

# Comprehensive Healthcare at Home:

**Redefining the Canadian  
Healthcare System**





# Executive Summary

Canada's healthcare system is at a breaking point. Costs are rising, the population is aging rapidly, and patients and providers alike are experiencing unacceptable delays, burnout, and fragmentation. The system remains heavily institution-centric, with long-term care, hospital, and specialist services prioritized in infrastructure and policy, while homecare is treated as a secondary service—underfunded, undervalued, and largely disconnected from the broader continuum of care.

We propose a bold, comprehensive solution: Comprehensive Healthcare at Home (CHAH)—a transformational shift in how healthcare is delivered in Canada. CHAH reimagines the home not as a supplement to institutional care, but as its foundation. It is a model that integrates primary, specialist, acute, long-term, and chronic care directly into the home environment, powered by predictive AI, coordinated by empowered care teams, and enabled by interoperable data.

CHAH is not just about delivering care at home; it's about delivering better care at home. This vision involves structured workforce empowerment, scalable technology platforms, cultural change, and system-wide integration of services. CHAH prioritizes people, not institutions; prediction, not reaction; and proactive investment, not endless crisis management.

This white paper presents:

- **Diagnosing the crisis:**  
We explain the demographic, structural, and fiscal pressures facing the system.
- **Presenting the vision:**  
CHAH reimagines the home as the foundation of care, not the exception.
- **Proving it works:**  
We show real-world examples and present economic models that support this shift.
- **Mapping the path forward:**  
We offer a phased roadmap and identify opportunities for coalition-building.
- **LM<sup>3</sup> ("LM Cubed"):**  
CHAH's proprietary predictive AI engine, designed to detect and prevent deterioration before it becomes a crisis.

## CHAH is already being tested in Canadian homes.

As we grow from pilot deployments to full provincial implementation, this model becomes not just viable—but inevitable. It's time to build a healthcare system that meets Canadians where they are. That begins at home.

See Appendix A for economic projections supporting CHAH. See Appendix B for a technical overview of LM<sup>3</sup> predictive intelligence.

# Introduction: Crisis Meets Opportunity

Canada's healthcare system is under intense strain. From the heartbreaking images of military personnel deployed to long-term care facilities during the COVID-19 pandemic, to the grim 2025 respiratory illness season—when emergency departments were described as “horrific and inhumane” by physicians on national television—the evidence is all around us. Our system is reaching its limits.

And we are only six years away from the demographic milestone that will define this century: in 2031, Canada's baby boomers will all be 65 or older, and the strain will increase every year until 2050 when the population of 85 and older will triple from where it is today. This shift will place unprecedented demand on every corner of

our healthcare infrastructure. The risks are serious—but the opportunity is just as great.

In times of crisis, the actions we take depend on the ideas we're ready to act on. In Canada, we've long held ideas of equity, dignity, and collective care close to our national identity. Medicare was born from these ideals—made possible through the vision and determination of Tommy Douglas, supported by John Diefenbaker, and finally implemented by Lester B. Pearson, driven by cross-party collaboration and public resolve. Today, we stand at another pivotal moment.

We must ask ourselves: what does bold, equitable, and sustainable healthcare look like for this generation?

## Comprehensive Healthcare at Home is our answer.

It is a strategy that brings healthcare directly to the home—not just homecare, but primary care, specialist care, acute care, and long-term care. It leverages Canada's skilled workforce, world-class healthcare standards, and emerging predictive technologies to fundamentally shift how and where care is delivered.

This paper explores the scope of the current crisis and offers a roadmap toward meaningful, measurable change through CHAH. It outlines how this model will:

- Expand access to quality care for Canadians of all ages and regions;
- Improve health outcomes while preserving dignity, independence, and quality of life;
- Create economic efficiencies by rebalancing healthcare spending;
- Stabilize and professionalize the care workforce;
- Support the 13 million unpaid caregivers across Canada;
- Strengthen healthcare's climate resilience and mobility;
- And enhance adaptability to future emergencies—from pandemics to climate-related displacement.

This model also responds to an urgent concern now voiced across the country: that the very principles of Canadian Medicare may be at risk. As public systems struggle to meet demand, more Canadians are turning to private pay. This creates a two-tier system where access is increasingly determined by wealth rather than need—undermining the equity at the heart of our healthcare values.

We believe CHAH offers a scalable, public-first alternative that can relieve pressure on the public system without abandoning the commitment to universal care.



DIGNITY



INDEPENDENCE



QUALITY OF LIFE

To achieve this, a major paradigm shift is needed. We must extend caregiving beyond hospitals and institutions, and recognize our homes as a central, powerful part of the healthcare ecosystem.

The future of Canadian healthcare begins here—in the homes where Canadians want and deserve to receive care.

## The Problem We Must Solve

### A System Strained by Demographic Reality

Canada's population is aging rapidly. By 2031, the entire baby boomer generation will be 65 or older, and by 2050, the population aged 85+ will have tripled. This historic shift will intensify pressures on a system already pushed to its limits. Hospital beds, long-term care capacity, and frontline care staff are insufficient not just for future needs—but for today's.

In Ontario alone, we are projected to need 66,000 hospital beds to meet demand by 2031—nearly double current capacity. And yet, current infrastructure plans fall staggeringly short. Across Canada, projections suggest we will need over 300,000 new long-term care beds and 77,000 new hospital beds—an expansion that could require more than \$240 billion in capital spending and \$131 billion in ongoing operating costs. These investments would take decades to complete, even as the demographic curve steepens.

### Burden of Preventable Illness

While capacity gaps dominate headlines, the less visible crisis lies in how much illness is preventable. Consider three major examples:

- **Diabetes-related amputations:**  
Over 7,700 lower limb amputations occur annually primarily due to diabetes and peripheral artery disease—85% of which could be avoided with earlier intervention, costing the system more than \$750 million per year.
- **Urinary tract infections (UTIs):**  
In 2008–2013, over 325,000 Canadians were hospitalized due to UTIs—many of which could have been prevented with a \$20 course of antibiotics. The cost: over \$4 billion, and one in twelve dying (8.1%) due to secondary infections arising from the hospitalization.
- **Falls among older adults:**  
Nearly 30% of Canadians over 65 are at risk of serious injury from falls. Hospitalizations, rehabilitation, and long-term decline from falls are a major driver of system usage—and a known, manageable risk.

### Top 3 Preventable Hospitalizations and Annual Cost

**\$5.6 Billion**

#### Falls

(65 years and above)

**\$4.0 Billion**

#### Urinary Tract Infections

**\$750 Million**

#### Amputations



**These issues are not rare edge cases.**

They are common, predictable, and deeply expensive. And they reveal a central truth: our system treats problems too late and too expensively.

