Intelehealth | Ayu 2.0

GenAI clinical co-pilot bringing doctor-quality care to tribal India

About the Organization

- **Intelehealth** (Telehealth Innovations Foundation) is a non-profit that builds open-source digital health tools for underserved communities. Its telemedicine platform is recognized as a **Digital Public Good**.
- **Focus**: Primary health care delivered through community health workers (CHWs) and remote doctors in places that have no doctor.
- **Flagship programme**: Arogya Sampada (since Nov 2021) brings free doorstep care to ~30 tribal villages in Peth and Surgana blocks, Nashik, Maharashtra.
- **Beneficiaries**: rural and tribal households (~69% below the poverty line), especially women, children and the elderly.

Problem Statement (use case specific)

- Tribal communities carry the heaviest disease burden but have the least access to care. Facilities are 25–55 km away, and a visit costs lost wages, so many delay care or turn to traditional healers.
- The gap is in both **quality as well as access**. Rushed, paper-based consultations at busy PHCs lead to incomplete diagnoses and unsafe prescriptions.
- **Why AI**: GenAI can turn a community health worker's (CHW) notes in local language into a structured clinical summary in English across 150+ protocols in seconds. Every remote doctor gets a ranked differential and a guideline-based treatment plan, so quality stays consistent at scale, in local languages, at low cost.

AI Solution Description

Ayu 2.0 is a GenAI clinical decision support system built into Intelehealth's open-source telemedicine platform. It combines rules engines and deterministic + probabilistic AI models to generate a management plan contextualized to the patient and socioeconomic setting.

- **CHWs**: Rules based history-taking in local language on an Android phone.
- **Doctors**: AI based clinical summary, a ranked top-5 differential diagnosis with probability & rationale and a treatment plan to review, edit & approve.
- **Patients:** advice in their own language; medicines and f/up via the CHW.

Tools and techniques Used

- LLMs grounded in Indian clinical knowledge base (150+ protocols)
- Model-agnostic: Medgemma 27b, Llama 4 Maverick, Gemini 2.5 Flash, etc.
- DSPy prompt optimisation, not fine-tuning; LLM-as-judge evaluation.
- Diagnosis prediction knowledge graph with deterministic outputs
- Dosage prediction calculator adjusted for weight and age.
- Speech to text transcription, translation and summarization
- Langfuse to trace every model call; ABDM/FHIR; DPDP-aligned privacy.

Key Features of tech solution

- **Human-in-the-loop**: every output is approved by a doctor.
- **Safety by design**: allergy, drug-interaction and red-flag alerts; 121 failure modes mitigated (ISO 14971-aligned FMEA).
- **Built for the last mile**: multilingual, voice-ready, works on basic phones and low bandwidth.
- **Sovereign**: self-hostable, with a continuous error-review loop.

Intelehealth | Ayu 2.0

GenAI clinical co-pilot bringing doctor-quality care to tribal India

Impact (Qualitative and Quantitative)

- **Current user base/active users**: 15
- **Deployment**: Live in Arogya Sampada across ~30 tribal villages in Nashik (n=295,654) and in Kuru and Kisko blocks of Jharkhand (n=25,585)
- **Volume**: 800-1000 consults per month
- **Program outcomes (evidence based on studies):**
  - **RCT** (20 doctors, 1,000 cases): diagnostic accuracy 59.7% → 71.7% (+12 percentage points, p<0.001); time to diagnosis 47% faster.
  - **Real world** (600 consults): correct diagnosis in the AI top-5 in 94.8% of cases; consult duration 11.9 → 6.6 min (~45% faster); 95.5% of prescriptions fully appropriate.
  - **Safety and trust**: zero unsafe or hallucinated outputs; doctors used an AI-suggested diagnosis in 91% of cases.
- **Beneficiary outcomes** (318 patients, Mar 2025): 91.8% complete recovery, 99.4% medication adherence.

Plan for roll-out and sustainability

- **National scale**: active plan to embed Ayu 2.0 in eSanjeevani, India's national telemedicine platform with thousands of users and millions of beneficiaries.
- **International expansion**: Kyrgyzstan and Nepal in progress.
- **Field Evidence**: 30-PHC SAKSHAMA cluster-RCT (2026–27) with Govt. of Chattisgarh, WHO and Johns Hopkins in progress.
- **Regulatory**: pursuing CDSCO Class B licence as medical-device software.
- **Sustainability**: modular architectures designed to integrate as plug and play with any system, sovereign hosting (MedGemma-27B), optimized for low bandwidth settings and low cost

Cost of development and ongoing maintenance

- **Development cost**: $300k (product, engineering, clinical, infrastructure)
- **Per-beneficiary cost**: Free (grant funded) in Nashik. Fixed cost of maintenance (see below) reduces as # of concurrent users increase; # of visits doesn't drive up cost. For example, 10 concurrent users with 20 visits/day/user = 5000 visits/month = Rs. 20 per beneficiary; with 20 concurrent users at same volume, cost drops to Rs. 10.
- **Maintenance and scaling cost**: ~$11k (~1L) per month for 100 concurrent users In case governments or other organization self-host on their own infrastructure, there is minimal cost for hosting Ayu 2.0

Additional documents

- **Application presentation:** https://drive.google.com/drive/folders/1dx_6zb_V3f615iTJtlpbWjSIJ0pAS8Nv
- **Solution Demo Videos:** https://drive.google.com/file/d/1RLJ1wg_NnDqsI1r7hsHUyzGM4ulmnwIq/view?usp=drive_link
- **User Testimonials:** https://drive.google.com/file/d/1DVYJAYAn1PGD5a2c7uHjjAZ3Ga6gHU7q/view?usp=sharing

ILSS - KCADT AI AWARDS