

PharmaDial – Intelligent Appointment Booking Voice Agent Specification

Objective

Develop an intelligent, NHS-compliant Appointment Booking Voice Agent for community pharmacies in the UK. The system aims to automate patient interactions, improve efficiency, and enhance engagement while supporting voice, SMS, and WhatsApp channels.

1. Core System Overview

- Voice Agent powered by LLM with simple reasoning capabilities.
- Supports voice, SMS, and WhatsApp interactions.
- Integrates with Google Calendar or other compliant scheduling tools.
- Provides web-based front end and back end for management and reporting.

A. Voice Agent (LLM-Powered)

- Conversational interface to handle bookings, cancellations, and amendments.
- Collects patient identifiers (name, DOB, NHS number if applicable).
- Secure speech-to-text and text-to-speech APIs.
- Logging and playback of calls for audit compliance.

B. Appointment Management

- Integration with Google or Microsoft Calendar.
- Book, modify, and cancel appointments with conflict detection.
- Supports appointment type tagging (e.g., NMS, flu jab).
- Custom buffer times between appointments.

C. SMS / WhatsApp Communication

- Automated confirmations and reminders with two-way responses.
- Configurable reminder times (e.g., 24h, 2h before).
- Bulk messaging for promotional campaigns.
- GDPR-compliant opt-out mechanism.

D. Multi-Language Support

- Supports English, Polish, Urdu, Bengali, Punjabi, Arabic.
- Automatic or manual language selection.
- Localized text and voice prompts.

E. Front-End Dashboard (Pharmacy Staff)

- Web interface for appointment management and communications.
- User roles: Admin, Pharmacist, Support Staff.
- Calendar view (day/week/month) and bulk message management.
- Reports on appointments, cancellations, and NMS uptake.

F. Back-End System

- Secure login with MFA and role-based access.
- Cloud-hosted UK/EU data storage with encryption.
- RESTful APIs for NHS system integrations.
- Full audit trail of all activities.

G. Automatic Calling System (NMS Integration)

- Outbound AI voice calls to eligible NMS patients.
- Automated scheduling and recording of responses.
- Integration with NHS systems for patient eligibility.

H. Marketing & Payment Integrations

- Google Ads tracking and appointment conversion metrics.
- Stripe or PayPal integration for chargeable services.
- Automated receipts and refund management.

Additional Functionalities (Recommended)

- Patient profile management (history, preferences, consent).
- Service analytics dashboard and KPI tracking.
- Integration hooks for NHS Spine and PMS (PharmOutcomes, Sonar).
- Accessibility features for elderly patients.
- Automated follow-up messaging for NMS and feedback collection.

Compliance and Security

- GDPR and NHS DSPT compliance.
- TLS 1.2+ encryption for data in transit.
- NHS data sharing agreements for integrations.
- Vulnerability scans and penetration testing.

Technical Recommendations

- Front-End: React or Next.js (responsive design).
- Back-End: Node.js or Python (FastAPI) with PostgreSQL/MongoDB.
- AI/Voice: GPT or Azure Cognitive Voice.
- Hosting: AWS or Azure UK region.
- Messaging: Twilio or Vonage.
- Calendar: Google Calendar API or Microsoft Graph.
- Payment: Stripe API.

Suggested Timeline

Phase	Deliverable	Duration
1	Requirements Finalisation	2 weeks
2	MVP Development (Core Booking + LLM Voice)	6 weeks
3	Integrations (SMS, Payments, Calendar)	4 weeks
4	Testing & Compliance Review	2 weeks
5	Launch & Monitoring	2 weeks

Prepared by: [Your Name]
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