# The Cost of Inaction

Without intervention, Canada's healthcare spending could grow to 14% of GDP by 2040—an unsustainable burden on taxpayers and governments. Meanwhile, people will continue to fall through the cracks of a reactive, overburdened, institution-first system.

The good news is this: every one of these trends can be mitigated through proactive care delivered in the home. CHAH offers not just a more humane model—but a more financially viable one. The time to act is now.



## Why Home is the Missing Foundation

When Canadians are asked where they want to receive care—whether recovering from illness, managing a chronic condition, or aging with dignity—96% say they prefer to stay in their own home. Yet despite this overwhelming preference, our healthcare system continues to prioritize institutional care, devoting six dollars to hospitals and long-term care for every dollar spent on homecare.

Publicly funded homecare in Canada receives just 0.4% of GDP—half the OECD average of 0.8%. The consequences are profound: inconsistent access, short visit durations, limited continuity of care, and over-reliance on family caregivers. One in three Canadians over 65 has unmet homecare needs, and many end up in long-term care not because it's the right clinical setting, but because it's the only available one.

Meanwhile, global peers have taken bold steps in the opposite direction. Denmark has not built a traditional long-term care facility since 1987. Instead,

it has restructured its system to deliver the majority of eldercare at home. Guided by principles of dignity, self-governance, and prevention, Denmark emphasizes short hospital stays, strong community care teams, and integrated services that support aging in place.

Canada's institution-centric model is misaligned with both our current demographics and our foundational values. Our geography, diverse population, and aging demographics make the case for a home-based model even more compelling. Yet we continue to invest in hospitals while underfunding the homecare sector that could alleviate demand and improve quality of life.

Comprehensive Healthcare at Home addresses this misalignment by treating the home not as a last resort, but as a primary site of care. With the right investments in workforce, coordination, and technology, we can build a modern, scalable, and person-centered care infrastructure rooted in the home—where Canadians want and deserve to be.

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*The right care, in the right place, at the right time.*

Andre Picard

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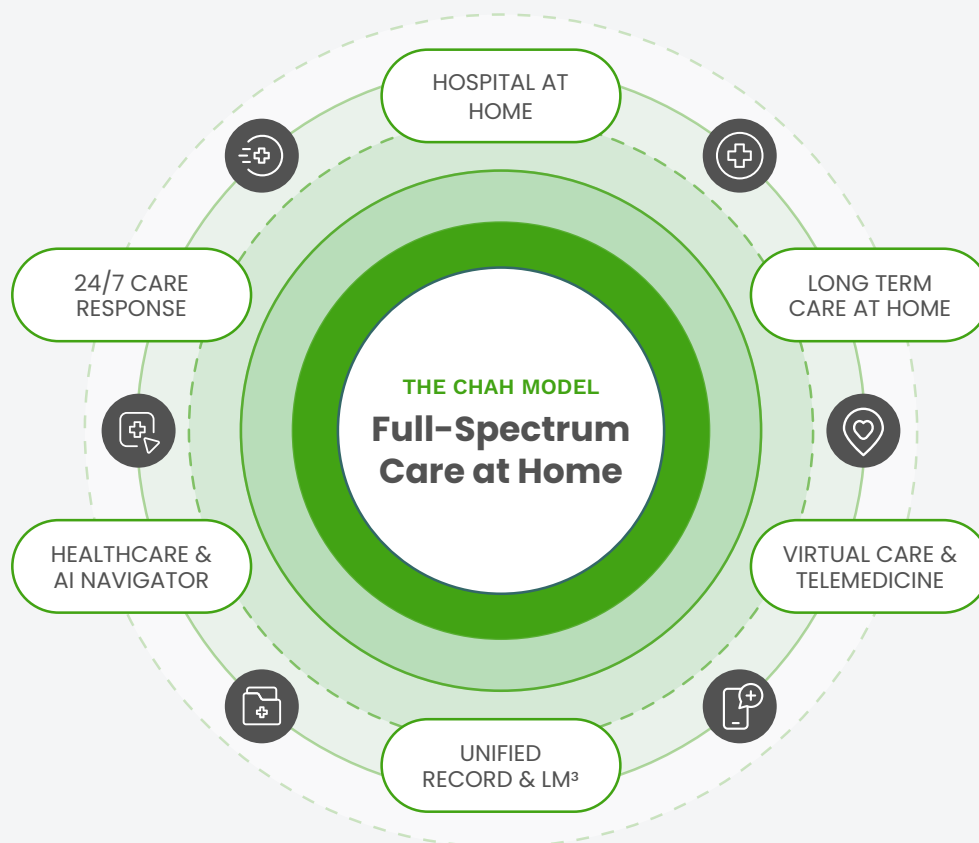
# The CHAH Model: Redesigning Care from the Ground Up

Comprehensive Healthcare at Home (CHAH) is not simply an evolution of the existing homecare model—it is a full redesign of how and where healthcare is delivered in Canada. It envisions a system where the full spectrum of care—primary, specialist, acute, long-term, and chronic—is available and coordinated in the setting where people overwhelmingly prefer to be: their own home.

Rather than continue investing exclusively in hospitals and institutions, CHAH brings the care infrastructure to the patient, enabled by predictive intelligence, real-time monitoring, interdisciplinary

care teams, and seamless data flow. It is a system designed around people—not facilities.

This white paper is not just a vision—it is a blueprint for transformation. We recognize that no single organization, company, ministry, or agency can deliver this model alone. CHAH is a call to action for healthcare providers, system planners, policymakers, innovators, and funders across Canada to co-create a future-ready, person-centered model of care. Our goal is to lay out the components clearly so that a collaborative, nationwide coalition can build toward this future—together.



# Care Where It's Needed Most

At the core of CHAH is the idea that all types of care can be delivered in the home, safely and effectively.

- **Hospital-at-Home:**

CHAH envisions a significant evolution of existing hospital-at-home programs using specialized equipment kits—"Hospital Ward in a Box"—containing the tools needed to manage cardiac, respiratory, pediatric, or post-operative recovery care. These mobile kits, including AI-powered remote patient monitoring, are supported by 24/7 operations centers and rapid-response nursing teams. Together, they can reduce or replace hospital stays for many patients—at lower cost and with better outcomes and provide a far more adaptive and resilient acute care system.

- **Long-Term Care at Home:**

CHAH enables high-acuity and ongoing care to be delivered at home, particularly for seniors and those living with disabilities or chronic conditions. Predictive monitoring supports safety, while mobility support and cognitive care solutions allow individuals to remain in their preferred environment longer.

