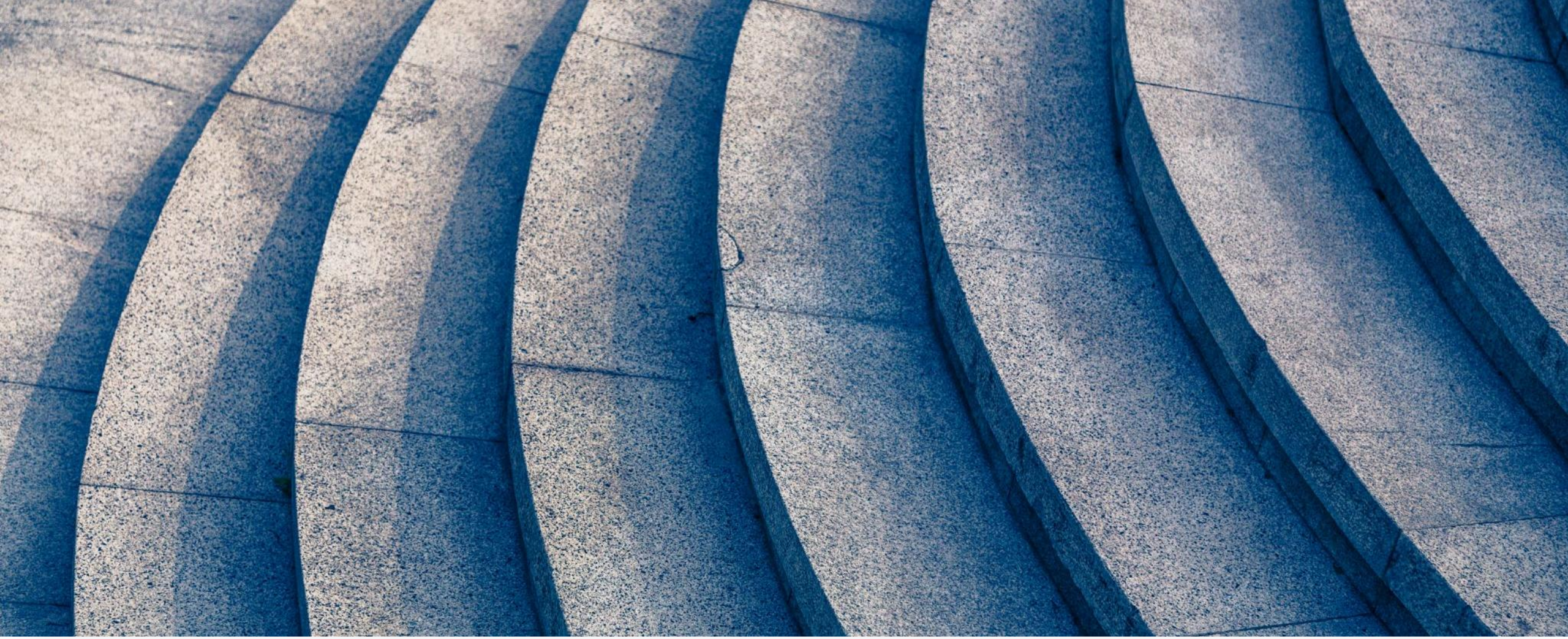


Update on Psychiatry Residency Training, Current trends

Farooq Mohyuddin, MD



Conflicts of interest: Dr. Farooq Mohyuddin

No conflict of interest to report

Future Directions in Psychiatry Residency Training Programs.

Responding to a rapidly changing world

New initiatives in our program

Seminars added

1) AI in mental health
2) Interventional Psychiatry
3) Reproductive Psychiatry
4) Climate Psychiatry

Pilot Curriculum on Artificial/Augmented Intelligence: Advancing Psychiatric Education

Do you use AI in your everyday life?

