COMM 4190 Research Paper

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Investigating if an LLM could be the first point of contact for mental healthcare providers

Introduction:

LLMs are currently being used in a variety of capacities. From research helpers to customer service representatives, these models are increasingly popping up as a solution to low to medium skilled tasks. One such industry is healthcare where oftentimes patient intake consists of a mix of technical questions relating to health and logistical ones relating to schedule and preferences. Specifically, I want to look at whether or not an LLM could replace the intake process for a patient seeking mental health services. This presents a number of challenges as there is a unique triaging process that must be done if a patient is having a panic attack or requires immediate care vs a patient seeking out traditional counseling. We will first explore what the mental health intake procedures are before examining how LLMs are already being implemented in the space as well as what this prompting could look like.

Importance of the Intake:

The intake is the first encounter where healthcare providers assess a patient's history and needs. The patient typically must provide information about their background, insurance, and medical history. This often includes questions about family medical history to inform about anything that could be hereditary. Then it is typical for a healthcare provider to question the patient about their current problems (symptoms, frequency of occurrence, extenuating circumstances) and what type of care that they can provide. It is important to note where a

patient is referred elsewhere if the current care provider cannot provide a particular service that the patient needs. (Price)

This portion of the intake is often conversation (ex: “What brings you here today?”, “How long have you been feeling this way”). This initial information intake is then often paired with more quantitative evidence based checklists to initially diagnose a patient. There are standards and guides to how the more technical components of these intakes should be done with the standard being the American Psychiatric Association and their DSM-5 cross-cutting scales in order to measure symptoms. (American Psychiatric Association 733)

Overall the goal of the intake is to build a rapport with a patient and determine if a care provider can properly meet their needs. While patients often benefit from having a human connecting with their care provider this type of intake can also decrease the speed at which their care is provided. They have to first have an intake where they might learn they are at the wrong provider or need a different form of care. This is a waste of everyone’s time and LLMs provide a means to potentially automate this initial point of contact to facilitate quicker care for everyone. (Taylor) (Guo)

How LLMS are being used in Mental Healthcare Today:

LLMs are already starting to be piloted to help with mental healthcare practices. There are a number of groups who are using LLMs to speed up screening, note taking, or direct care. One of the main groups doing this is Limbic.ai with their AI chatbot Limbic Access. This is a screening bot that will talk to prospective mental health patients. It functions a lot like the other forms of tirage where users describe their concerns to Limbic Access and it categorizes their need and how to move forward. The tool functions well with the automated assessment lasting

about 15 minutes with 93 percent accuracy on preventing issues. Limbic Access also accounts for other issues like the suicide prevention, directing patients to more immediate care providers. (Carrington)

While the immediate chatbots as an intake is still in its infancy there are more robust tools that assist with the scribing and documentation. One example of this is the startup Upheal which offers AI intake notes that listens to an intake session and automatically extracts the relevant information (Upheal). Something that is interesting about Upheal and other companies with such offerings (Limeade, Meditech) are that they focus on the mental health sector as opposed to all medical practices . Lastly some groups are focused on injecting AI directly into care with virtual therapists and chatbots. Dartmouth's Therabot is a chatbot designed to directly administer care. When studied, it was found that it delivered greater symptom reductions in depression and anxiety than standard digital therapy (American Hospital Association).

While this is an interesting development, it is unlikely that chatbots will replace care. In the AI automation timeline, it is to be imagined that human therapists would be one of, if not the last task, to go. The other tools listed above that provide support to mental healthcare providers are far more likely to be implemented. (Dockterman) (Efrem)

Considerations for LLMs in Healthcare:

Although some groups are already approaching this issue it is important to consider what aspects must be considered when developing an LLM based intake tool. LLMs possess the ability to augment every step of the intake. They can actively engage the patient, adopt interviews, flag symptoms, and route data collection to feed into a summary for mental healthcare providers. (Wen, Bo, et al)

Ideally this tool would be able to ask open-ended clinically relevant questions while still being able to adapt dynamically to a patient's responses without injecting inappropriate suggestions. The LLM must also be able to tell the difference between what is relevant or not (ie: is a patient rambling or sharing helpful history). Outside of the actual LLM such a tool would need to be integrated into the current workflows to minimize the need for manual editing.

As LLMs continue to become used by mental healthcare providers in order to make their processes more efficient there are some ethical and legal concerns that arise. One major component is HIPAA compliance and patient privacy. It is important to note that standard consumer LLMs (ChatGPT, Claude, Gemini) are not typically HIPAA compliant as data submitted to them (ie: the user inputs) are allowed to be stored and used for model training (Alder) (Paubox).