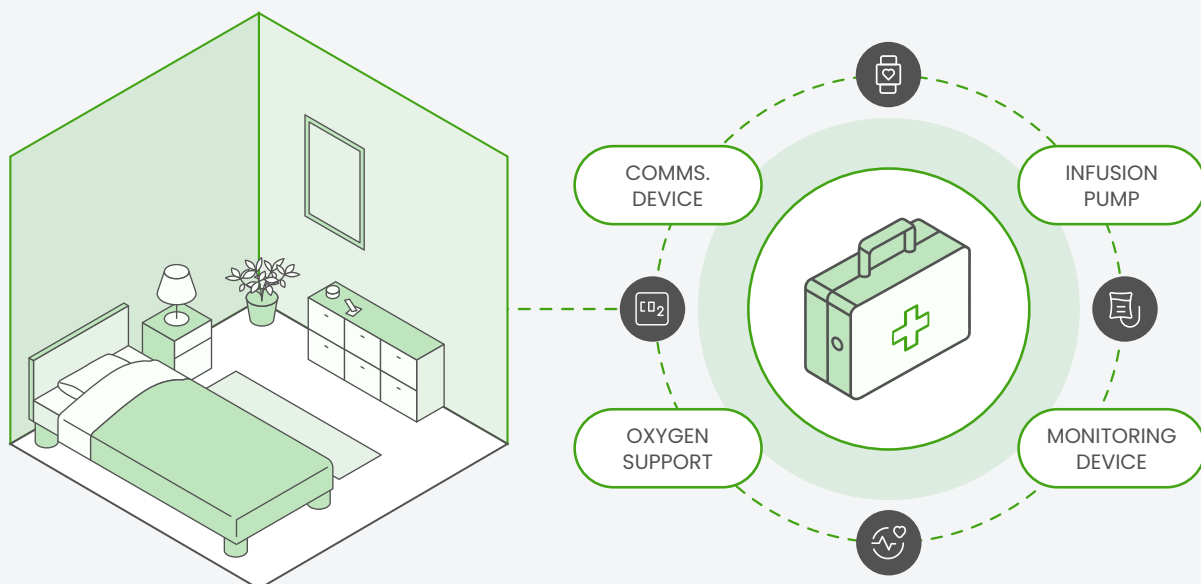
- **Primary Care at Home:**

Through a network of trained Healthcare Navigators—RNs supported by predictive tools—CHAH could enable every Canadian to receive an annual in-home health check-in, preventive care, and better chronic disease management. This addresses the growing lack of access to family doctors, especially in rural and underserved communities, and could be delivered at a fraction of the cost of recruiting more family physicians. At the same time, it would free up family doctors to focus on more complex care and monitoring for those that need it.

- **Smarter Deployment of Resources:**

Using real-time predictive analytics, CHAH prioritizes care delivery based on risk level and urgency. This ensures that caregivers are deployed where they are needed most, improving both responsiveness and efficiency.

## Hospital Ward In a Box





# The Role of Technology

Comprehensive Healthcare at Home requires a foundation of remote patient monitoring—CHAH AI Care, a secure, modular platform for home-based predictive care. It is designed around two key capabilities:

## Detect & Dispatch

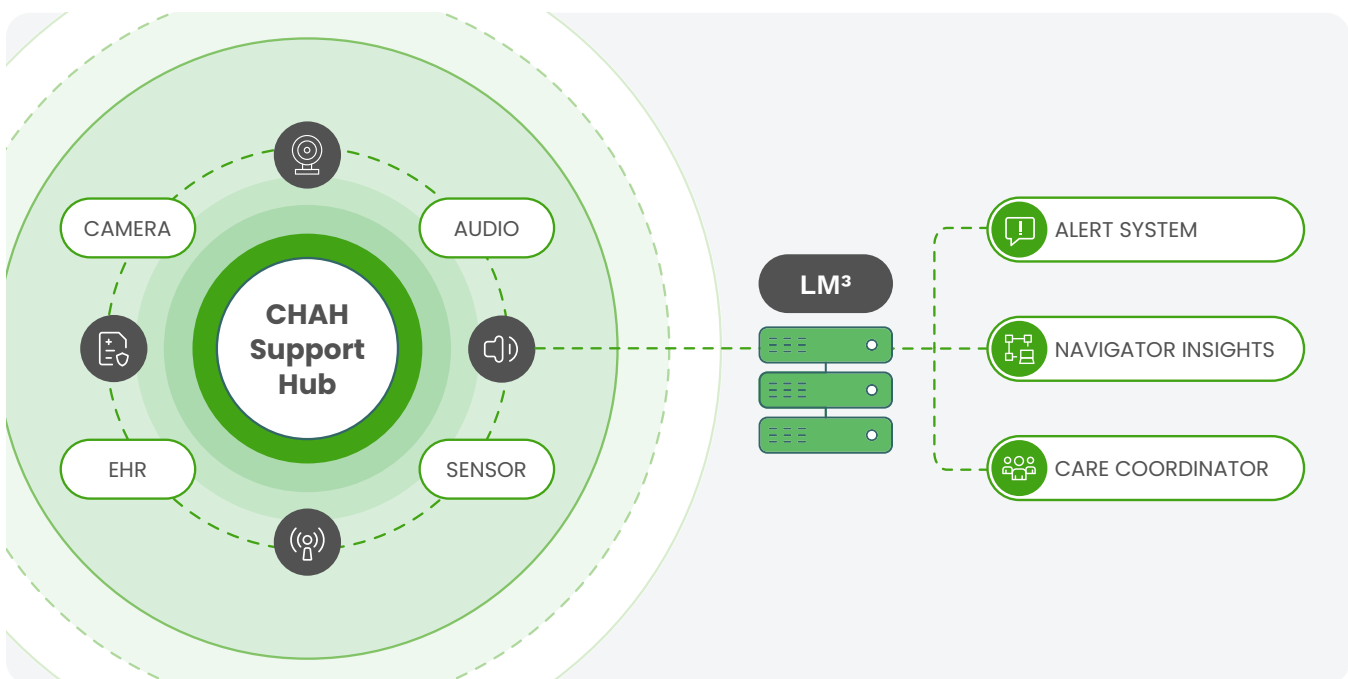
Real-time monitoring using camera, audio, sensor, and wearable data to detect events such as falls, wandering, and environmental risks. Alerts are triaged through a 24/7 Care Operations Centre.

## Predict & Prevent

Daily health data is analyzed to detect trends in mobility, toileting, and behavior. Predictive models generate risk scores for events like infections, pressure sores, or functional decline—allowing care teams to intervene before hospitalization is needed.

## LM<sup>3</sup> Data Flow

At the heart of this platform is LM<sup>3</sup>—the Large Multi-Modal Model of Predictive Healthcare (see also Appendix B). LM<sup>3</sup> fuses data from multiple inputs (visual, audio, sensor, and clinical notes) and continuously refines its predictive accuracy as the system scales. It functions as the intelligent layer that supports every decision in the CHAH ecosystem.



