



# **TITLE: MEDIBOT – AI-POWERED CHATBOT FOR HOSPITAL APPOINTMENT MANAGEMENT**

**TASK: BUILD A CHATBOT WITH AMAZON LEX!**

Presented by:

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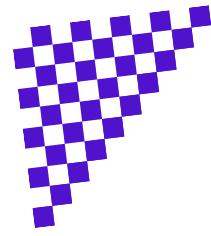
Date

**June 25 2025**

## THE PROBLEM

- Long wait times for booking
- Overloaded front desk staff
- Missed or double-booked appointments
- Repetitive patient queries





# THE SOLUTION - MEDIBOT

## WHAT IS MEDIBOT?

- Medibot is an AI chat assistant that assists old and new patients to check for appointment availability, booking, rescheduling, cancellation, and FAQs
- 24/7 patient support via natural language interface
- Simplicity, speed, and automation



### CHECK AVAILABILITY

This allows patients to check if the hospital has an available opened at their preferred date and time before proceeding to booking and confirmation of appointment



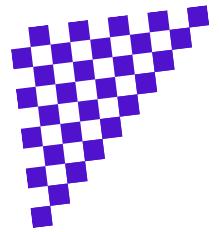
### BOOKING

Book appointments from their comfort zones with just a few clicks without having to stay on long telephone queues



### CANCEL APPOINTMENT

This app lets patients cancel previously booked appointments



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### RESCHEDULING

Patients who have either cancelled or missed an appointment can reschedule appointments



