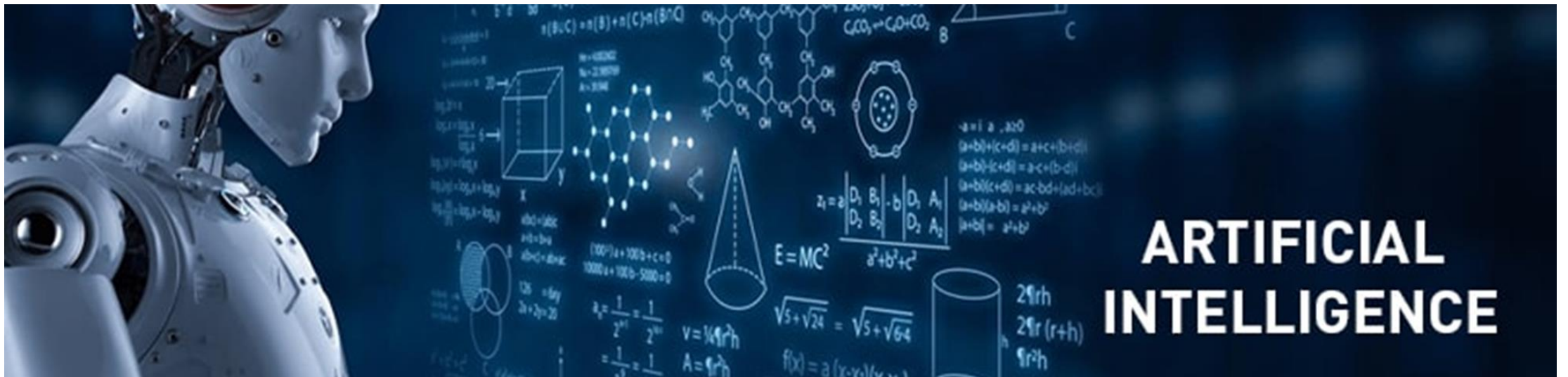


# AI In Primary Care

Ariane Siegel, General Counsel and Chief Privacy Officer

Abbas Zavar, Digital Health Research Lead

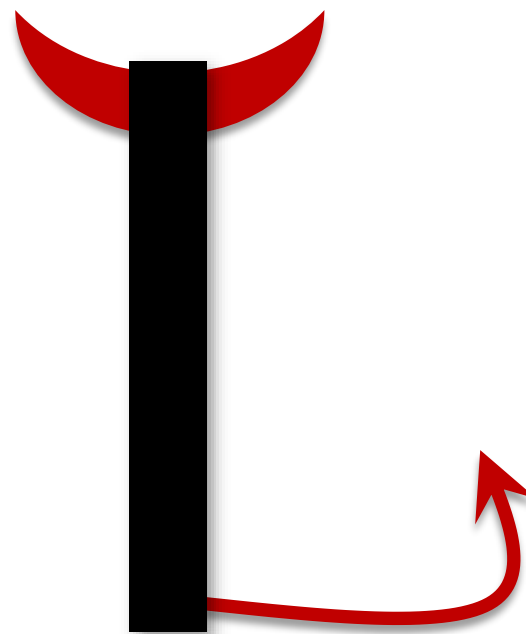
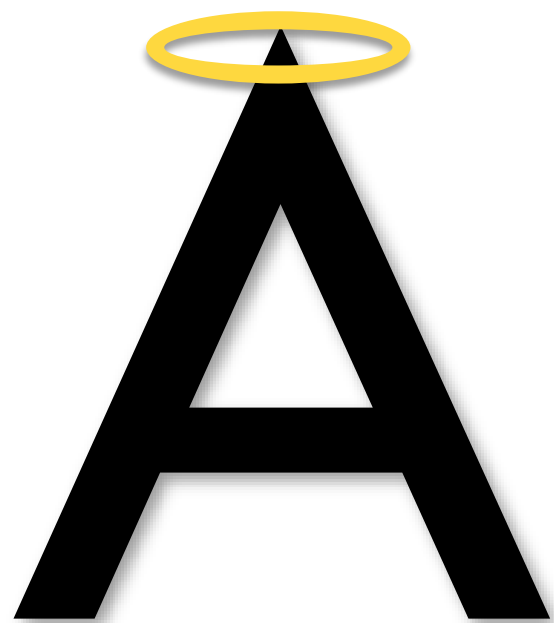
Simon Ling, Executive Director, Partnerships and Stakeholders