# Data That Follows the Patient

Care cannot be proactive if information is locked in silos. That's why CHAH calls for the implementation of a Unified Health Record (UHR) and Unified Care Record (UCR)—interoperable data systems that follow a patient across care settings and across provincial healthcare systems. These records would:

- Ensure that physicians, nurses, homecare workers, and family caregivers are working from a single source of truth;
- Empower patients with control over who accesses their data;
- Align with the goals of Bill C-72, the Connected Care for Canadians Act, which calls for data interoperability across providers.

These technologies make continuity of care not just possible—but automatic. Building these tools must be a shared national priority, shaped by collaboration across sectors.

## Policy Levers Already in Motion

For decades, Canada has struggled to create a system where patient information seamlessly follows individuals across care settings. The passage of Bill C-72, The Connected Care for Canadians Act, acknowledges this issue.

By mandating interoperability and prohibiting data blocking, the legislation represents a step forward. However, passing a law is not enough—we need a bold vision and decisive action to transform our system into one that proactively delivers the right care, at the right time, in the right place.

A different initiative, the formation of “Ontario Health Teams” is aimed at driving deeper, more effective local coordination of care.

In either of these policy and structural changes, CHAH is well positioned to not only build on them, but to be part of the change and implementation.

## Privacy–First Interoperability

Interoperability is not just a technical preference—it is a clinical necessity. When critical health data is locked in institutional silos, it leads to delayed care, duplicated tests, and dangerous gaps in treatment. CHAH addresses this by envisioning blockchain-based patient ownership of data with real-time AI analytics and local edge processing.

The CHAH Support Hub performs predictive analysis on-site, ensuring that raw video, audio, and health data never leaves the home unless explicitly permitted. Encrypted alerts and insights are transmitted securely to providers via LM<sup>3</sup> and integrated directly with provincial EHR systems like AlayaCare. As Bill C-72 mandates national data interoperability, CHAH is ready to scale on top of that infrastructure—offering a privacy-conscious, real-time data model that empowers both patients and care teams.

# What is CHAH AI Care?

**The CHAH Support Hub** is a secure, privacy-first device installed in the home, enabling:



## 24/7 Monitoring

Leveraging AI and sensor fusion (cameras, wearables, in-home devices) to detect changes in health, activity, or environment.

## Real-Time Insights

Predictive analytics identify risks such as falls, infections, or cognitive decline, enabling timely interventions.

## Privacy-First Design

All data is processed locally, ensuring sensitive information never leaves the home.

**CHAH AI Care** integrates homecare services to offer comprehensive support:



## Scheduled Visits

PSWs and nurses provide regular assistance with daily activities, health monitoring, and social interaction.

## CHAH Operations Center (CHOC)

Staffed 24/7, the CHOC evaluates alerts, coordinates responses, and dispatches appropriate care resources.

## Proactive Care Models

AI-driven insights enable long-term risk management, reducing hospitalizations and enhancing quality of life.

**CHAH LM<sup>3</sup>** processes data from multiple sources to create personalized health risk profiles, and enables:



## Risk Detection

Early detection of risks such as falls, infections, and cognitive decline through real-time data analysis.

## Predictive Healthcare Data Model

Predictive modelling to identify long-term trends in health, enabling proactive interventions to prevent adverse events.

## Multidimensional Care

Integration of insights across multiple domains to support holistic, personalized care planning.



*We're building the new model for healthcare at home.*

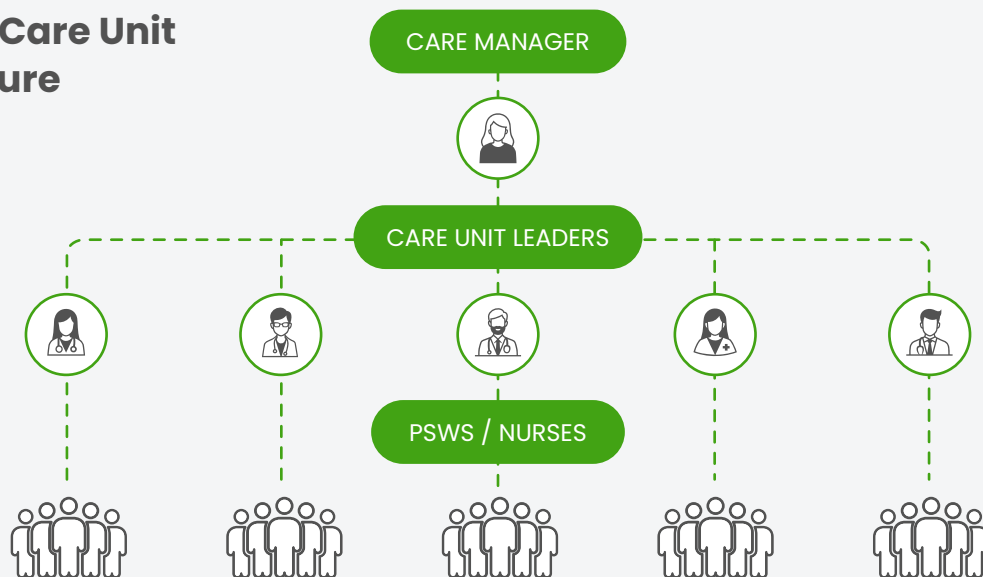


# Powered by People

CHAH's success depends not on technology alone but on the empowerment of the healthcare workforce. It is built around:

- **CHAH Care Units:**  
Small, structured teams of nurses and PSWs delivering care in a defined neighborhood or region. These units include leadership roles and support peer mentoring and continuity.
- **Stable Employment and Career Growth:**  
Full-time roles with benefits and paid training encourage retention. Micro-credentialing pathways allow PSWs to gain skills in dementia care, wound care, and palliative support—enhancing their career while reducing burden on nursing staff.
- **AI-Supported Scheduling and Coordination:**  
LM's predictive insights allow teams to respond to risk signals efficiently, improving both care outcomes and worker satisfaction.

## CHAH Care Unit Structure



## Care Is a Collective Effort

A resilient, person-centered system must be built by the people who care. CHAH honors their work—and offers a path to make that work more sustainable and impactful.

With the infrastructure of care placed where people live, powered by data and human relationships, CHAH offers a better healthcare experience—more accessible, more efficient, more human. But it cannot be achieved alone. This is an invitation to all corners of the healthcare ecosystem to build the future—together.

# **Real-World Validation and Economic Justification**

The Comprehensive Healthcare at Home model is not just aspirational—it is grounded in evidence and real-world success. Around the world, countries facing similar demographic and fiscal pressures have embraced strategies that bring care closer to the patient, with impressive results.

## Proven Global Examples

Denmark has been a global leader in the home-first healthcare model. Since the 1980s, the country has intentionally shifted investment away from institutional long-term care and toward home-based services. Today, Denmark provides integrated homecare for most older adults, supported by interdisciplinary community teams. The result: shorter hospital stays, lower system costs, and higher satisfaction.

