

Project Title

Improving the Patient Journey for Lung Function Tests using Artificial Intelligence

Project Lead and Members

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Organisation(s) Involved

National Healthcare Group, Tan Tock Seng Hospital, Synapse

Healthcare Family Group(s) Involved in this Project

Allied Health

Applicable Specialty or Discipline

Pulmonology, Respiratory Therapy

Project Period

Start date:

Completed date:

Aims

Traditionally, the process of scheduling, preparing for, and following up on lung function tests can be complex and time-consuming, often leading to patient anxiety and delays in care. Artificial Intelligence (AI) offers innovative solutions to streamline this journey. AI-powered chatbots are revolutionizing patient interactions by providing timely, personalized assistance throughout the testing process.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Project Category

Technology

Digitalisation, Automation, Artificial Intelligence, Machine Learning, Digital Platform

Care & Process Redesign

Quality Improvement, Workflow Redesign, Job Effectiveness, Access to Care, Waiting Time, Value Based Care, Patient Reported Experience Measures, Patient Satisfaction

Keywords

Chronic Obstructive Pulmonary Disease, Artificial Intelligence (AI), Chatbots, Lung Function

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Introduction

Lung function tests are critical diagnostic tools used to assess respiratory health and detect conditions such as asthma, chronic obstructive pulmonary disease (COPD), and other pulmonary disorders. Traditionally, the process of scheduling, preparing for, and following up on lung function tests can be complex and time-consuming, often leading to patient anxiety and delays in care. Artificial Intelligence (AI) offers innovative solutions to streamline this journey. AI-powered chatbots are revolutionizing patient interactions by providing timely, personalized assistance throughout the testing process. From initial scheduling to post-test follow-up, these intelligent systems can enhance patient engagement, reduce administrative burdens, and improve overall satisfaction. By integrating AI into the patient journey for lung function tests, healthcare providers can ensure a smoother, more efficient, and patient-centered experience.

Methodology

We participated in a one-day workshop organized by Synapxe and Amazon Web Services (AWS) as part of the GenAlus Challenge. The chatbot was designed using AWS architecture, leveraging services such as AWS Lambda for serverless computing, Amazon Lex for natural language understanding, and Amazon DynamoDB for scalable data storage. The development process involved iterative prototyping and user feedback to ensure the chatbot meets the needs of patients and healthcare providers. Chatbot can be accessed via QR Code (Figure 1) and an example is shown in Figure 2.

Purposed use of the chatbot

The AI-powered chatbot will significantly improved the efficiency and user experience of the lung function test process. Key features include:

1. Automated Scheduling and Reminders: Reducing no-show rates.
2. Real-time, Personalized Patient Support: Alleviating anxiety and improving preparation for tests.
3. Streamlined Post-test Follow-up: Ensuring timely communication of results and recommendations.

Detailed Functionality: The chatbot assists patients through the entire process by:

1. Providing step-by-step instructions for test preparation.
2. Sending reminders for scheduled tests.
3. Answering frequently asked questions and addressing patient concerns in real-time.
4. Following up post-test to communicate results and recommendations promptly.

Next Step

We are currently seeking funding to enhance the proof of concept and conduct extensive testing with patients to validate its usability and effectiveness. The business model could involve a subscription-based service for providers or an in-house solution maintained by healthcare facilities. Additionally, we aim to standardize patient education materials across Singapore in multiple languages, improving patient outcomes and ensuring consistent, high-quality care.



Figure 1: Access to Chatbot

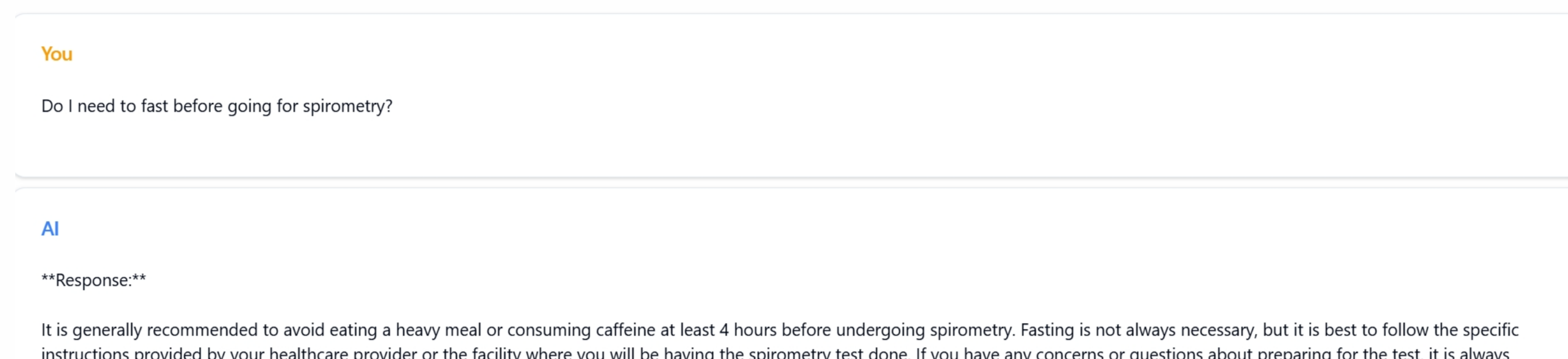


Figure 2: Example of Q & A

powered by **aws**

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