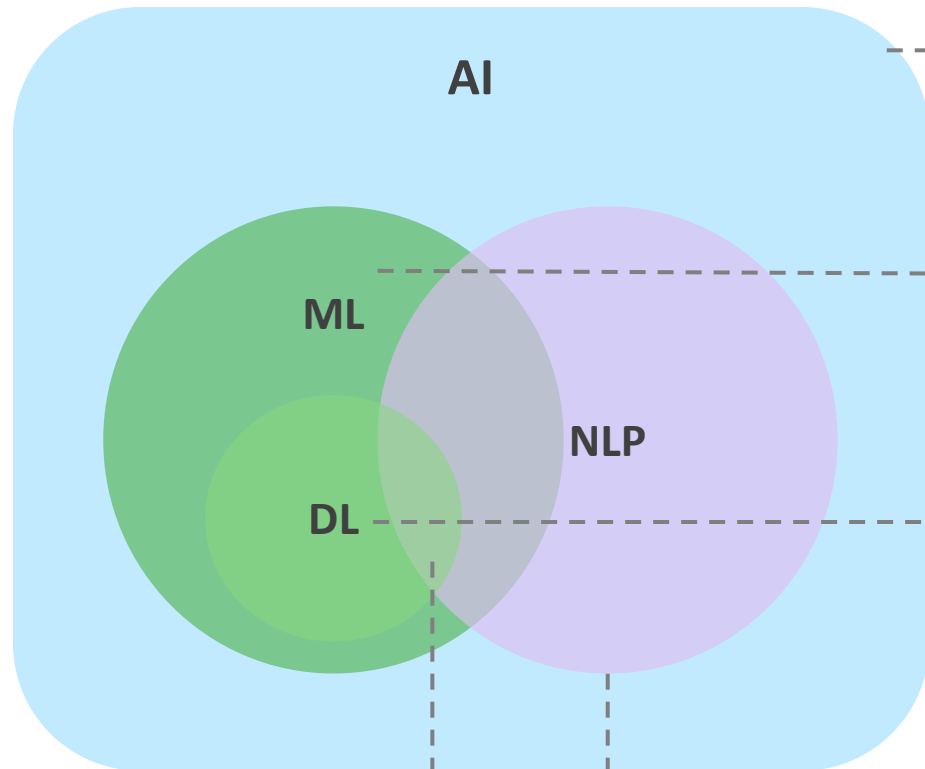
# About OntarioMD (OMD)?

- OntarioMD is a subsidiary of the Ontario Medical Association
- Formed in 2004 to advance physician EMR adoption on behalf of the Ministry of Health
- OMD's focus is on helping clinicians to efficiently onboard to digital health tools and to use these tools effectively so patient care is improved and clinician stress is lessened
- OMD is funded mainly by Ontario Health





# What is Artificial Intelligence?



**Others:** Computer Vision |  
Speech Recognition |  
Speech Synthesis |  
Robotics

**AI Chatbots**  
(e.g. ChatGPT)

## Artificial Intelligence

Any technique which enables computers to mimic human behavior

## Machine Learning

Subfield of AI that uses algorithms to automatically learn how to perform a given task without being explicitly programmed with rules

## Deep Learning

Part of ML that uses a set of algorithms called Artificial Neural Networks inspired by the human brain

## Natural Language Processing

Branch of AI that deals with the training of computers to understand, process, and generate language

# 90+ Healthcare AI Startups To Watch

## Imaging & Diagnostics



## Drug Discovery



## Predictive Analytics & Risk Scoring



## Genomics



## Fitness



## Hospital Decision Support



## Remote Monitoring



## Virtual Assistant



## Clinical Trials



## Nutrition



## Compliance



## Mental Health



# Market Map as of 2019

Each company in the map has raised at least one \$10M+ funding round since 2018


Created by You. Powered by CBINSIGHTS

# Examples of AI Healthcare Applications

**AI could help doctors detect heart disease**

1 Smart stethoscope detects heart failure

2 AI in A&E: have you had a heart attack?



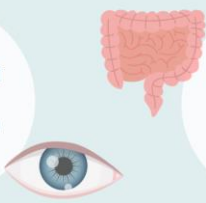
Smart stethoscope identified people with heart failure correctly 9 out of 10 times

Only 1 in 10 presenting at Emergency with a suspected heart attack are found to have had one. AI performed better than standard methods in determining heart attacks

**AI could predict the progression of disease**

5 Will I develop wet age-related macular degeneration in my other eye?

6 AI assesses risk of flare-ups in ulcerative colitis



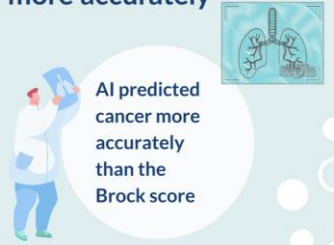
AI correctly predicted the development of wet AMD in 41% of patients. It outperformed 5 out of 6 experts.