PEI's COACH Program (Caring for Older Adults in the Community and at Home) also offers a powerful Canadian precedent. The program reported:

- A 66% reduction in hospitalizations
- A 33% drop in ER visits
- A 50% decline in visits to primary care physicians
- A 75% reduction in long-term care stay duration for those eventually institutionalized
- Significant savings: \$1.41 million saved from just 13 pilot clients

## Economic Reality and Fiscal Imperatives

Deloitte projects that without intervention, Canadian healthcare spending could reach 14% of GDP by 2040. The costs of maintaining our current institution-centric approach are already unsustainable—and they will only grow as the population ages.

Our own econometric model (see Appendix A) shows that CHAH can prevent a major portion of this projected cost escalation. By reducing hospitalizations, long-term care admissions, and emergency department usage—while empowering lower-cost community-based interventions—CHAH has the potential to avoid hundreds of billions in cumulative system costs by 2040 if implemented at scale. This is consistent with independent projections, such as Deloitte's estimate that proactive care models could reduce Canadian health spending by up to \$220 billion over two decades.

**This isn't a bet on future technology. This is a return on redesigning how care is delivered.**

### The PACE Model

The PACE Model (Program of All-Inclusive Care for the Elderly), originally developed in the United States and now being piloted in parts of Canada, offers another powerful example of what's possible when care is coordinated and person-centered.

Like CHAH, PACE provides comprehensive, wraparound services to older adults—combining medical, social, and community support to enable aging at home. CHAH builds on this ethos, expanding its scope to a national model that is digitally enabled, AI-supported, and designed to serve a broader population through decentralized care delivery.



### These outcomes are not anomalies.

They are examples of what is possible when care is coordinated, proactive, and delivered where people live.

# Workforce Transformation: The Foundation for Sustainable Change

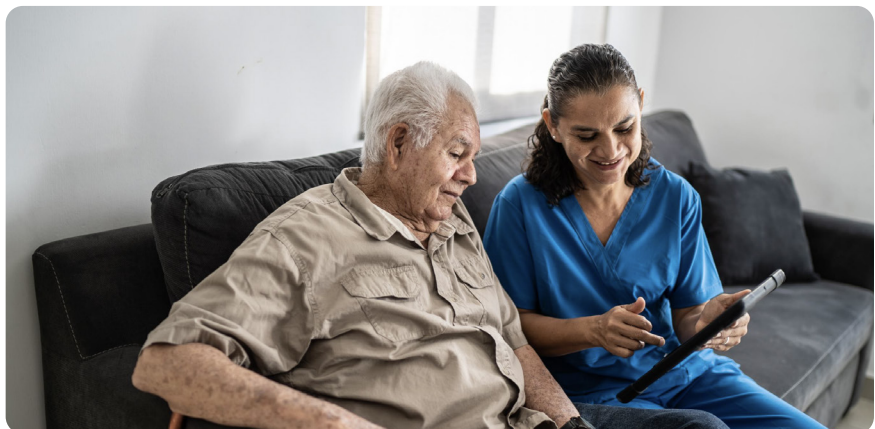
At the center of CHAH is a belief that healthcare is delivered by people—and empowered people deliver better care. Our workforce model is inspired by Buurtzorg, the renowned Dutch homecare organization that transformed care delivery by restructuring how teams operate.

Buurtzorg's model is built on small, autonomous teams of nurses that manage their own client caseloads. Freed from rigid task assignments and supported by smart tools—not bureaucracy—nurses deliver more continuous, holistic care. The result?

- Hospitalizations reduced by 30%
- Sky-high job satisfaction
- Among the highest patient satisfaction scores in the Netherlands

We've adapted this approach to Canada's context through the CHAH Care Unit model, which combines structured team-based care with AI-supported decision-making. Key features include:

- **Small teams (5–10):**  
Nurses and PSWs assigned to a defined region.
- **Full-time, stable employment:**  
Transitioning workers from gig-based roles into secure, supported jobs.
- **Career development and progression:**  
Opportunities to grow from casual part-time work to full-time Care Unit members, to Care Unit Leads who offer mentorship, and into regional or office management roles. Micro-credentials in dementia care, wound care, and palliative support help PSWs expand their scope and impact.
- **Improved communication and engagement:**  
Care Units of 5–10 caregivers are led by a Care Unit Lead. Five Care Unit leads (and their teams) will report to a Care Manager – at each level maintaining a manageable span of control and enabling two-way communication, leading to greater workforce engagement.
- **Workforce optimization:**  
LM<sup>3</sup>-powered routing and prioritization ensures the right care reaches the right person at the right time.



# Healthcare Navigators: A Scalable Model for Universal Primary Care Access

Another major innovation within CHAH is the proposed national deployment of Healthcare Navigators—a specialized role for nurses to act as community-based care coordinators. These Navigators would:

- Provide annual health check-ins and preventive care
- Track chronic conditions and facilitate early interventions
- Support families through referrals, diagnostics, and follow-up
- Reduce dependency on emergency departments by managing risk proactively

## Personalized Care For Every Canadian

With approximately 40,000 to 45,000 nurse-trained Healthcare Navigators supported by a custom AI Healthcare Assistant, deployed across Canada each responsible for about 1,000 residents, CHAH could ensure that every Canadian—urban or rural—receives proactive, personalized primary care support in their home.

This model not only fills the access gap left by declining numbers of family physicians but also enhances system efficiency by resolving issues before they become critical.

CHAH is not a concept on the horizon—it is a model already in motion. We have the precedent, the tools, and the economic rationale. What's needed now is collective will. This is a blueprint to bring that will to life.



### What is a Healthcare Navigator?:

An experienced RN or RPN, able to guide clients and families through the dense Canadian healthcare system. These resources acting as key referral and continuity agents can now be AI-supported, ensuring seamless coordination of care, from annual physicals to managing chronic conditions, empowering patients and improving healthcare system efficiencies.

With AI-assisted triage enabling oversight of 1,000 Canadians, 40K to 45K nursing-trained Healthcare Navigators could ensure that every Canadian has an annual visit and risk screening.



**Building the Future:  
Phased Implementation  
(2025–2035)**

2025 – 2035



## Phase 1

(2025–2026)



## Phase 2

(2027–2029)



## Phase 3

(2030–2035)

### Pilots and Platform Validation

- Launch hospital-at-home pilots using “Hospital Ward in a Box” and mobile kits to deliver acute care at home for targeted patient populations.
- Begin provincial deployments of Healthcare Navigators, piloting full-time RNs in the community responsible for 1,000 residents each.
- Stand up Operations Centres in partnership with existing care coordination hubs to triage real-time alerts and dispatch services.
- Deploy CHAH AI Care and LM<sup>3</sup> in pilot regions to validate predictive models, refine risk scoring, and demonstrate early impact.