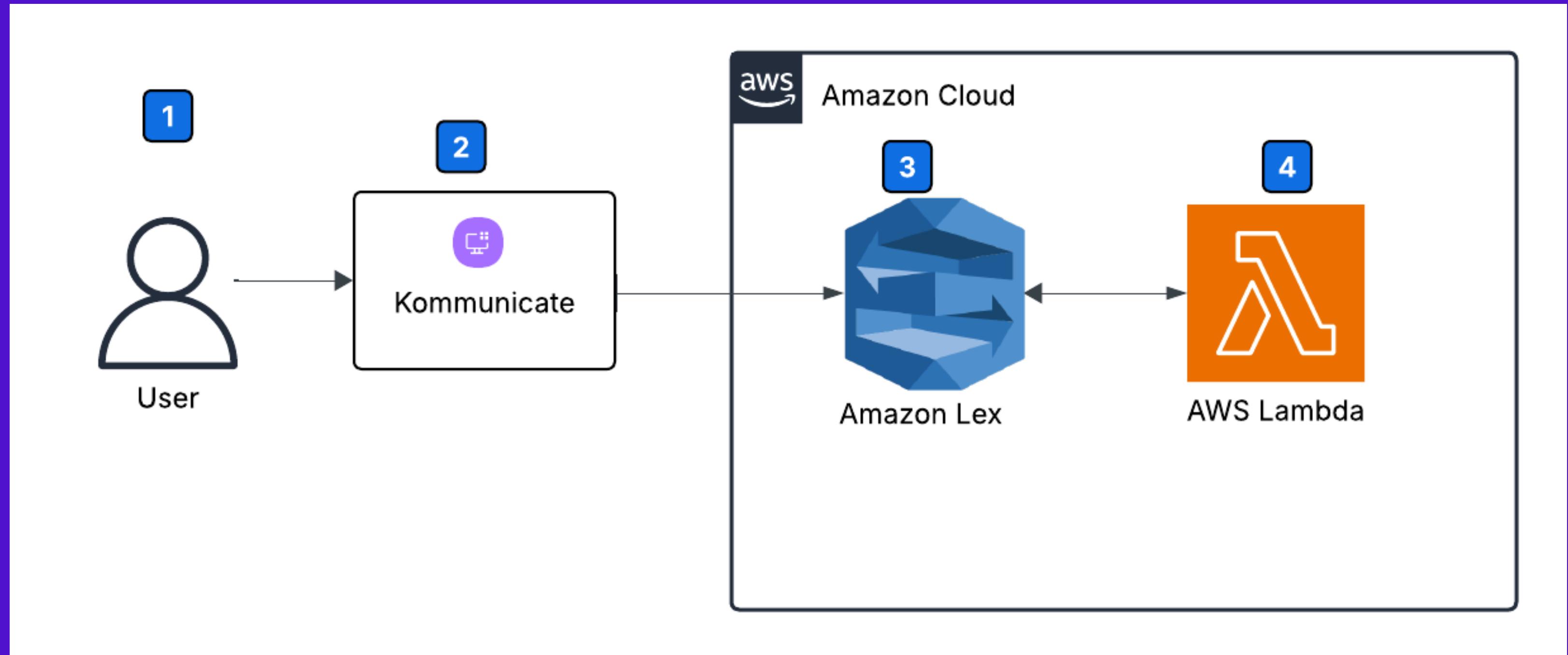
### FAQS

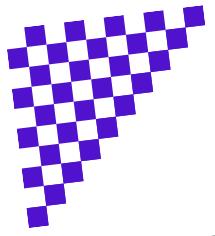
FAQS by patients - direction, opening times and medical-related questions

### SCALABLE & ACCESSIBLE 24/7

There is no restriction to the volume of patients and services are available 24/7.

# TECHNICAL ARCHITECTURE





# CORE TECHNICAL FUNCTIONS: AMAZON LEX

BookAppointmentIntent  
DirectBookingIntent  
WelcomeIntent  
FAQOpeningTimesIntent  
FAQLocationIntent  
AppointmentCancellationIntent  
UnconfirmedBookingIntent  
RescheduleIntent

- Can I come into the hospital any time today?
- Can I do a walk-in to the hospital?
- Can I schedule an appointment for next Wednesday?
- Are there any slots for tomorrow?
- What days are available to schedule an appointment?

## DEFINED SEVERAL INTENTS

- Check Appointment Availability Intent
- Book Appointment Intent
- Direct Booking Intent
- Appointment Cancellation Intent
- Unconfirmed Booking Intent
- Reschedule Intent & FAQ Intents

## UTTERANCE

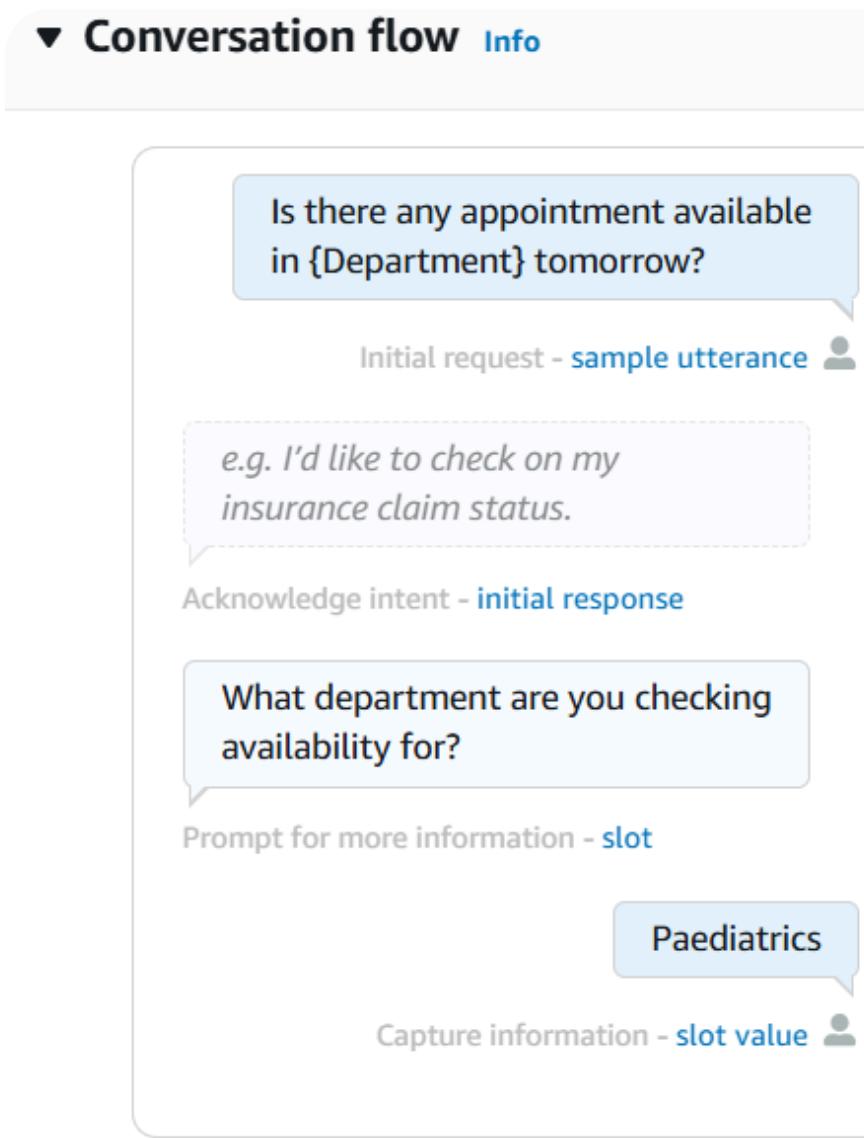
These are sample phrases that users/patients type into the chat interface to invoke the intents