AI accurately distinguished between remission and disease activity more than 8 times out of 10 - a similar degree of accuracy, and comparable to pathologists.

**AI could diagnose lung cancer more accurately**

3 Are these lung nodules cancerous?

4 AI predicted cancer more accurately than the Brock score




Almost **700** AI/ML-Enabled Medical Devices



Medical Devices Active Licence Listing

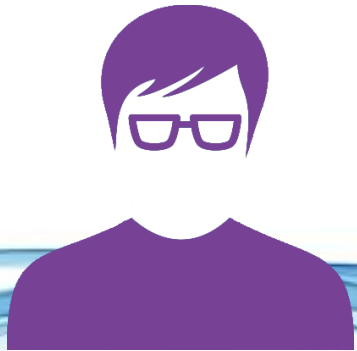
Device Name	Company	First Issue Date	Specialty – Description
Critical Care Suite	GE Medical Systems, LLC	July 22, 2020	<b>Radiology/ Emergency Medicine</b> – AI-powered chest X-Ray device that automatically scans images for pneumothorax and alerts radiologist for review on suspected identifications.
AI-Rad Companion	Siemens Healthcare GmbH	December 24, 2020	<b>Radiology</b> – AI-powered algorithms that allow automation of post-processing of imaging datasets and routine repetitive tasks. Licenses have been provided for cardiovascular, musculoskeletal, pulmonary, brain MR, and prostate MR.
Advanced Intelligent Clear-IQ Engine (AIQE) for MR	Canon Medical Systems Corporation	June 1, 2021	<b>Radiology</b> – Deep learning reconstruction technology that produces magnetic resonance images with low-noise properties.
EnsoSleep	EnsoData, Inc.	August 12, 2021	<b>Neurology</b> – AI scoring and analysis for diagnosing sleep disorders.

partial listing

Source: National Institute for Health and Care Research (NIHR)

# AI in Primary Care - Current Market Focus

*Pre-Visit*



*In-Visit*



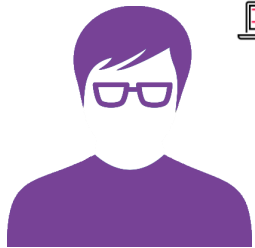
*Post-Visit*



# Current Market Focus

## *Pre-Visit*

Auto monitoring  
Auto triage/early prioritization



Entity recognition &  
linking

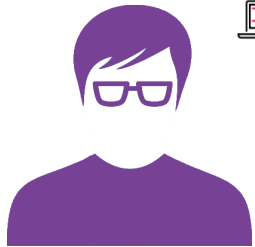




# Current Market Focus

## In-Visit

Auto monitoring  
Auto triage/early prioritization



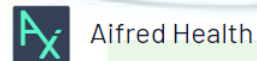
AI-Scribe



Virtual Assistant



Agent Health



Clinical Decision Support

HIPPÖAI



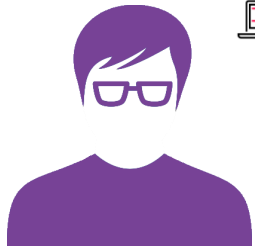
Entity recognition & linking



# Current Market Focus

## Post-Visit

Auto monitoring  
Auto triage/early prioritization



PrecisionEHR.ai  
Infermedica



abridge tali+ AUTOSCRIBE  
**AI-Scribe**

Mobius MD

Ambience



tali+

**Virtual Assistant**

Phelix

Agent Health

caddie health

**Auto billing**



**Auto monitoring**

SWIFT



**Entity recognition & linking**

QUIPPE  
CLINICAL LENS

emTelligent®  
MEDICAL NLP



Aifred Health

CORVISTA®  
HEALTH

**Clinical Decision Support**

HIPPOAI



Dr. Lex

Khure



Health



SenSights.AI  
A MarkiTech Company

**Patient engagement and education**

Agent Health

# Will AI Replace Doctors?

“

*It is clear to me that AI will never replace physicians — but physicians who use AI will replace those who don't.*