### National Scaling and Workforce Transformation

- Expand the CHAH Care Unit model across homecare providers, shifting PSWs from gig-based roles into full-time team-based employment.
- Integrate micro-credentialing pathways for specialty care areas (e.g., dementia, palliative, wound care) with provincial colleges and certification bodies.
- Grow Healthcare Navigator capacity across all provinces, reaching scale of 30,000+ roles in progress toward full national coverage.
- Extend CHAH AI Care platform capabilities, including new predictive modules (e.g., cardiovascular, cognitive decline, medication adherence).

### System Integration and Universal Coverage

- Deploy 40,000–45,000 Healthcare Navigators nationally, ensuring every Canadian receives proactive, primary care access at home.
- Integrate the Unified Health Record and Unified Care Record into national data infrastructure, aligned with Bill C-72 compliance mandates.
- Support full-spectrum care at home—acute, chronic, long-term, and primary—through CHAH-enabled provider networks across Canada.
- Measure outcomes and savings to drive continuous improvement and guide policy evolution.

# Building the Future: Phased Implementation (2025–2035)

Transforming Canadian healthcare at this scale cannot happen overnight—and no single organization can do it alone. CHAH is a blueprint for system-wide transformation, but its success depends on sustained collaboration across governments, service providers, technology partners, and frontline healthcare teams. What we offer is a practical path forward: a phased implementation strategy that aligns with Canada's demographic pressures, economic constraints, and workforce realities.

This roadmap reflects a deliberate, collaborative approach—grounded in pilot data, scalable infrastructure, and a vision for universal access to home-based care. It is a call for action across the ecosystem: let's build this together

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*We don't claim to be the leaders Canada needs.  
But we believe a blueprint must exist to rally behind.*

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## Why Now? And Why We Must Lead

We are living through an unprecedented moment in Canadian history—a moment that demands more than incremental policy adjustments. We are entering a once-in-a-century demographic shift, one that will stretch the boundaries of our current system and test our national values of equity, universality, and compassion.

By 2031, every member of the baby boomer generation will be 65 or older. This aging bulge will not be brief—it will last decades, intensifying demand across every level of care. But unlike many of the global challenges we face—geopolitical instability, climate change, or pandemics—the healthcare crisis of aging is entirely predictable. We know what is coming. The real question is whether we have the foresight—and the leadership—to act now.

Canadians have faced healthcare crises before. In the 1940s, Tommy Douglas led a bold experiment that would become the foundation of Medicare. His vision, forged in resistance and built on human dignity,

changed the course of our nation. But he did not do it alone. He built a movement—of communities, of practitioners, of policy leaders—committed to a shared idea of what care should be.

That is what this moment demands again. At CHAH, we do not claim to be the leaders Canada needs. But we believe a blueprint must exist to rally behind—a shared vision to make the transformation possible. We offer this white paper not as a fixed prescription, but as a starting point for a national conversation. It is an open-source framework for a movement.



We believe CHAH is not only viable—it is inevitable. The only question is whether we shape its emergence with intention and equity, or allow it to evolve unevenly and under pressure.

We also recognize that the healthcare crisis is part of a larger, interconnected set of global challenges. As climate instability intensifies, our care systems must become more mobile, distributed, and resilient. Traditional institutions will not be enough. Home-based, AI-enabled care can serve not only the needs of our aging population, but also as a buffer against the unpredictable shocks to come.

## Let's Build It Together

Comprehensive Healthcare at Home is not just a model. It's an open invitation.

This transformation will not be led by one company, one ministry, or one profession. It will be built by a coalition—of nurses, caregivers, technologists, healthcare leaders, families, researchers, and policymakers—who believe that better care is possible, and that it begins at home.

We are already partnering with innovators, homecare agencies, clinicians, and researchers across Canada who are testing, building, and validating this approach. But we know we need more voices, more leadership, and more collaboration.

If you are a frontline healthcare worker who wants to be part of something more stable and sustainable—let's talk.

If you are a policymaker searching for scalable, people-first solutions—this blueprint is yours to adapt.

If you are a health tech innovator, system planner, academic, or community leader—join us.

Together, we can bring clarity, coordination, and compassion back to healthcare. Together, we can ensure that aging is met with dignity, that care is delivered proactively, and that our healthcare system reflects the values we hold as Canadians.

The appendices that follow offer a deeper dive into the economic rationale and technical foundations of this work. But we hope the heart of this whitepaper is clear:

This is a national movement. And it starts now.

### Healthcare transformation is not just a technical project.

It is a national renewal movement—a chance to reconnect with the values that brought us Medicare in the first place: care, equity, shared responsibility, and dignity. The opportunity is now. Let's seize it together.



-  HOSPITAL AT HOME
-  LONG TERM CARE AT HOME
-  VIRTUAL CARE & TELEMEDICINE
-  UNIFIED RECORD & LM<sup>3</sup>
-  HEALTHCARE & AI NAVIGATOR
-  24/7 CARE RESPONSE

APPENDIX A

# **Quantifying the Future**

An Econometric Model  
for Home-Based  
Healthcare  
Transformation in  
Canada

Canada's health system stands at a crossroads. Rising costs, an aging population, and workforce burnout are pushing the system toward an unsustainable tipping point. Deloitte and CIHI projections indicate that healthcare spending could grow from ~\$360 billion in 2023 to ~\$660 billion by 2040—representing nearly 14% of GDP under a status quo model. But this estimate may be conservative. The OECD predicts that Canada will be the lowest-performing advanced economy in GDP growth through 2060, amplifying the real cost burden if healthcare inflation continues unchecked.

Meanwhile, demand is surging. Ontario alone expects the number of people on the long-term care (LTC) waitlist to exceed total available beds by 2026. As of early 2025, 69,000 Ontarians are already waiting for

under 80,000 beds, and nationally, the system may require up to 300,000 new LTC beds and 75,000 new hospital beds by 2031 to meet demand. This infrastructure gap is financially and logistically insurmountable using conventional strategies.

CHAH offers a fundamentally different approach—delivering all categories of healthcare (primary, specialist, acute, long-term, and chronic care) in the home supported by an integrated model of services, predictive AI, and smart clinical workflows. To quantify its potential, we propose a robust econometric model to capture both the avoided costs of traditional institutional care and the broader value created across the health system.

## Model Design and Key Drivers

The model would compare projected health system costs under two scenarios:

- **Status Quo (No significant model change):** Continued investment in institutional care, reactive treatment, and fragmented service delivery.
- **Transformational CHAH Adoption:** Broad deployment of CHAH's AI-driven, proactive care ecosystem.