## SLOT TYPES

These are information the bot needs to fulfill the intents. The bot prompts for slots required for intent fulfillment, in order of priority.

# CORE TECHNICAL FUNCTIONS: AMAZON LEX

▼ Conversation flow [Info](#)



Initial request - sample utterance

Is there any appointment available in {Department} tomorrow?

e.g. I'd like to check on my insurance claim status.

Acknowledge intent - initial response

What department are you checking availability for?

Prompt for more information - slot

Paediatrics

Capture information - slot value

e.g. Okay, got it.

Capture success information - slot capture success response

e.g. I'm having trouble understanding you.

Capture failure information - slot capture failure response

Please insert your date of consideration in this format YYYY-MM-DD

Prompt for more information - slot

<date>

Capture information - slot value

- ▶ Prompt for slot: FirstName
 

Slot type  
AMAZON.FirstName

*Message: Please type in your first name so we can pro...*
- ▶ Prompt for slot: LastName
 

Slot type  
AMAZON.LastName

*Message: Please type in your last name so we can proc...*
- ▶ Prompt for slot: QPatientID
 

⚡ Slot type  
AMAZON.AlphaNumeric

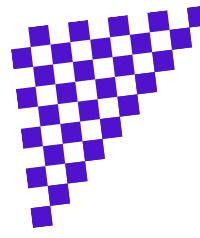
*Message: Do you have a patient ID or hospital number?*
- ▶ Prompt for slot: PatientID
 

⚡ Slot type  
AMAZON.AlphaNumeric

*Message: Please type in your patientID/hospital numb...*
- ▶ Prompt for slot: DateOfBirth
 

⚡ Slot type  
AMAZON.Date

*Message: Please type in your date of birth using the fo...*



# CORE TECHNICAL FUNCTIONS: AMAZON LAMBDA

```
import json
from datetime import datetime

def lambda_handler(event, context):
    intent_name = event['sessionState']['intent']['name']

    if intent_name == 'CheckAppointmentAvailabilityIntent':
        slots = event['sessionState']['intent']['slots']
        department = slots['Department']['value']['interpretedValue']
        date = slots['Date']['value']['interpretedValue']
        time = slots.get('Time', {}).get('value', {}).get('interpretedValue', None)

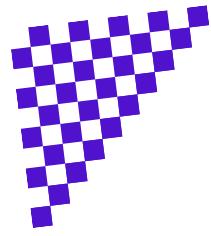
        formatted_time = None
        if time:
            try:
                dt_time = datetime.strptime(time, "%H:%M")
                formatted_time = dt_time.strftime("%I:%M %p").lstrip("0")
            except ValueError:
                formatted_time = None

        if date == "2025-06-25":
            available_slots = []
        else:
```

```
lambda_function.py
5  lambda_handler(event, context):
9  if intent_name == 'CheckAppointmentAvailabilityIntent':
25     if date == "2025-06-25":
26         available_slots = []
27     else:
28         available_slots = ["10:00 AM", "11:00 AM", "2:00 PM", "6:00 PM"]

30
31     if not available_slots:
32         message = f"Sorry, there are no available appointments in {department} on {date}"
33         dialog_action_type = "Close"
34     elif formatted_time and formatted_time not in available_slots:
35         message = (f"Sorry, there is no appointment available at {formatted_time} in {department}. "
36         f"Available times are: {', '.join(available_slots)}. Please select from the list")
37         dialog_action_type = "Close"
38     else:
39         message = (f"Yes, we have appointments available in {department} on {date} at {formatted_time}. "
40         "Would you like to book this appointment?")
41         dialog_action_type = "ElicitIntent" # Ask what the user wants to do next

43
44     return {
45         "sessionState": {
46             "dialogAction": {
47                 "type": dialog_action_type
48             },
49             "intent": {
```