Jesse Ehrenfeld, President of the American Medical Association

# The future of AI in Primary Care

## AI as an Assistant

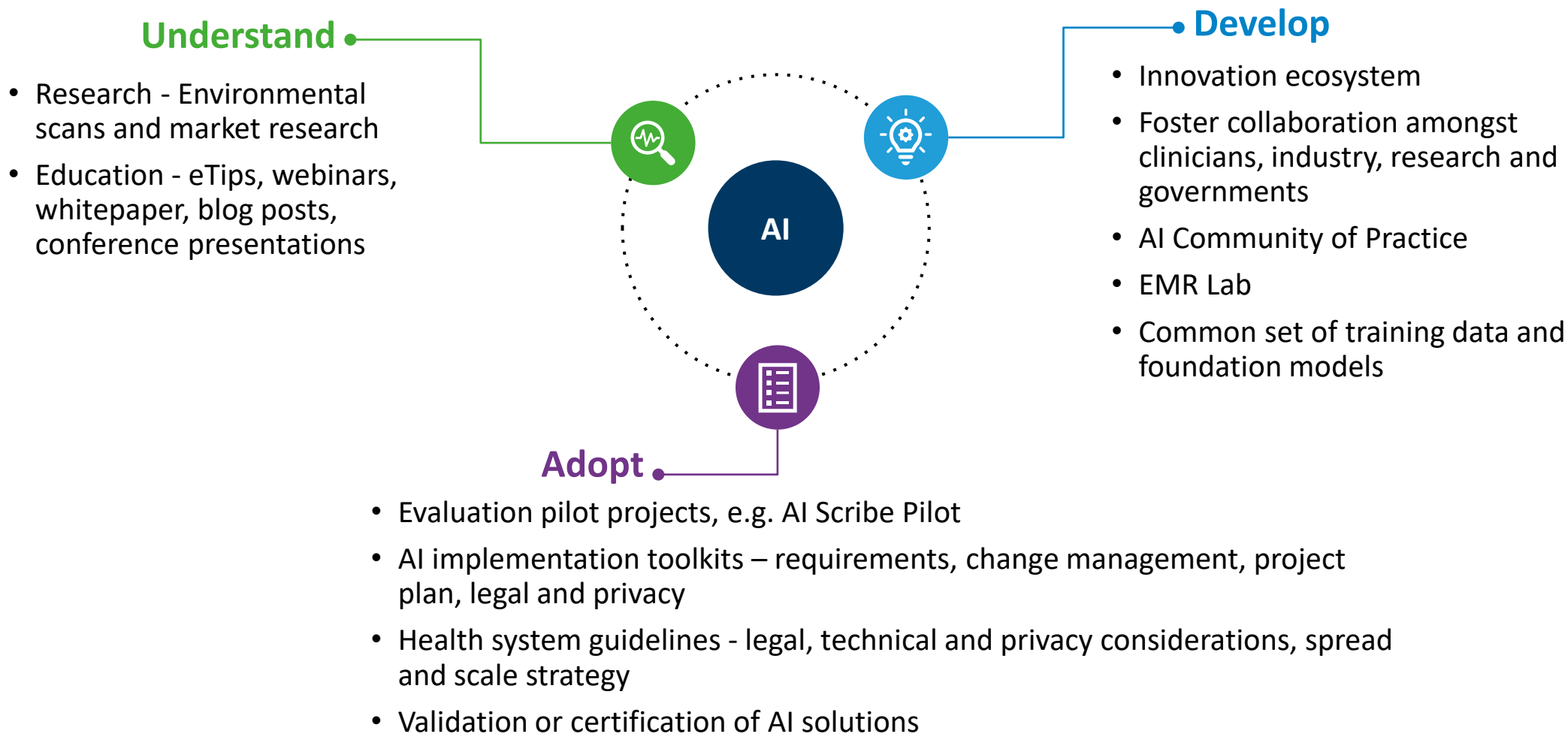
“...the ability to have all of the data about a person assimilated and analyzed, to have scans and slides read ... liberates doctors from keyboards so they can look patients in the eye.”

*Eric Topol, MD and Medical Futurist*

AND reduce your workload and give time back to you!

# OMD AI Strategy

Leveraging AI to advance OMD's Mission of accelerating digital health for clinicians and patients.



# Evaluation Study Approach

## 1 Preliminary Pilot

Begin with a preliminary pilot to conduct an evaluation of **WELL Health's AI Voice software** with a small group of 30 physicians – 50 patient encounters (25 w/o AI Scribe and 25 w AI Scribe).

This preliminary pilot is an important stepping stone for the main pilot to follow which will involve multiple AI Scribe solutions, EMR vendors, and a larger number of pilot participants. This initial study is a practical testing ground for the evaluation framework while providing early insights into AI scribe effectiveness and user experiences, which can help focus and refine the main study.

