AutoSymptom: Automated Patient Symptom Logging Tool

- Good morning/afternoon, everyone. My name is Tavon Goodwin and today I'll be presenting my proposed solution for improving patient symptom tracking between visits, a tool I'm calling ***Auto Symptom*.**
  This project was inspired by a common challenge in healthcare, patients often develop or worsen symptoms after discharge, but those symptoms aren't consistently reported back to the care team.
  Auto Symptom is designed to close that gap using automation, integration with existing hospital systems, and a patient-friendly interface that doesn't add extra work for clinicians.

The Current Issue

- **Let's start with the problem**
  Many patients, especially those with chronic conditions or recent hospitalizations experience changes in their health between visits.
  However, most of those symptoms go unreported until the next appointment or emergency visit.
  Studies show that around 11 to 14 percent of discharged patients are readmitted within 30 days, often because warning signs were missed.
  This gap in communication leads to delays in care, preventable ER visits, and higher readmission rates.

Why This Matters (Cost & Safety)

This issue isn't just about safety

- it's also a major financial problem.
  Each year, there are roughly 3.8 million 30-day hospital readmissions in the U.S., costing hospitals an average of over $15,000 per readmission. Hospitals are increasingly penalized by CMS for high readmission rates, which adds financial pressure.
- Research has shown that early detection through symptom monitoring can significantly reduce hospitalizations and improve patient outcomes. So, there's both a human and an economic incentive for hospitals to invest in better tracking systems.

Previous Solutions

- Several strategies have already been tried.
  One common approach is post-discharge follow-up calls, but these rely on staff availability and are time-consuming.
  Some developers have launched standalone symptom-checker apps, but most lack integration with the hospital's EHR, so clinicians rarely use them.
- Others rely on wearable devices or home monitoring kits, which can be effective but are expensive and fragile not ideal for long-term use or deployment at scale.

Why Those Solutions Failed

- The main reason these solutions failed is because they increase the workload on clinical staff.
  Nurses or care coordinators often must manually enter or review data from external systems.
  Many tools also operate outside the EHR, which means the information doesn't flow naturally into the clinician's existing workflow.

- Finally, patient adherence is low when tools are complicated or when devices need to be charged, connected, or maintained.
  Hospitals need something lightweight, integrated, and easy for both patients and providers.

Proposed Solution: **AutoSymptom**

That's where *AutoSymptom* comes in.

- It's a simple mobile or web-based application that prompts patients to log their symptoms daily or weekly, depending on their condition.
  Each prompt contains just a few adaptive questions

  for example, "Is your pain better, worse, or the same?" or "Have you taken your medication today?"

- The app then pushes structured data directly into the hospital's EHR using FHIR standards, without requiring any manual entry by clinicians.
  A built-in triage engine automatically identifies high-risk symptom patterns and flags them for review by the care team.
  In short, it helps clinicians focus on the patients who need attention most, without adding any new documentation burden.

User Flow (Patient Experience)

Here’s how it works from the patient’s perspective.
After discharge or during a clinic visit, the patient is invited to opt in.
They receive short daily or weekly symptom check-ins through the app or by text message.
If any answers raise concern

for instance, reporting chest pain or shortness of breath
AutoSymptom automatically sends an alert to the care team’s EHR inbox.

The patient also has the option to request a callback or schedule a virtual visit directly from the app.
It’s intuitive, quick, and helps patients feel connected between visits.

Implementation Plan

Implementation would occur in three main phases.

Phase 1: Pilot the tool with a specific patient group, such as congestive heart failure or oncology patients.
Phase 2: Integrate the system into the hospital's EHR using FHIR APIs so that symptom logs appear in clinicians' workflows.
Phase 3: Expand functionality by training the triage engine using real-world data from the pilot to improve accuracy and recommendations.
The goal is to build gradually, ensuring security, usability, and strong adoption by both patients and staff.

Data Security & Privacy

- Because AutoSymptom handles protected health information, security and privacy are top priorities.
  All data is encrypted both in transit and at rest using AES-256 and TLS 1.2 or higher.

- Role-based access ensures that only authorized clinicians see patient alerts.

- The system also includes full audit logs and HIPAA-compliant consent flows so patients always know how their data is being used.
  In short, it’s designed with a privacy-by-design approach that aligns with existing hospital policies.

Desired Outcomes & Metrics

- To measure success, AutoSymptom would track several key performance indicators:
  First, the reduction in 30-day readmissions and emergency visits within the pilot group.

- Second, the number of early interventions triggered by patient-reported symptoms.

- Third, patient engagement measured by how often patients complete their symptom logs.
  We'd also gather qualitative feedback from both patients and staff to continually refine the user experience.

Limitations & Risk Mitigation

- Of course, every technology has limitations.
  One concern is alert fatigue; too many non-critical alerts could overwhelm clinicians. To mitigate that, AutoSymptom uses tiered thresholds and only escalates truly concerning patterns.

- Another issue is the digital divide; not all patients have smartphones or internet access. As a backup, we can use SMS-based check-ins.
  Finally, we need to avoid data overload. The app summarizes patient trends rather than flooding clinicians with raw data.

Conclusion & Questions

- In conclusion, AutoSymptom is designed to give patients a simple way to communicate their health status between visits and to do it without adding work for the clinical team.

- By capturing symptom changes early, we can prevent avoidable readmissions, lower costs, and improve quality of care.
  Thank you for your attention. I'd be happy to answer any questions.

References

- These references include studies from the AHRQ, JAMA, and Nature Medicine that demonstrate the value of remote monitoring and the financial impact of readmissions.
  They provide strong evidence that this type of solution is both practical and beneficial to healthcare systems.