# CORE TECHNICAL FUNCTIONS: AMAZON LAMBDA

Alias language support: English (US)

▼ Lambda function - *optional*

This Lambda function is invoked for initialization, validation, and fulfillment.

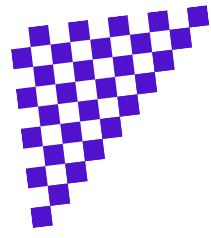
Source

CheckAppointmentAvailability

Lambda function version or alias

\$LATEST

[Learn more about Lambda](#) ↗



# CORE TECHNICAL FUNCTIONS: AMAZON LAMBDA

## Fulfillment advanced options [Info](#)

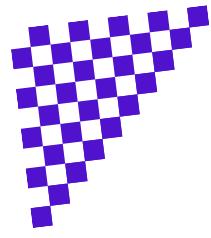
X

### Fulfillment Lambda code hook [Info](#)

You can enable Lambda functions to initialize the conversation, validate user input, and execute fulfillment.

#### Use a Lambda function for fulfillment

You can use AWS Lambda to fulfill your intent. The Lambda function is invoked after slot elicitation and confirmation. Use this function to fulfill your intent.



# SCALABILITY & ERROR HANDLING INTENT

## Message group Info

I can define a text message group to respond using plain text.

## Usage

Immm, Interesting! I really did not understand that can you try rephrasing your question?