Duration: Sep-Dec 2023

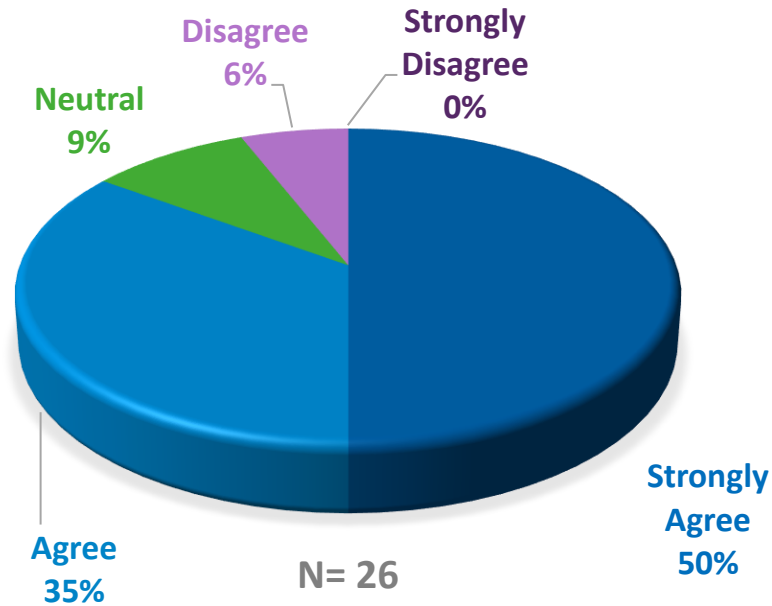
## 2 Pilot

A comprehensive pilot to evaluate the effectiveness of Artificial Intelligence ambient scribe solutions in reducing administration burden and burnout. Multiple vendors will be invited to participate in the evaluation. A diverse group of physicians will be recruited as pilot participants.

Project partners include **Ontario Health, eHealth Centre of Excellence, the Women's College Hospital Institute for Health System Solutions - Virtual Care (WIHV)**.