Discussion: Experience of using AI in psychiatry

Need for Education in AI

Overview of AI's role in psychiatry

- Detection of at-risk mental states
- Diagnosis
- Treatment plans
- Improving access to high-quality care
- Predicting prognosis
- Predicting medication response
- Evaluating suicide risk
- Relapse prediction and prevention
- Simulated patients

Current Curricular gaps

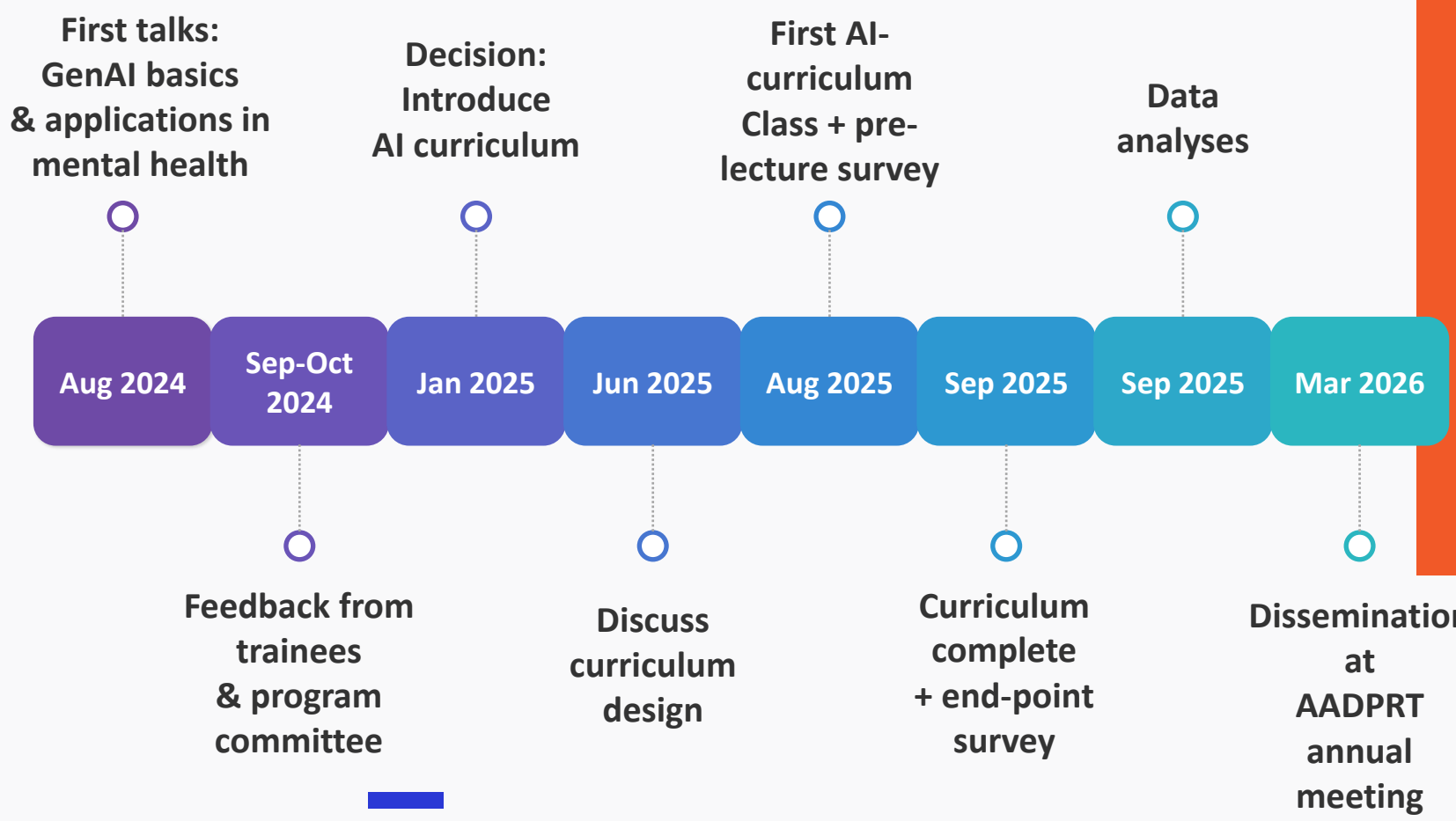
- Efforts underway to develop and implement structured curricula on AI
- Medical schools
- Residency programs in certain specialties (radiology, ophthalmology, family medicine)
- Psychiatry residency training programs seem to be lagging

How many of your patients have interacted with AI before they see you?