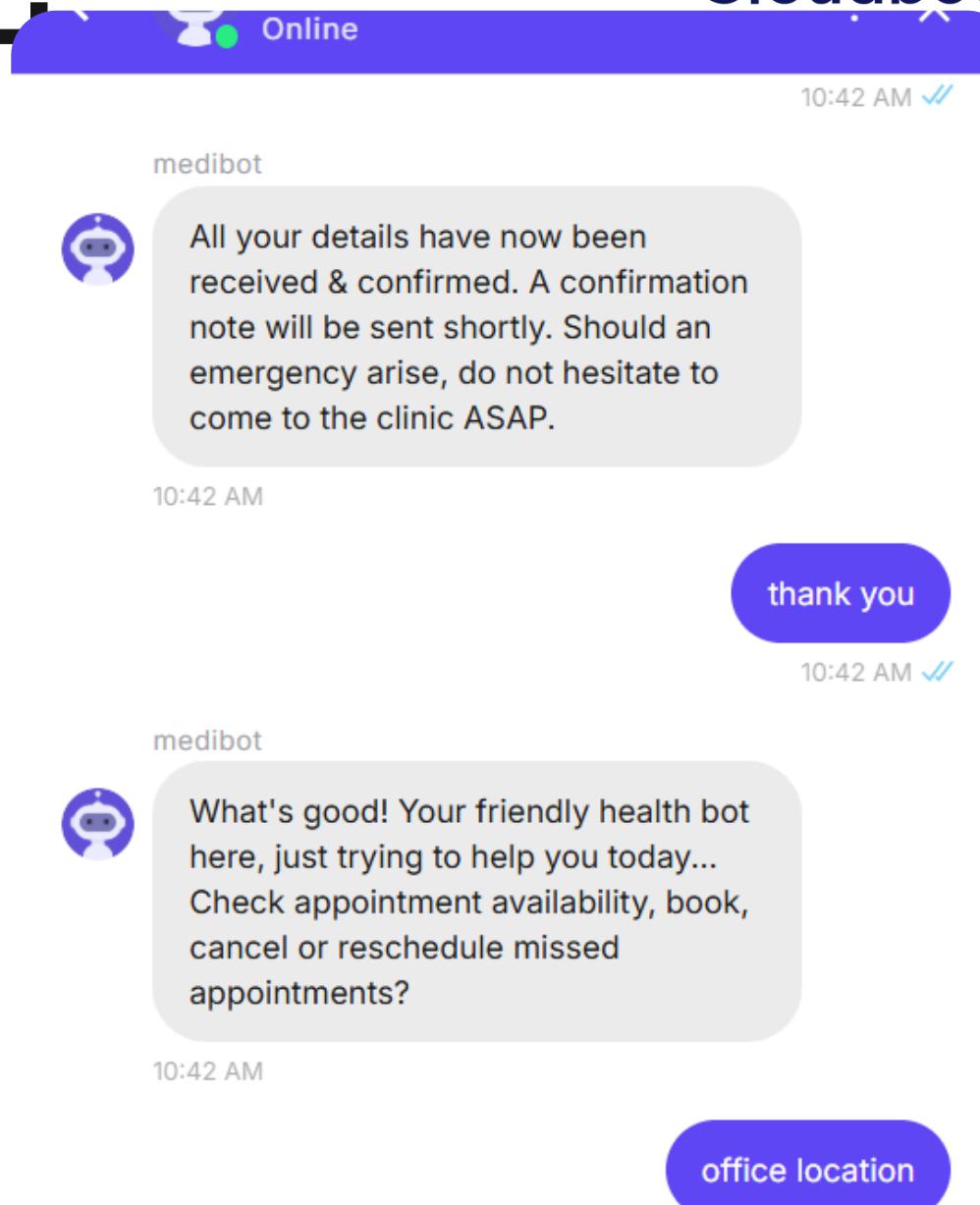
## Variations - optional

› way, I didn't get that! Are you trying to book an appointment, cancel an appointment or reschedule a missed o

am sorry I am unable to help you with that. Would you like to try something else or reach out to our helpline by