**At its core, the model could take the form:**

$$Y_t = \beta_0 + \beta_1 \cdot \text{HospitalizationsAvoided}_t + \beta_2 \cdot \text{LTCBedDeflection}_t + \beta_3 \cdot \text{HealthcareWorkforceEmpowerment}_t + \beta_4 \cdot \text{CaregiverBurdenReduction}_t + \beta_5 \cdot \text{SystemEfficiency}_t + \varepsilon_t$$

Where:

- $Y_t$  = Net health expenditure as % of GDP (or total public system cost)
- $\beta_i$  values measure the marginal impact of each system lever
- $\varepsilon_t$  accounts for shocks and unobserved variation

**Key Drivers:**

- **Hospitalizations Avoided:** Reduction in ER visits, readmissions, and acute escalation events via AI-powered monitoring and intervention.
- **LTC Bed Deflection:** Enabling aging-in-place with clinical support, delaying or eliminating institutionalization for many seniors.
- **Healthcare Workforce Empowerment:** CHAH's LM<sup>3</sup> engine gives PSWs and nurses predictive tools, enabling earlier, more focused care. This reduces caregiver burnout, increases client impact, and boosts job satisfaction by reconnecting caregivers to purpose—turning overstretched staff into force multipliers.
- **Caregiver Burden Reduction:** Technology-supported monitoring reduces reliance on unpaid family caregivers, especially women, enabling broader labor force participation, helping to boost GDP growth.
- **System Efficiency:** AI automates repetitive tasks, coordinates interventions, and increases client throughput without lowering quality.



Initial modeling can focus on high-cost, high-volume triggers of hospitalization such as urinary tract infections and falls—conditions where predictive care has already demonstrated measurable impact. Subsequent phases will explore how sensor fusion (e.g., combining AI with real-time data from the home) further amplifies predictive power, and how this will reshape the regression models in collaboration with academic and clinical partners.

## From Data to Action: The Integration Challenge

The gap between data insights and operational execution isn't just a step in the process—it's the whole game. Too many healthcare initiatives assume that surfacing the right insight is enough. But real transformation happens when insights are integrated into the daily workflows of providers.

CHAH's design recognizes that success isn't about more dashboards—it's about redesigning care delivery so that the insights are embedded, actionable, and aligned with how clinicians and caregivers already work. This is why CHAH is not just a data initiative, but a change-management platform, built to merge human-centered workflows with advanced technology.

### Next Steps: 12–18 Month Modeling Plan

| PHASE        | ACTIVITIES                                                                                                                      |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|
| 0–6 months   | Data collection (StatCan, CIHI, CHAH pilot sites); basic regression modeling on key drivers; engage academic/actuarial partners |
| 6–12 months  | Expand model scope (dynamic simulations, agent-based modeling); publish working paper; build scenario dashboard                 |
| 12–18 months | Test assumptions against real-time CHAH deployment data; refine predictive inputs; engage with policymakers and funders         |

## Conclusion: From Crisis to Opportunity

Canada cannot afford to inch forward with minor reforms. The projected costs of maintaining the current system are not just unaffordable—they are impossible. The solution lies in moving from reactive treatment to proactive care, from data accumulation to operational integration, and from unsustainable infrastructure expansion to targeted, intelligent workforce activation.

CHAH is more than a care model—it's an operating system for a healthier, more sustainable healthcare future. But to bring it to life, at scale, we need to show the math. This econometric model will be our blueprint for transformation—quantifying the avoided crises and captured opportunities of a system redesigned for the home, for the worker, and for the next generation.



## APPENDIX B

# **An Introduction to LM<sup>3</sup>**

The Large Multi-Modal  
Model Driving a New Era  
in Home-Based  
Healthcare Crisis to  
Opportunity



# What is LM<sup>3</sup> ?

In just a few years, artificial intelligence has gone from a speculative idea to a household term. Words like "ChatGPT" and "LLM" (Large Language Model) are now widely recognized, even if many people don't fully understand what they mean. Just two or three years ago, most public understanding of AI revolved around robotics, or IBM's Watson supercomputer. In business, AI was largely seen as "intelligent automation" — combining simple machine learning with robotic process automation (RPA) to handle routine tasks.

Today, we are on the cusp of another AI evolution — one that combines text, image, sound, and sensor data to unlock far more personalized and responsive forms of care. This is the vision behind LM<sup>3</sup>, a Large Multi-Modal Model developed by CHAH Technology to enable true proactive healthcare at home.

## A Quick Look Back How We Got Here

AI research took a leap forward in 2017 with the paper "Attention is All You Need," which introduced transformer architecture — a new way for machines to understand patterns in data. But technology alone wasn't enough. We also needed a huge boost in computing power.

This came not from Bitcoin, as is sometimes assumed, but from the rise of graphics processing units (GPUs). Originally built to power video games, GPUs became key to modern AI thanks to companies like NVIDIA, which developed CUDA — a software platform enabling fast AI training. The breakthrough came in 2012, when Geoffrey Hinton's lab at the University of Toronto used GPUs to train a deep learning system called AlexNet, demonstrating dramatic improvements in image recognition. That moment set the stage for what we now call Vision AI.

## Why Vision AI Matters in Healthcare

Vision AI gives machines the ability to interpret images — not just to "see" but to understand what they're seeing. Cameras can detect movement, posture, expressions, even skin tone changes. In healthcare, that means the difference between passively recording a person and proactively identifying risks like falls, infections, or cognitive decline.

While language models work with text (structured and unstructured), vision models interpret high-dimensional visual data. Each image might have thousands of data points. But vision AI alone is not enough. What makes LM<sup>3</sup> unique is its ability to combine multiple data sources — vision, audio, text, and environmental sensors — into one continuous stream of intelligence.

**LM<sup>3</sup> stands for  
Large Multi-Modal Model.  
It's the AI engine powering  
CHAH's approach to home-  
based healthcare.**



### Cameras

Interpret visual data from cameras (e.g., posture changes, unusual movements)



### Audio

Combine it with sound (e.g., tone of voice, coughing, or calling for help)