Which programs here have a curriculum on AI for their residents?

Key Dates

AI Curriculum in Psychiatry Residency Training



Goals of Pilot Curriculum

The curriculum's objectives were to help residents.

- ❖Envision how such tools may integrate into psychiatric care
- ❖Empowering the residents with the foundational knowledge and practical skills about AI based tools
- ❖Critically evaluate AI tools
- ❖Understand their development, strengths, and limitations
- ❖Practice prompt engineering and explore generative/agentic AI

Lecture Series

The lectures were focused on the following topics

- Introduction to AI with a focus on generative AI
- Prompt engineering and agentic AI
- Limitations of AI-based tools and Clinical use cases of AI in psychiatry

Why we chose these topics?

Foundational basic knowledge on AI

Practical education on how AI-tools work

Ethics and limitations of AI: stakes are high with patient care

Evolving technology

What is the minimal, WE, physicians as psychiatrists should know?

Introduction to AI with a focus on generative AI

- Definitions of common AI-related terminology
- Analogy to human brain
- Transformer architecture
- Types of generative AI models
- Foundational models vs. Generative AI models
- Historical advancements in AI technology
- Basic LLM terminology
- Comparing commonly used LLMs
- What determines the quality of the answers from LLMs?

Introduction to AI with a focus on LLM

- Basic LLM terminology
- Comparing commonly used LLMs
- What determines the quality of the answers from LLMs?
- How generative AI systems generate an answer?
- Deterministic vs. Creative responses
- Hallucinations in LLMs
- Retrieval augmented generation (RAG)
- Fine-tuning of models and approaches
- Pretraining of models and approaches

Prompt engineering and Agentic AI

- Agentic AI: What are AI agents and how do they work?
- Evaluation criteria for Agentic AI/ Generative AI in clinical decision making
- What is prompt engineering?
- How to write a prompt?
- Features of a high quality prompt
- Prompt engineering techniques: Zero-shot, Few-shot, Chain of Thought, Tree of Thoughts
- Best practices for prompt engineering with OpenAI API
- Demonstration of prompt engineering across various commonly used AI platforms and comparing outputs from each

Clinical use cases of AI in psychiatry

- Extractive AI vs. Generative AI and their use cases
- Patient monitoring
- Systems-based care applications
- AI-chatbots
- Digital therapy (Software-as-a-treatment)
- AI-driven medical education and training
- Machine-learning based prediction of disorders, medication response and prognosis
- Drug discovery, repurpose, and clinical relevance
- Personalized medicine

Interventional Psychiatry

- **Transcranial Magnetic Stimulation (TMS):** A non-invasive outpatient procedure using magnetic pulses to stimulate specific areas of the brain without anesthesia.
- **Ketamine and Esketamine (Spravato):** Fast-acting medications administered via intravenous (IV) infusion or nasal spray to rapidly reduce severe symptoms.
- **Electroconvulsive Therapy (ECT):** A highly effective, medically controlled procedure performed under brief general anesthesia that induces a therapeutic seizure to reset brain chemistry.
- **Other Procedures:** Includes stellate ganglion blocks (SGB), vagus nerve stimulation (VNS), and deep brain stimulation (DBS) for complex cases.

Reproductive Psychiatry

Should residents graduating from residency training programs be able to treat Peripartum patients as an expert?

Climate Psychiatry

- Global Environmental Disruptions
- Direct impact
- Heat
- Pollution
- Eco Anxiety

Should we prepare our graduates to deal with climate disasters?

Questions

Thank you

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