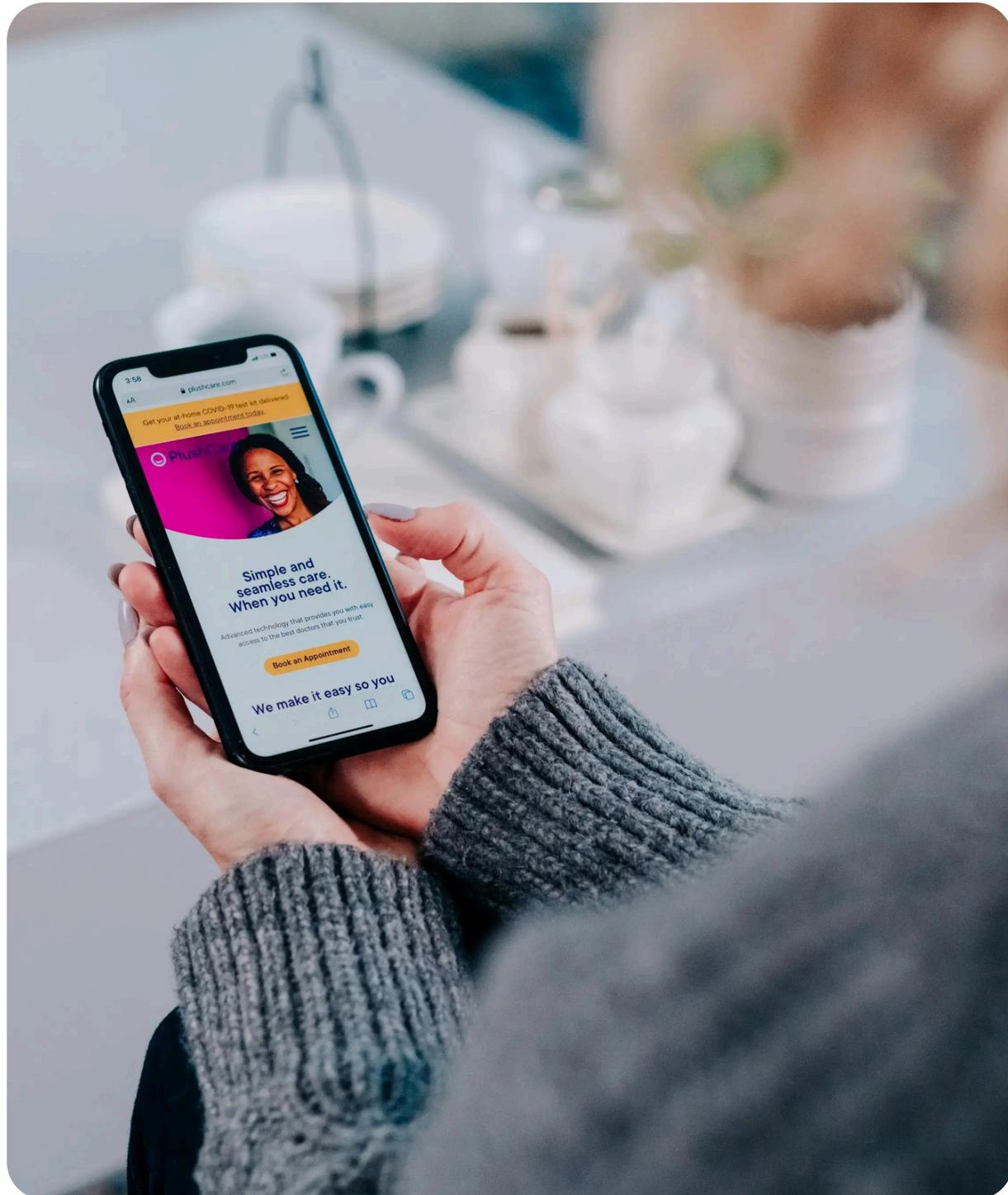
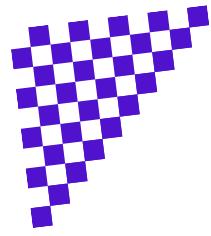
## More response options

I custom payloads, SSML, and card groups.



## FALLBACK INTENT

This intent handles undefined utterances or intents not configured in the chatbot or the bot finds confusing.