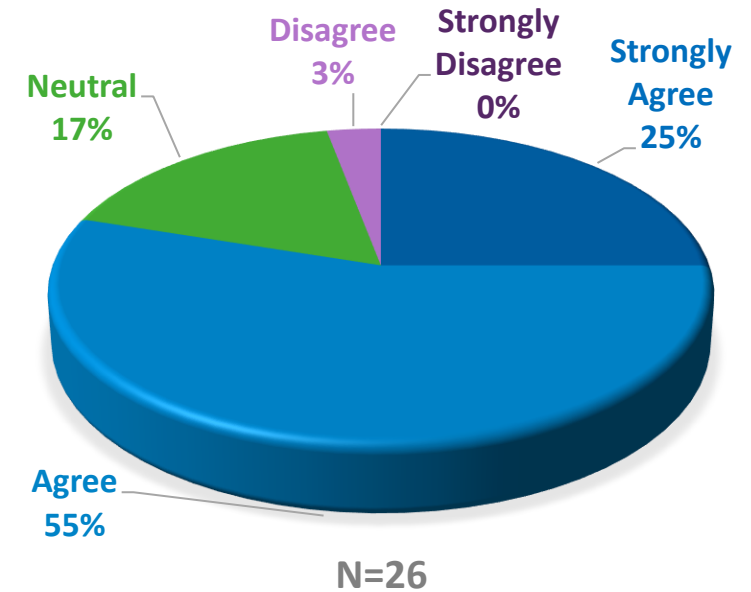
Duration: Dec 2023 - Jun 2024

## Clinical Workload Management, Efficiency, & Burnout



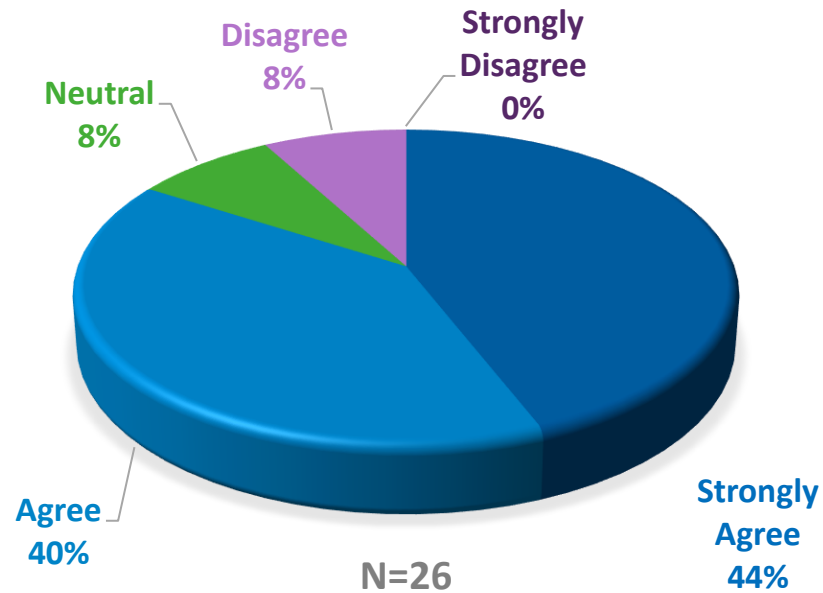
Most physicians (85%) reported reduced cognitive and administrative burdens and time savings, indicating the AI scribe's effectiveness in managing workload and reducing documentation-related stress.

## AI Scribe Functionality



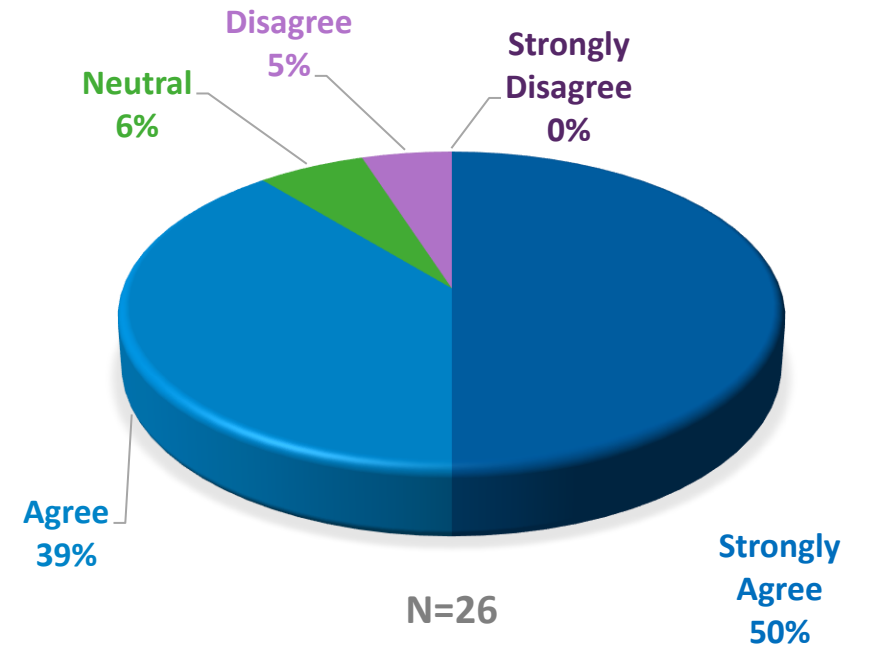
The theme centers around physician satisfaction with the AI scribe's functionality, adaptability, conversational capture, and comprehension of clinical terminology. Most physicians (80%) expressed overall satisfaction with the AI scribe, highlighting its practical features and functions.

## Efficiency & Time Management



Most physician respondents (84%) recognize the AI scribe as an effective tool that enhances workflow by providing real-time transcription, reducing cognitive load, and saving time in documentation.

## User Experience & Interface

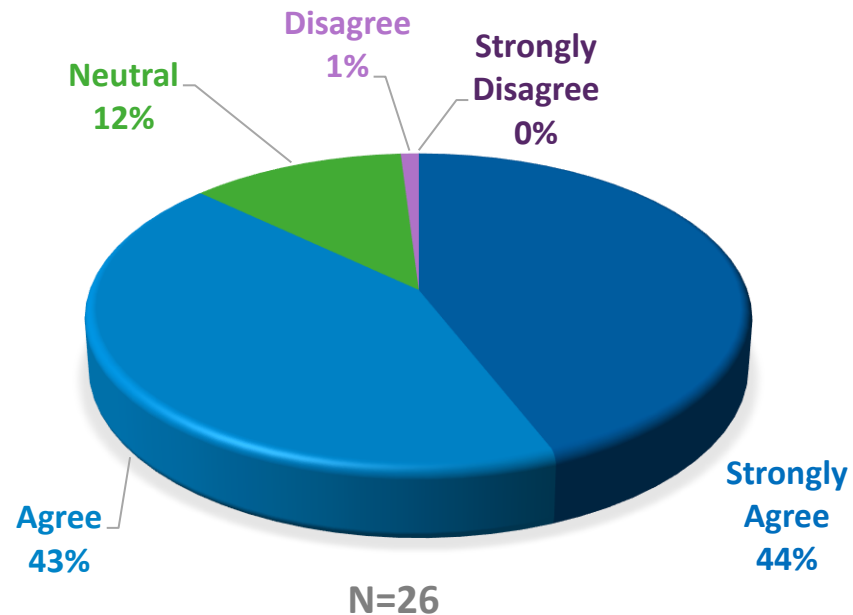


The findings reveal a generally positive response, with 89% of physicians reporting satisfaction with both the AI scribe's user interface and the training process.



