**Project Proposal**

**Title:**  
Measuring the Invisible Work of Epic In-Basket Messaging in Outpatient Psychiatry

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**Course:** BMIN 5070 – Human Factors in Biomedical Informatics

**Problem Summary**

Outpatient psychiatry providers manage substantial “invisible work” through Epic in-basket messaging, including patient calls, advice requests, results, refills, and inter-provider communication. These tasks require clinical judgment and significant time, yet they remain absent from productivity metrics (e.g., RVUs, visit counts). The result is fragmented work, increased cognitive load, and hidden workload that contributes to burnout and safety risks. From a human factors perspective, this represents a serious misalignment between measured productivity and actual provider effort.

**Objectives**

1. Quantify the volume and time burden of Epic messaging for providers in Dept 603 (PBH OPC 3535 Market Street, 2nd floor).
2. Examine variation across message types, providers, and patient panel sizes.
3. Explore workload distribution during versus outside of business hours.
4. Apply human factors principles to interpret implications for workload, cognitive demands, and error risk.
5. Propose strategies to make invisible work visible in departmental reporting and planning.

**Methods**

* **Data Request**: Aggregated, de-identified data for Jul 2024 – Jun 2025, for providers with roles Physician, Psychiatrist, Nurse Practitioner, and Resident. Requested elements:
  + Monthly counts per provider of in-basket messages by type (Patient Call, Patient Advice Request, Results, Rx Authorization, Rx Response, Chart Cosign, CC’d Charts, Patient Unviewed Results, Refill Errors).
  + Aggregated time spent per provider on in-basket messages (sum of time, and/or average time per message type, if available).
  + Number of active patients under each provider per month (panel size).
  + Timing of message handling (during vs. outside of business hours; weekday vs. weekend).
  + Turnaround time (average days to closure per message type).
* **Analysis**:
  + Summarize totals, trends, and distributions.
  + Compare workload across message types, providers, and panel sizes.
  + Visualize with descriptive figures (time series, distributions, workload normalized per panel size).
  + Interpret findings through human factors frameworks (workload fit, multitasking, fragmentation, error tolerance).

**Expected Outcomes**

* Quantitative profile of Epic messaging workload across providers and message types.
* Contextualization of invisible work relative to provider panel size.
* Human factors analysis of how invisible work contributes to cognitive load, burnout, and patient safety risks.
* Recommendations for incorporating messaging workload into departmental dashboards and capacity planning.

**Timeline**

* **Week of Sep 10**: Finalize data request t and leadership sign-off.
* **Week of Sep 17**: Validate dataset; finalize analysis plan.
* **Week of Sep 24**: Conduct descriptive analyses and produce draft figures.
* **Week of Oct 1**: Draft results and discussion; refine figures.
* **Week of Oct 8**: Finalize paper and prepare 10–12 slide presentation.
* **Oct 15**: Project presentation.

**References**

1. Koppel R. Great Promises of Healthcare Information Technology Deliver Less. In: *Healthcare Information Management Systems*. Springer; 2016.
2. Shah SJ, Devon-Sand A, Ma SP, et al. Ambient artificial intelligence scribes: physician burnout and perspectives on usability and documentation burden. *J Am Med Inform Assoc.* 2025;32(2):375–380.
3. Singh H, Sittig DF. Measuring and improving patient safety through health information technology: The Health IT Safety Framework. *BMJ Qual Saf.* 2016;25(4):226–232.
4. Thimbleby H. *Fix IT: See and Solve the Problems of Digital Healthcare.* Oxford Univ Press; 2022.
5. Tutty MA, Carlasare LE, Lloyd S, Sinsky CA. The complex case of EHRs: examining the factors impacting the EHR user experience. *J Am Med Inform Assoc.* 2019;26(7):673–677.

**Significance**

This project will provide a systematic, human factors–based analysis of invisible Epic in-basket workload in outpatient psychiatry. By quantifying message volume, time burden, panel context, and after-hours distribution, it will reveal the gap between formal metrics and lived provider experience. The findings will support more human-centered definitions of provider capacity and inform future workflow and system design for sustainable, safe care.