### Health Record

Integrate clinical notes and patient histories



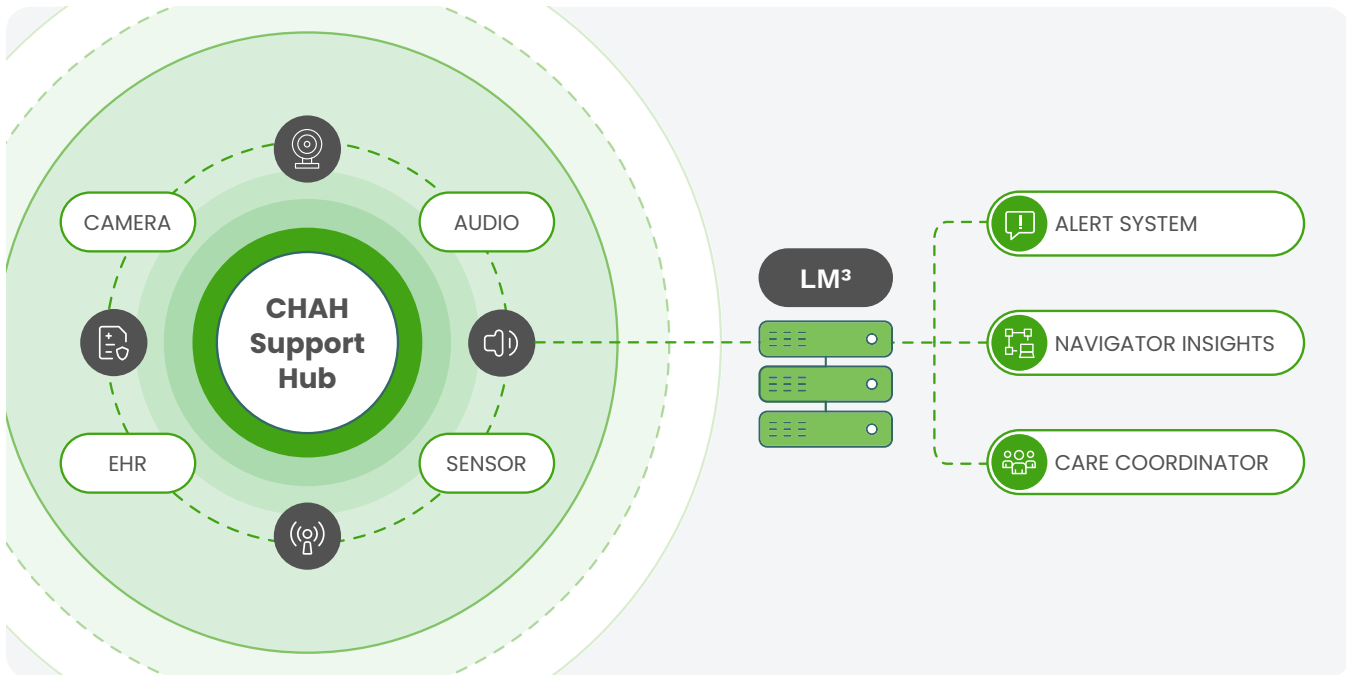
### Sensors

Fuse readings from passive sensors like pressure mats, oxygen monitors, glucose sensors, and more

## LM<sup>3</sup> isn't just a smarter machine—it's a new lens on what care can look like.

This sensor fusion and triangulation enables LM<sup>3</sup> to generate personalized insights for each individual, in real time. It supports both clients (by detecting early signs of health decline) and caregivers (by helping prioritize and direct care).

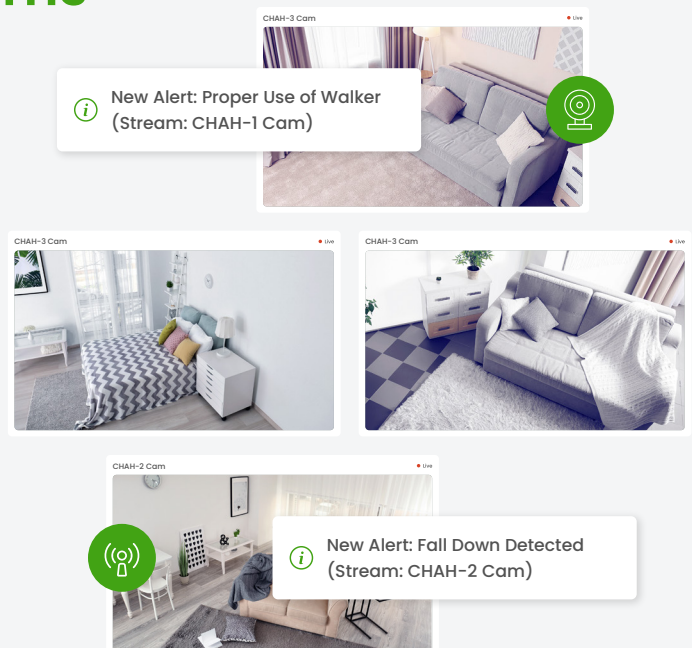
For example, LM<sup>3</sup> might detect subtle signs that a senior is developing a urinary tract infection or hasn't been moving as much — and alert a nurse to check in proactively. That could prevent an ER visit, a hospital admission, or even a move into long-term care.



## Why Scale Matters: LM<sup>3</sup> Learns and Improves Over Time

Like all advanced AI systems, LM<sup>3</sup> becomes more powerful as it scales. Today, it is being piloted in a small number of households. But as we roll out and grow to 1,000 clients with CHAH AI Care, LM<sup>3</sup> will already become a powerful predictor. As the system expands to thousands and eventually tens of thousands of homecare clients, its predictive power will grow exponentially.

Every new environment contributes unique data: how health events manifest across different people, how early signs present in daily routines, and how personalized risk factors can be identified before issues escalate. With scale, LM<sup>3</sup> will not only detect more patterns — it will become faster, smarter, and more targeted in its recommendations.



# Empowering the Workforce with Intelligence

LM<sup>3</sup> doesn't just support patients — it supports the frontline care workforce. By giving nurses and personal support workers (PSWs) access to real-time, predictive insights, it turns overwhelmed staff into force multipliers. They can make faster, better decisions and spend less time chasing symptoms, more time improving outcomes. This leads to better client experiences, less burnout, and more job satisfaction.

## Real-World Impact: A Glimpse Into the Near Future

Imagine Mary, an 82-year-old living alone but with complex care needs. With CHAH AI Care LM<sup>3</sup> -enabled monitoring at home, a sensor in her bed notices she's been unusually still through the night. A nearby pressure sensor confirms less movement. At the same time, voice monitoring detects fatigue in her speech, and a camera sees she's walking more slowly. LM<sup>3</sup> pulls all this together and flags a high probability of early infection. A nurse gets alerted. The intervention happens within hours, not days.

This isn't science fiction. This is within reach.



DIGNITY



INDEPENDENCE



QUALITY OF LIFE

## What Comes Next

CHAH Technology is actively working with Canada's leading academic and research organizations in AgeTech to validate LM<sup>3</sup> in real-world settings. We believe LM<sup>3</sup> will be a key part of the future of proactive, home-based healthcare — not by replacing people, but by amplifying the impact of caregivers through intelligent data.

LM<sup>3</sup> isn't just a smarter machine. It's a new lens on what care can look like: proactive, personalized, and powered by data that works with people, not around them.

“

*This model is not a concept on the horizon—it's already in motion.*

”

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Will you join us in this dialogue? We hope you will.  
The timing has never been more critical.

**Contact us at**

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