

PURPOSE / OBJECTIVES

- Identify a care gap:** Radiologic findings suggestive of malignancy are sometimes missed or lack timely follow-up, leading to delayed care.
- Use AI to detect risk:** A custom NLP pipeline leveraging a Large Language Model (LLM) was developed to flag reports indicative of new or progressive pancreatic cancer for manual review to investigate care gaps.
- Aim:** To evaluate whether an **LLM-based NLP system** can identify **patients at risk for missed or delayed follow-up** and lay the groundwork for **AI-driven safety nets** that support proactive clinical intervention.

Methods

Figure 1. AI-enabled workflow for identifying patients at risk for delayed recognition of worsening or suspected pancreatic cancer.



We used NLP to create a custom pipeline using **589,513 radiology reports** from a large health system. The model flagged 2,897 reports related to pancreatic cancer; 43 were identified as suspicious for new, unexpected, or particularly worrisome findings. We then **conducted a detailed manual review of 9 consecutively flagged cases** to assess follow-up, diagnostic closure, and timeliness of response.

Results

Figure 2A. NLP-Flagged Cases Categorized by Diagnostic Novelty.

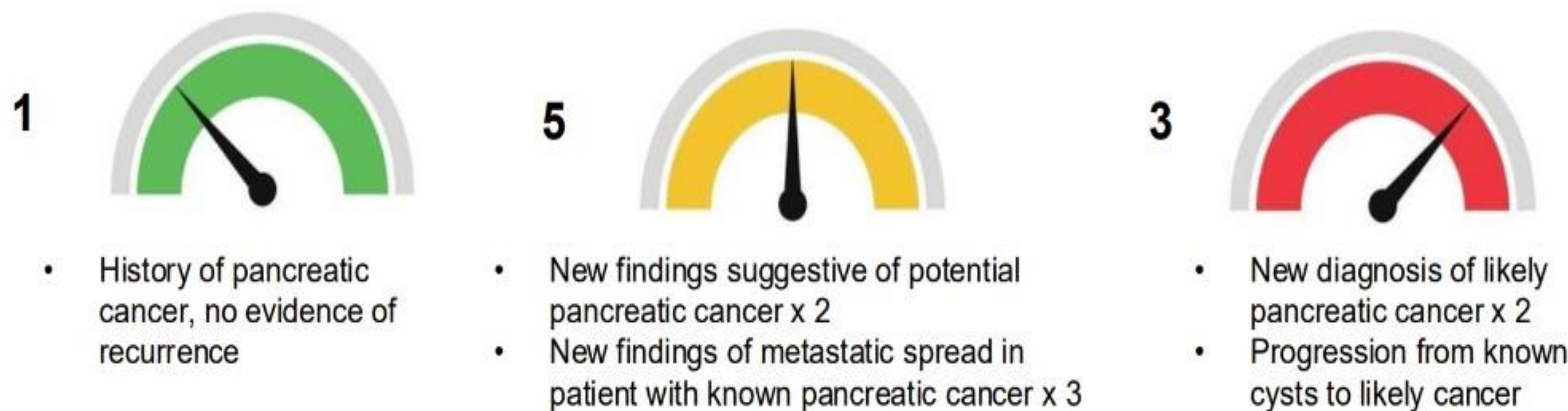


Figure 2B. Examples of Manual Review Findings and Downstream Care Gaps.

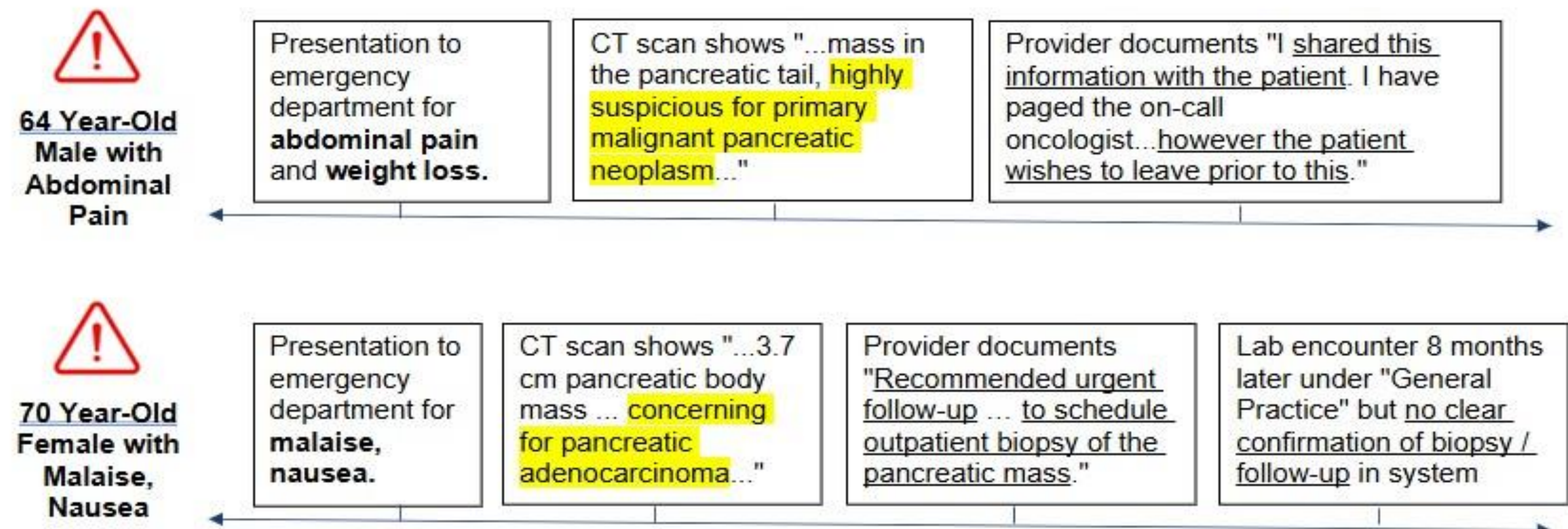


Figure 2C. Summary of Care Gaps Identified.

Risk Category	Care Gaps Identified
Stable / Known Disease	•Appropriate surveillance maintained
Progressive / Indeterminate Findings	• Missed biopsy or follow-up imaging • Communication or coordination lapses
Probable / New Pancreatic Cancer	• Emergent presentation without outpatient coordination • No interim evaluation or contingency plan

Conclusions: Our LLM-powered NLP uncovered ultra-rare (<1 in 10,000) but high-impact diagnostic gaps—exemplifying a potential use of AI as an innovative safety net tool to ensure proper follow-up for high-risk imaging findings related to Pancreatic Cancer.