## BUSINESS IMPACT & RELEVANCE

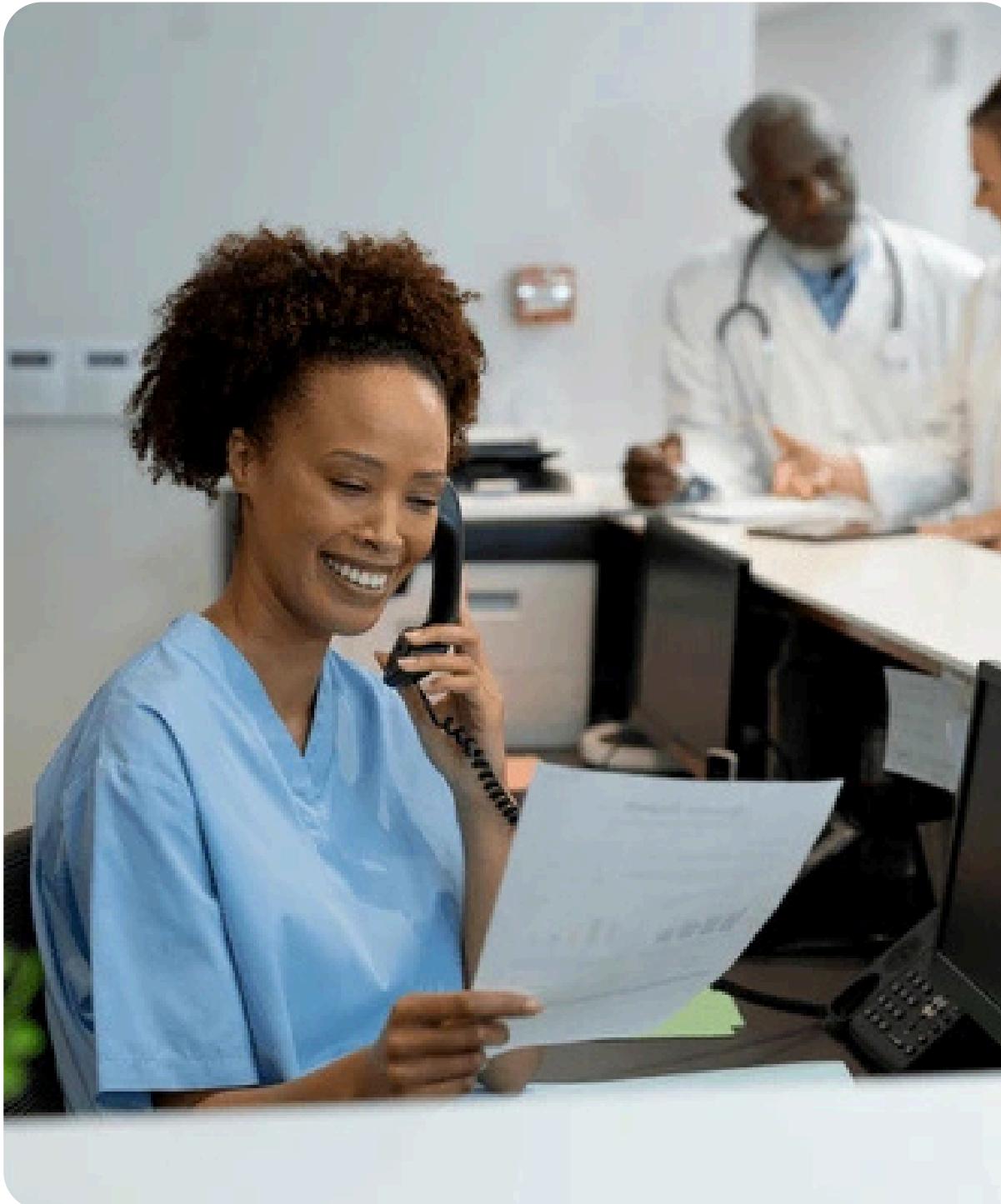
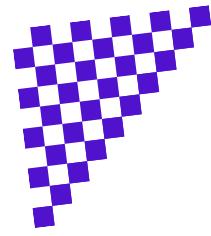
**REDUCES LONG WAIT TIMES AT THE HOSPITAL**

**REDUCES ADMIN WORKLOAD FOR FRONT DESK STAFF**

**IMPROVES EFFICIENCY**

**IMPROVES PATIENT SATISFACTION THROUGH 24/7 SELF-SERVICE**

**SAVES COSTS BY AUTOMATING REPETITIVE TASKS**



## BUSINESS IMPACT & RELEVANCE

**SCALABLE FOR HOSPITALS OF ANY SIZE – FROM CLINICS TO LARGE TRUSTS**

**DATA INSIGHTS FROM PATIENT QUERIES AND BOOKING PATTERNS**

**PROVIDE MORE INFORMATION IN CASE OF RESEARCH & POLICY DECISION MAKING**

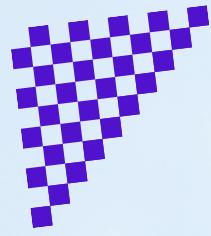
# CHALLENGES FACED

- Avoid repetition for the book appointment intent with lambda.
- Card response only allows for 5 lists
- Tried the Custom payload using Lambda but did not reflect on Kommunicate
- Appointment date & time selection using Calendly
- DynamoDB

??

# FUTURE DEVELOPMENT

- A CALENDAR INTEGRATION
- DATABASE INTEGRATION
- ENABLE SMS/EMAIL CONFIRMATIONS USING SES/SNS
- MULTILINGUAL SUPPORT (geography dependent)
- ADD AMAZON COGNITO FOR PATIENT AUTHENTICATION
- ??



# Thank you



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**Cloudboosta**

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**June 25 2025**