

## Appendix 1: Interview Guide

### Topic 1 (15 minutes)

Patient ED experience. What are typical points of interaction among people, technology, and systems for diagnosis?

*Activity: Creating an ED diagnostic process/journey map*

Elucidate key points of interaction among people, technology/tools, and systems for diagnosis. Through a process map activity, participants will be asked to:

1. Identify typical points of interaction and opportunities for communication amongst people and system technology/tools (pagers, computer, ECG printouts, etc),
2. Depict how information flows through the system (across space and time), through direct interactions or indirectly (i.e., through technology/tools), emphasizing activities contributing to diagnosis, and
3. Highlight what they perceive to be key decision points

#### *Questions and Probes:*

1. *Time allotted, 5 minutes* [Moderator]: Think about a patient case where there was difficulty in the diagnostic process, such as an undifferentiated chief complaint. Based on your ED work practice, we would like for you to review this simplified timeline of a diagnostic process. We will give you a couple of minutes to look it over, first: react to it/discuss if steps are missing or out of order (< 5 minutes), and then have you walk us through the process for a patient presentation. Any questions?

*After reviewing timeline:* We would now like for you to present your work processes. In addition to your activities, try to include all of the elements or information you use that contribute to diagnosis or management decisions or that affect diagnostic processes (e.g., interactions with people, any physical or electronic tools you use, how the physical space impacts the process, etc.).

1. You may choose to point out areas where problems/potential breakdowns/issues arise as well as areas where things are helpful in the process and work well
2. You may choose to point out points where key decisions are made

As you walk through the timeline, we will jump in to ask additional questions or for you to provide more detail to help our understanding.

2. *Presentation;* Participant will then present work process using timeline with discussion.
  1. Moderator probes
    - i. What specific work practices do you use individually?
      1. Probe: How is information captured, recorded, organized, and documented at various points in the diagnostic process?
    - ii. Where is the most important part in the process?
    - iii. Where is the most challenging part in the process?
    - iv. How do you cope with the challenges?
      1. Probe: What strategies do you use?

- v. What are barriers/facilitators leading to a diagnosis? Where were the points things were delayed or you didn't understand or get the information you needed?
      1. Probe: What patient related factors do you feel contribute to or detract from the diagnostic process?
      2. What clinician related factors do you feel contribute to or detract from the diagnostic process?
      3. What system-related factors do you feel contribute to or detract from the diagnostic process?
    - vi. Can you think of a case where the diagnostic process could have been improved? How?
  2. Moderator should note whether certain domains are excluded from timeline presentation to provide foundation for discussion in Topic 2

### Optional Break (5-10 Minutes)

We are going to take a quick 5-10 (*depending on if running behind*) minute break. When we get back, we will explore the different domains involved in the diagnostic process in more detail. Please be back to your computer at XX:XX.

### Topic 2 (30-40 minutes)

Elaborate on diagnostic experiences and brainstorm possible interventions.

Reflect on specific ED diagnostic experiences, exploring the strengths and vulnerabilities in diagnostic successes or failures. Participants will be encouraged to elaborate on their stories through follow up questions.

### *Domain specific Questions and Probes*

1. **Information Gathering (Collection & Organization)** We are interested in hearing how you arrive at a diagnosis and what steps do you take to get there.
  1. As a [interview participant's role], *what type* of information do you collect during the diagnostic process and *how* do you collect it?
    - i. Where does the information come from?
    - ii. What information do you gather from other clinicians such as nurses?
    - iii. What information do you gather from patients or family members?
  2. Describe the diagnostic timeline - How does this information flow through the system?
    - i. Probe: Who knows information at any point in time?
    - ii. Probe: How do others gain access to that information?
  3. How do you organize this information once it is collected?
    - i. Differential diagnosis list / working diagnosis
      1. When do you make an initial diagnosis?