# Patient Perception and Satisfaction

## Physicians' Survey



A high percentage of physicians (87%) reported that their patients had positive reactions to the AI scribe, indicating its beneficial role in enhancing patient experiences and the quality of care.

## Patients' Survey

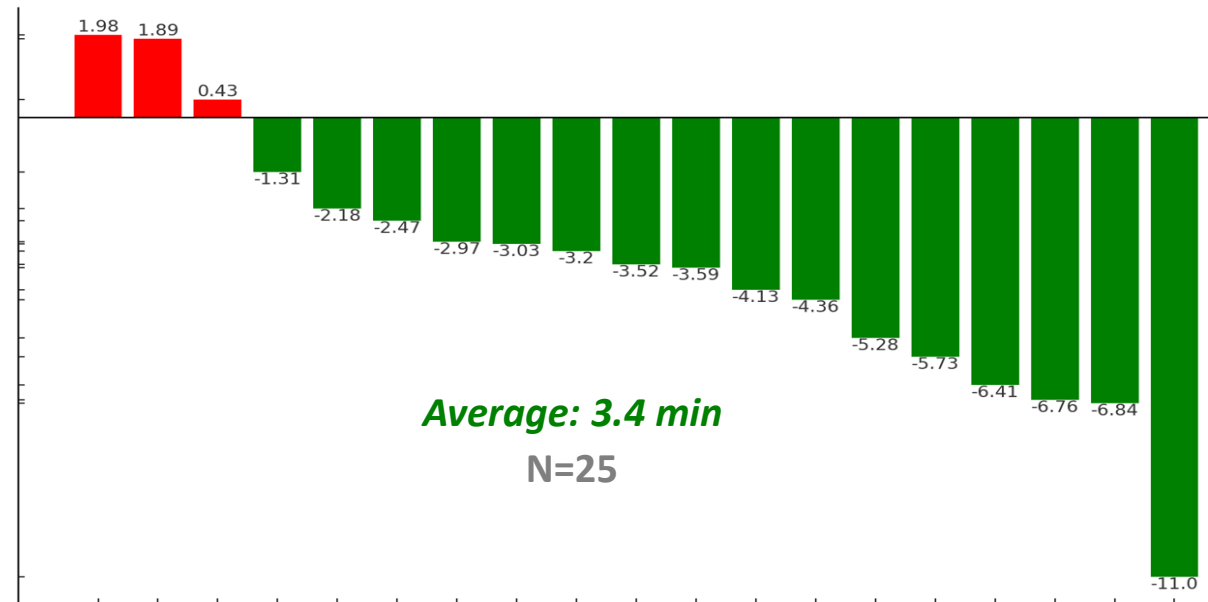
- **Focus on Conversation: 95%**
- **Comfort with AI Scribe: 92%**
- **Visit Satisfaction: 84%**
- **Enhanced Doctor-Patient Relationship: 78%**

### Patient-Physician Correlation:

- Both physicians and patients recognize the AI scribe's role in enhancing clinical interactions.
- High comfort levels with AI scribes reported by patients mirror physicians' observations.
- Increased satisfaction in care experience further affirms AI scribe's positive impact.

# Time Motion Study

The time-motion study was conducted to evaluate the AI scribe's impact on clinical efficiency, focusing on the time spent on consultations and clinical note creation. The results indicate decreased time spent on these tasks, demonstrating the AI scribe's positive effect on time efficiency in clinical settings.



## •Average Minutes Saved per Consultation:

- Average saving of 3.4 minutes per consultation.
- Change ranged from 2 minutes lost to 11 minutes saved per consultation.
- 84% of clinicians reported a decrease in average consultation time with the AI scribe.

