

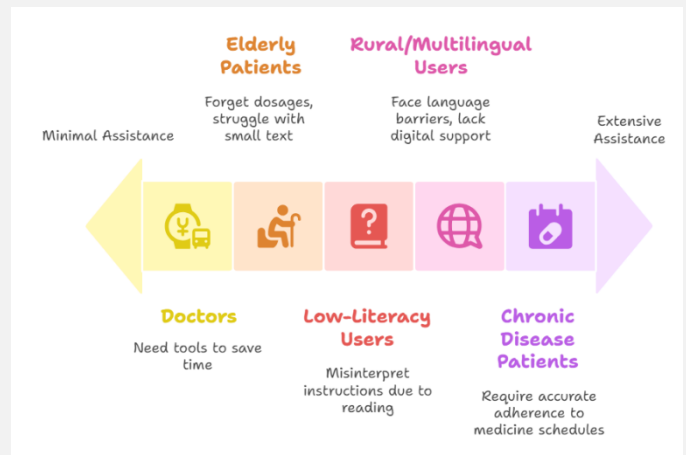
AI-Driven Voice Prescription & Adherence Assistant

1. Problem Statement

India's healthcare system faces a dual challenge: doctors are overburdened with high patient loads, and patients struggle to follow handwritten prescriptions. Manual prescriptions are often illegible, incomplete, or misinterpreted—leading to dosage errors, drug misuse, and poor health outcomes. Elderly and chronically ill patients, in particular, forget schedules or take medicines incorrectly. This gap in prescription clarity and adherence is a major public health concern. A Gen-AI-powered assistant can digitize prescriptions via voice, reducing the doctor's workload while improving accuracy. Simultaneously, the patient-facing app ensures timely reminders and confirmations. This AI-driven, closed-loop solution offers a realistic, scalable approach to streamline doctor-patient workflows and reduce medication-related errors.

2. Target Audience & Context

The proposed AI assistant primarily serves two user groups: **doctors** and **patients**. Doctors in India, especially in government hospitals and rural health centers, often handle over 50 patients a day, leaving little time to write detailed prescriptions. On the other hand, **patients**—particularly the **elderly, chronically ill, visually impaired**, and those with **low literacy or limited language proficiency**—face difficulties in reading, understanding, or remembering medicine instructions. The rise of smartphones, even in semi-urban and rural areas, and the growing comfort with voice-based tools create the right ecosystem for deploying this AI-powered solution.



3. Use of Generative AI

• Doctor-Side Transcription & Structuring:

- ASR (e.g., Whisper, Indian-accent engines) transcribes doctor dictation to text with medical accuracy.
- Generative LLM (GPT-based, MedPaLM) structures text into prescription templates.
- Automatically detects drug interactions, contraindications, and ambiguous terms.
- Uses interactive prompts for clarification.

• Patient-Side Engagement:

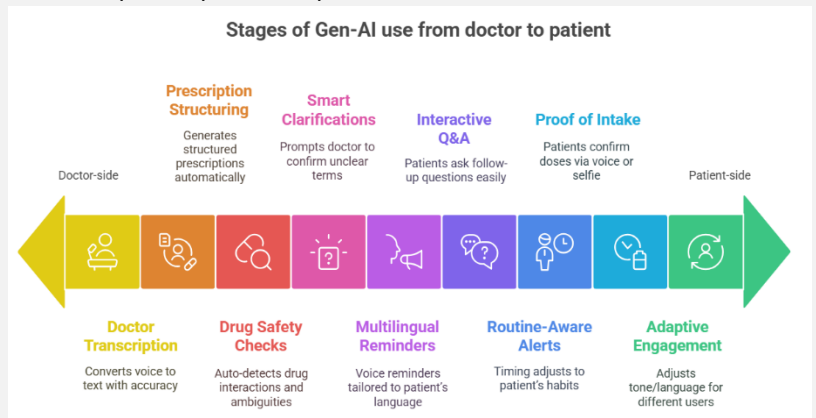
- LLM generates multilingual, context-aware voice.
- Supports on-demand Q&A.
- Reminders adapt to patient's daily routine and preferred accent.

- Intake Verification:** Generative AI scripts guide patients through quick voice confirmations or selfie captures to log adherence. This dual-role deployment of Gen-AI ensures accuracy, comprehension, and engagement for diverse users.

