submitted to CIHR) to provide an independent and objective evaluation of scientific and strategic priorities and offers guidance to the Network's Executive Committee.
- ◆ Event & Symposium Planning Committee: Planning and preparation for all Network events, including the Lyme disease awareness webinars, annual general meetings, and symposiums.
- ◆ Network Leads: Provides oversight and reporting for the Network's pillars and committees. Co-chairs for each pillar/committee consists of one scientific representative and one patient partner.
- ◆ Project Grants Committee: Explores opportunities for new funding opportunities.
- ◆ Trainee Advancement Committee: Provides opportunities for knowledge sharing and networking between scientific experts with students and trainees.
- ◆ Patient & Community Advisory Committee: Engaged group of patients and caregivers who have lived experience or provided care for those living with acute or chronic Lyme disease, as well as citizens from communities concerned about Lyme disease. The committee connects with researchers to partner in research and/or to serve in an advisory capacity making recommendations on matters that impact the experiences of patients with Lyme disease in Canada.
- ◆ Community Engagement Committee: Engages with community groups and external stakeholders (outside of patients and family caregivers) including parks and recreation, fishery, farming, and Indigenous communities to focus on identified Lyme disease priorities.

CLyDRN Governance Structure: Pillars Description

- ◆ Pillar 1 (Diagnostics): Conducts diagnostic research priorities identified by patient partners.
- ◆ Pillar 2 (Prevention & Risk Reduction): Identifies and evaluates preventative measures, interventions, and population health approaches to decrease the risk of Lyme disease occurrences; and assesses, tracks, and predicts the changing risk of Lyme disease in Canada to identify and inform targets for risk reduction through three project initiatives: Canadian Lyme Sentinel Network (CaLSeN), Longitudinal Risk Study, and Risk Reduction Innovation Program. There are four (4) working groups under this pillar: Surveillance, Epidemiology, Modelling, and Intervention.
- ◆ Pillar 3 (Clinical Science & Health Service Research): Consists of three identified research projects: CLYME-Biobank, COHORT, and ECONOMIC sub-study to the COHORT study.
- ◆ Pillar 4 (Patient and Community Engagement, Training & Knowledge Translation): Leads Network's activities into best practices in knowledge translation, training, and patient engagement.