2. What are you using (resources – medical tools, other roles) to make that diagnosis?
  4. What do you perceive as a strength / weakness / area of opportunity concerning information flow and organization through the system?
    - i. Probe: What are the strengths?
    - ii. Probe: What are the weaknesses?
    - iii. Probe: What are areas of opportunity?
  5. Physician: How do you deal with diagnostic uncertainty? What causes/influences you to place more orders? Describe how you navigate diagnostic uncertainty.
2. **Interpersonal Factors:** Describe the people you interact with during the ED encounter, and how you interact with them (in-person, using technology). How do these people contribute to the diagnostic process? Consider the following examples of who you may interact with during the ED encounter: Patients, patient surrogates or caregivers, nursing team, patient techs, consultants, security, social work, residents, fellows, medical students, or other stakeholders.
1. What are strengths / weaknesses / areas of opportunity as it relates to these interactions?
  2. What strategies do you use to come to shared understanding with patients/caregivers? Nurses? Consultants? Etc.
3. **Technological Factors:** How do interactions between people and tools/technology facilitate and/or detract from ED diagnosis and management? (i.e., in what ways do you think people and tools interact in ED diagnosis)
1. How does the EMR affect diagnosis? Consider the use of prior records, outside data, sticky notes/chat, comments, track board, etc.
  2. What changes to EMR or other tools within the system do you think could improve the diagnostic process or help with diagnostic decision-making?
4. **Environmental/Systems Factors:** How do environmental aspects of the ED affect diagnosis and decision-making? Consider the following examples of environmental aspects of the ED that may affect diagnosis and decision-making: Layout (space, time), noise, lighting, patient volume, seating/positioning of staff and patients, or other factors.
1. Describe the burden of interruptions, high cognitive workload, workflow, clinical activities.
  2. Are there specific institution protocols or policies in place that aid or detract from your diagnostic processes?
    - i. Are these situations related to any particular groups of patients – e.g., those requiring imaging, or of a certain age?
5. Optional: Thinking back to the patient timeline we displayed earlier, would you think the ‘ideal’ diagnostic process is similar or different than that diagnostic process?
1. How so?
  2. Are there opportunities for interventions? – creating a new tool/system/physical space, role, policy, etc.

*With remaining 15-20 minutes.* Now that you have explored a patient case using this simplified timeline, we are going to show you an ED diagnostic Framework [Moderator: scroll to ED Acute Care Framework on Miro board].

1. We are first going to walk you through this framework and will again ask you to react to it – is anything missing or anything that can be eliminated from this model?
2. Where commonly are the gaps in the diagnostic process? Where do you think breakdowns leading to errors are happening?
3. Where do you see opportunities to improve diagnostic decision making? How can we make these improvements?

### **End, Debriefing (5 Minutes)**

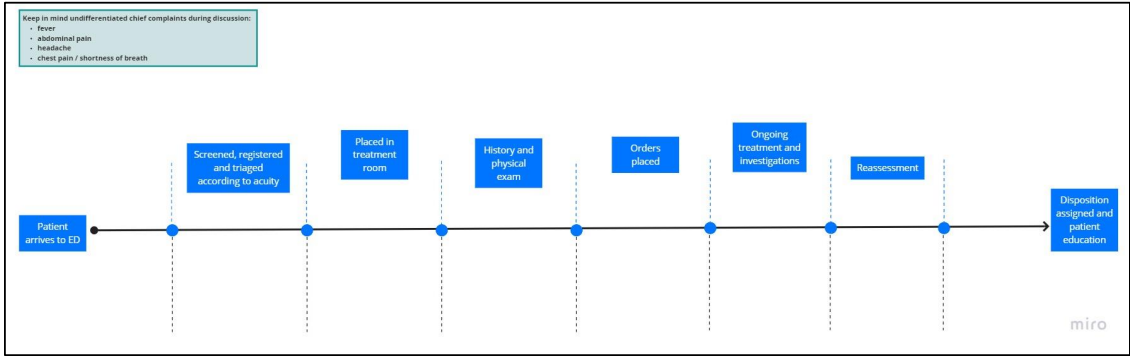
Are there any other factors that haven't been discussed that affect the diagnostic process?

Is there anything else we should have asked to help us understand your experience better?

1. Moderator will debrief participant and notify the participant that the patient timeline will be used as summary of the discussion. The timeline with discussion points will be sent via email to the participant for brief review to ensure it captures an accurate understanding of what was discussed. Offer points of contact for further information on involvement and next steps.
2. Participants will be thanked for taking part in the study and released.

Zoom Screen Share Images

Miro ED Patient Timeline



ED Acute Care Framework (Modified-NASEM)