4. Solution Framework

1. Doctor App

- Voice Capture:** Doctor taps "Record" and dictates the prescription during the consultation.
- Real-Time AI Processing:** ASR transcribes speech; LLM structures medications into discrete fields (name, dose, frequency, instructions), highlighting potential safety issues.
- Interactive Review:** The system flags unclear entries and requests confirmation.
- Digital Sign-Off:** Doctor reviews, edits if necessary, applies a secure e-signature, and sends the finalized prescription link or SMS to the patient's app.

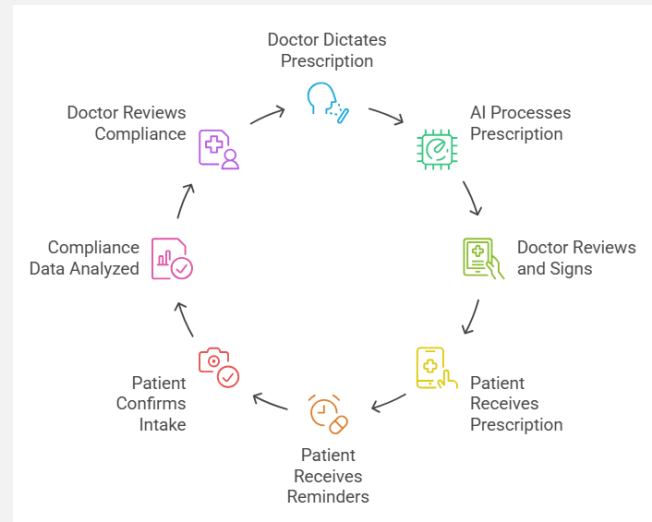


2. Patient App

- **Prescription Import:** Patient taps the secure link to load the digital prescription.
- **Intelligent Reminders:** AI schedules voice alerts in the patient's chosen language and accent, syncing with daily routines.
- **Proof-of-Intake:** At each reminder, the app prompts a voice "Taken" response or selfie capture; timestamps are logged automatically.
- **Compliance Dashboard:** The app visualizes adherence streaks, missed doses, and weekly summaries for both patient and doctor review.

3. Data & Feedback Loop

Doctor voice → ASR & LLM → Structured Rx → Digital signature → Patient app → Reminders & Intake proof → Compliance data → Doctor dashboard. This closed-loop provides continuous analytics—enabling early interventions, workflow optimization, and actionable insights for improved patient outcomes.



5. Feasibility & Execution

The proposed system is technically viable using proven open-source tools and mobile development frameworks. It ensures data security, legal compliance, and practical integration into existing healthcare workflows. A pilot rollout will help refine performance in real-world conditions.

Key Execution Components:

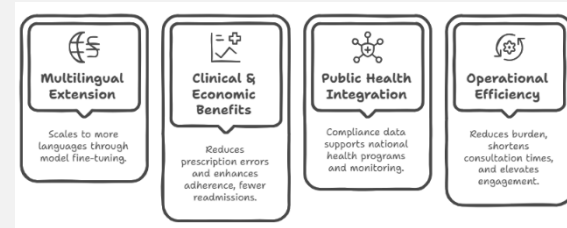
- **Speech & Language Models:** Use Whisper or MedPaLM fine-tuned for Indian medical speech
- **Backend:** Node.js + Firebase for secure storage, real-time sync, and user authentication
- **Mobile App:** Built in Flutter or React Native with camera/mic integration
- **Security:** Full encryption, consent mechanisms, and audit logs (DPDP Act compliant)
- **Pilot Strategy:** Test in both urban hospitals and rural clinics for feedback

6. Scalability & Impact

The solution is designed for nationwide rollout, with cloud-native infrastructure and flexible multilingual support. It promises clinical, operational, and public health benefits at scale.

Scalability & Impact Highlights:

- **Language Adaptability:** Extend to more Indian languages
- **Health Benefits:** 50–60% fewer errors, improved chronic care compliance
- **Public Health Integration:** Feed data into programs like Ayushman Bharat
- **Efficiency Gains:** Reduced admin work, shorter consults, higher patient satisfaction



7. Conclusion

The core solution brings together a **voice-based prescription tool for doctors** and a **smart, multilingual patient app**—offering reminders and proof of medicine intake. Designed with scalability and user empathy in mind, the MVP will be piloted in diverse clinics to validate effectiveness. The concept is practical, impactful, and market-ready—making it a strong foundation for a scalable health-tech product.

MVP & Business Viability:

- **Doctor-side:** Voice-to-prescription tool supporting medical speech and structure
- **Patient-side:** Reminder engine with proof-of-intake (voice/selfie) features
- **Languages:** Initial rollout in English, Hindi, and Telugu
- **Pilot Scope:** Select urban hospitals and rural clinic.