# Key Messages of This Preliminary Study



**Overall findings indicate a positive trend** that can be explored and better understood with either a much larger sample of physicians/patients and/or in-depth qualitative research methods



**Physicians experienced savings in time spent in consults** with AI Scribe. Future studies could validate this finding in a larger sample, as well as explore nuances surrounding this time saving using qualitative methods

# Legal and Privacy Risks and Mitigation

- Privacy law and security concerns
- Informed consent and patient rights
- Ethics
- Patient Safety/Accuracy
- Integrity and bias/discrimination
- Malpractice/liability claims
- CPSO compliance and other guidelines
- Contractual agreements



# EXISTING LEGAL REQUIREMENTS

## WHERE DOES AI FIT?



PRIVACY  
PIPEDA (FEDERAL)

**PHIPA**

FIPPA

COMMON LAW

CONTRACTS/UNION

TORTS-INTRUSION UPON SECLUSION

CRIMINAL CODE

OTHER

MEDICINE ACT

**CPSO GUIDELINES**

**COURT ORDERS**

# Legal Landscape Today



Canada: AIDA; Voluntary Code of Conduct; Guide on Generative AI

Ontario: Trustworthy AI Framework

U.S.: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

E.U.: AI Act

# IPC: Principles for the Development, Provision, and Use of Generative AI Systems

1. Legal authority and consent
2. Appropriate purposes
3. Necessity and proportionality
4. Openness
5. Accountability
6. Individual Access
7. Limiting collection, use and disclosure
8. Accuracy
9. Safeguards



# Legal Landscape Today

- Privacy
  - PHIPA and HIC responsibilities, patient confidentiality
  - OPC and Provinces
- Data Governance and Ownership
- Consent Requirements
- Security and Encryption
- EMRs
  - OMD certification
- Professional Oversight and Accountability
  - CPSO, CMPA
- Regulatory Authorities
  - IPC, Health Canada, Government of Canada
  - Is this a Device





# Privacy Focus

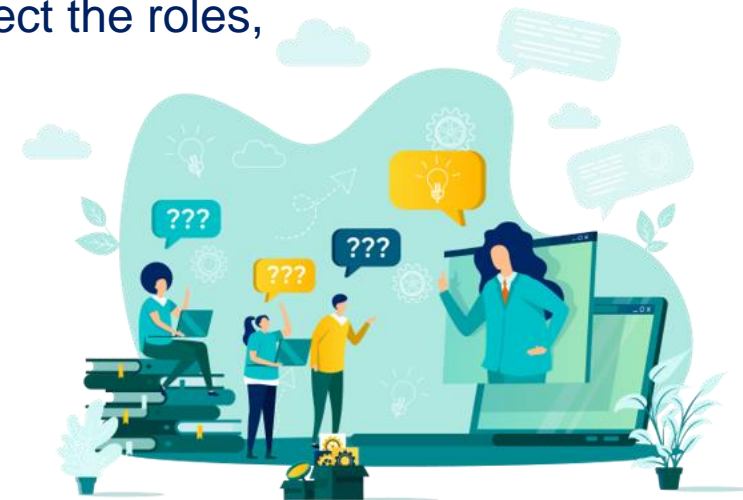
- **Responsibility** to ensure that products and services that are using AI comply with existing domestic and international privacy legislation and regulation.
- **Key privacy principles** and how they apply when developing, providing, or using generative AI models, tools, products and services.
- **Establish legal authority** for collecting and using personal information, and when relying on consent, ensuring that it is valid and meaningful;
- **Being open and transparent** about the way information is used and the privacy risks involved;
- **Making AI tools explainable** to users;
- **Developing safeguards** for privacy rights; and
- **Limiting the sharing of personal**, sensitive or confidential information

# QUESTION - ANSWER

**Is it a concern that certain programs de-identify and store transcriptions for R&D? Is that against any regulations or laws or ethics?**

**INVESTIGATION – ALBERTA VIRTUAL CARE – BABYLON:**

- Collecting (recording) and using audio and video consultations through the Babylon app goes beyond what is essential to provide a health service
- Inconsistent with provincial and national guidelines for providing virtual health care
- Policies and procedures implemented by the physicians also did not reflect the roles, responsibilities and accountabilities required by HIA.



# Pre-Pilot: What Did We Learn



**Note: OMD cannot answer these questions but can broker the collaboration between vendors and physicians to establish a governance structure that includes both.**

## Vendors:

- Still learning
- Access to data and responsibilities

## Data:

- Parameters for use
- Recordings
- Feeding into machine learning model

## Physicians:

- Privacy issues
- Bias and accuracy liability
- Training

# Discussion and Q&A



 OntarioMD

 @OntarioEMRs

 OntarioMD

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 OntarioMDInc

 OntarioMD.blog