This is an important consideration as more products are released that are essentially just wrappers. Another ethical consideration is the bias that LLMs may have to certain groups. There is already some research showing that LLMs may have better prognosis for White patients compared to minorities under the exact same conditions (Yang). One of the reasons that this could be is because so much of the existing medical literature was created with white or male patients in mind - it is understandable that a model trained on the literature would also carry over some of the biases (Gao). For the general intake process this should not be a major concern as ideally a model is not giving specific medical information during this process, however it is a factor that should be considered as this information is handed off to a mental health professional. This is a circumstance where a hallucination is less than ideal (Azamfirei). It is also important to note that informed consent should play a large role as this technology continues to develop.

Patients should clearly understand that they are dealing with an LLM as opposed to an actual human.

Prompting:

As we continue to consider how LLMs can be used in the mental healthcare provider intake process, we can think about how these models should be prompted. Below is an example of a prompt used to test out the idea of LLMs as a first point of contact for mental healthcare providers. The goal of the prompt is to capture the motivations above in order to collect the proper information in a succinct way.

You are an empathetic, HIPAA-aware virtual assistant helping conduct an initial mental health intake. Your job is to gather relevant background information, assess current mental health symptoms, screen for crisis risk, and determine preferences for care. You should speak in a calm, non-judgmental tone. If at any point the user appears to be in crisis, gently direct them to emergency resources and do not proceed further with intake.

Begin with transparency and consent. Then proceed step by step, asking the following questions, allowing the user to skip any they feel uncomfortable answering. Be sure to pace your questions—after every few responses, summarize what the user has said and check in with them.

SECTION 0: Consent and Framing

Start with:

"Hello, I'm here to guide you through a few questions that will help a licensed mental health provider better understand your needs. I'm not a human therapist, but I can collect information that helps connect you with the right care. If you're ever uncomfortable, feel free to skip any question or stop at any time.

Are you okay with me asking a few questions to get started?"

Only proceed if the user consents.

SECTION 1: Safety and Crisis Assessment

Ask these questions first:

1. Are you currently experiencing thoughts of harming yourself or others?

2. Have you had any thoughts like this in the past few weeks?

3. Do you feel you are in immediate danger or crisis right now?

4. Would you like help connecting to a crisis support resource?

→ If YES to 1 or 3: Stop the intake and share immediate resources such as the suicide prevention hotline or emergency services. Do not continue with further questions.

SECTION 2: Presenting Concerns

If the user is not in crisis, proceed:

5. What brings you here today? (Open-ended)

6. How long have you been feeling this way?

7. Have there been any recent life changes or stressors that may be affecting your mental health?

SECTION 3: Symptom Check (Use DSM-5 inspired phrasing)

Say: "Over the past two weeks, how often have you experienced the following? You can respond with: Not at all / Several days / More than half the days / Nearly every day."

8. Feeling down, depressed, or hopeless

9. Feeling nervous, anxious, or on edge

10. Trouble sleeping (too little or too much)

11. Difficulty concentrating

12. Loss of interest in activities you usually enjoy

13. Changes in appetite

14. Fatigue or low energy

SECTION 4: Background and History

15. Have you received mental health support or therapy before?

16. Are you currently taking any medications for your mental health?

17. Is there any family history of mental health challenges that you're aware of?

SECTION 5: Goals and Preferences

18. What type of support are you looking for? (e.g., talk therapy, medication, group therapy, not sure yet)

19. Do you have any preferences for your provider? (e.g., gender, cultural background, therapeutic style)

20. Are there any specific goals you'd like to work on in therapy?

SECTION 6: Logistics

21. What days or times generally work best for you for appointments?

22. Will you be using insurance or paying out-of-pocket?

SECTION 7: Final Check-In

Say:

"Thank you so much for sharing this with me—it really helps your provider prepare to support you. Is there anything else you'd like to mention before we wrap up?"

Instructions for Yourself (the LLM):

- Always prioritize safety. If the user appears in distress, escalate by sharing help resources and pausing further questions.

- Use a warm, validating tone throughout.

- After every 4–5 questions, summarize key points to show understanding.

- Respect the user's boundaries and let them skip any question.

- Do NOT make any diagnoses or treatment recommendations.

- At the end, output a summary of the intake for handoff to a licensed professional.

When tested (see attached prompting) this prompt was able to gather information from the patient while ensuring the patient's safety. By prioritizing safety the LLM (Anthropic's Sonnet 3.7) was able to successfully divert in a self harm situation. Once the LLM guided the patient

through the intake process - it had successfully collected all relevant information with no human international required.

Future of LLMs for Mental Healthcare:

We will continue to see LLMs become a larger part of healthcare from the intake, to note taking, to actually providing care. As this develops, there is the most optimism to be had with the note taking and intake. This is because it is exactly the kind of skill that is done well by the structured pattern recognition that LLMs do well. Intake or note taking systems require synthesizing data via standardized questionnaires. It is important to note that this differs from actually providing care - something that is hard to do properly through a chat interface. Even with this there is some exploration into how these models can make mental healthcare accessible to everyone. It is in these support roles that LLMs will likely develop real impact in the short term, augmenting healthcare providers instead of replacing them.