Navigating Clinical AI: A Practical Approach to Using LLMs in Primary Care

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Presented by:

Dr. Neil Naik, Clinician Leader and AI in Medicine Specialist
Dr. Rajesh Girdhari, Family Physician and Digital Health Leader

The session explored how **artificial intelligence (AI), particularly large language models (LLMs),** can be practically applied in primary care to address workload pressures, improve efficiency, and support clinical decision making. The physicians explore the benefits, while clearly outlining risks, limitations, and governance considerations.

Webinar recording link: *LLMs in Primary Care*

A Case for Exploring AI in Primary Care

- Fully adhering to preventive, chronic, and acute care guidelines for a typical patient panel would require **approximately 26.7 hours per day**!
- AI is positioned as a valuable enabler to help clinicians prioritize care and reduce administrative burden.

What can LLMs do well?

- Summarize and interpret clinical information (e.g., test results, reports).
- Support administrative workflows such as documentation, inbox management, and report triage.
- Use LLMS to *speed up thinking*, not replace it

Limitations and Risks

- **Probabilistic outputs:** LLMs generate likely answers, not guaranteed correct ones making inbox management and report triage risky until this is rectified.
- **Failure modes:** Out of distribution data, incorrect feature attribution, and model drift can all lead to errors.
- **Clinical accountability:** Clinicians remain fully responsible for decisions made using AI outputs.
- **Privacy concerns:** Patient identifiable information should not be entered into general purpose AI tools. Follow regulatory and college guidance.
- **System and policy:** Billing and compensation models evolve slowly to accommodate this in practice.
- **Lack of standardized data:** remains a major barrier to effective AI use

Example Use Cases

Result Interpretation (Pulmonary Function Tests):

Different AI tools generate helpful but slightly different summaries from the same data. One included a factual inconsistency. This can lead to medical legal issues if the sources cannot be verified.
Takeaway: Always verify against source data.

Dermatology

Can help identify potential diagnosis from images. Conclusions shift when clinical context added as prompting and context shape AI output.

Takeaway: Prompting and context strongly influence output.

Open Evidence

Tools trained on medical literature (e.g., Open Evidence) provided structured, citation-supported guidance but still required verification and jurisdictional awareness

Takeaway: Citations improve transparency, but don't eliminate responsibility.

Practical Tips & Success Factors

- Be specific in the ask and provide relevant context
- Ask for uncertainty clarifications
- Request structured outputs
- Treat outputs as decision-support drafts, not a final clinical interpretation
- Always avoid input of patient identifiers into external tools

Future Opportunities for AI in Primary Care

- AI-assisted prescription renewals
- Inbox management and report categorization.
- Personalized medicine, population health management, and tailoring interventions at scale.