

PRE-READ BRIEF

Digital Solutions for Improving Blood Pressure Control Strengthening Long-Term Hypertension Care through Technology

Cardiovascular Health Partner Convening 2026

This brief is a pre-read for the **digital solutions: adoption longitudinal tracking tools** breakout group during the Write the Headline: Co-Creating the Future of CVH session, on May 7th. It outlines why sustained patient tracking is central to hypertension control, how well-designed digital tools can strengthen continuity of care, and what conditions are needed to scale effective systems in the next phase of CVH partnership work.

Why This Matters

The Hypertension Burden

High blood pressure (BP) is the world's leading preventable cause of death, responsible for more than 10 million deaths each year. Among the 1.3 billion adults living with hypertension globally, only about 1 in 5 have their BP under control. Hypertension is treatable with affordable medicines and straightforward protocols. The gap between what is possible and what is being delivered is one of global health's most preventable tragedies.

Why Longitudinal Monitoring Is the Central Challenge

Hypertension requires lifelong treatment. Patients with hypertension must be diagnosed, treated, followed up, and retained in care indefinitely. This creates an inherent systems challenge: how do health systems find patients, keep them in care, adjust treatment over time, and monitor population-level outcomes at scale? This is especially critical in resource-limited settings with high patient volumes and stretched clinical workforces.

Robust user-centered digital information systems are a foundational requirement for large-scale hypertension control. However, many digital systems in low and middle-income countries (LMICs) fall short due to unreliable connectivity, complex tools that are not easy to use for frontline workers with limited digital literacy, lack of interoperability and fragmentation. Governments and donors often do not invest in long-term infrastructure to implement and sustain digital systems—whether electronic health records (EHRs) or focused digital tools—that require ongoing costs for hardware, integration, training, development and maintenance. Paper-based information systems also consistently fail the test—inefficient records, lost patients, ineffective treatment, no real-time performance visibility. Good digital tools require long-term investment and add value when they solve a well-defined problem.

HEARTS and the Role of Digital Tools

The WHO HEARTS Technical Package

Since 2017, Resolve to Save Lives has partnered with WHO, global partners, and country governments to implement the HEARTS technical package, a public health approach to hypertension control in 40 countries. HEARTS has five core components: evidence-based protocols, reliable access to medicines and devices, team-based care, patient-centered care, and systems for monitoring.

Digital tools sit at the heart of the final component. A strong digital information system, designed correctly, can mean the difference between a program that fails and one that saves millions of lives.

Key Evidence

In 4 countries implementing the WHO HEARTS Technical Package and using a shared digital health information system, facility-based BP control improved from 18% at baseline to 46% within 48 months. In Bangladesh, adoption of the Simple app was associated with a tripling of BP control rates among those in care.

Key Principles for Effective Digital Tools

- ❑ **Minimal data entry:** Capture the minimum data needed to improve patient care. Overloaded data entry forms reduce compliance and introduce error.
- ❑ **Offline capability:** Systems that function when internet connectivity is unreliable ensure data capture and continuity of care.
- ❑ **User-centered design:** Health workers must be co-designers, not just end-users. RTSL conducts monthly user-testing cycles with frontline nurses and doctors to continuously improve usability.
- ❑ **Actionable data for decision-makers:** Data collection only matters if it drives decisions. Dashboards must surface the right indicators at the right level (facility, district, national) and lead to data-informed action to improve patient outcomes.

Notable Tools in Digital Hypertension Management

The Simple App

The Simple mobile application (simple.org) was developed by Resolve to Save Lives and is available as an open-source digital public good. Simple is currently used by healthcare workers in Bangladesh, Ethiopia, India, Sri Lanka, and Myanmar to manage nearly 7 million patients with hypertension and diabetes. Its design reflects the four principles above, and it is provided free of cost with no vendor lock-in. Simple has three integrated functions:

- ❑ **Point-of-care mobile app:** Healthcare workers record BP readings, medications, and appointment dates at every patient visit. New patient registration takes approximately 83 seconds; a follow-up visit is logged in under 20 seconds.
- ❑ **Patient retention tools:** Automated overdue lists identify patients who have missed appointments. Healthcare workers can call overdue patients directly through the app with secure, anonymized calling. Automated SMS and WhatsApp reminders are sent to patients ahead of scheduled visits.
- ❑ **Management dashboard:** A dashboard gives program managers real-time performance data (e.g. enrollment, BP control rates, loss to follow-up). Data updates daily, enabling quality improvement cycles.

DHIS2 Tracker

DHIS2 is used in over 70 countries and enables individual-level longitudinal tracking. For countries with existing DHIS2 infrastructure, RTSL and the DHIS2 team have developed a free, open-source hypertension and diabetes control package that includes the three functions above. In countries where DHIS2 is a core component of the national health information infrastructure, this reduces implementation cost and fragmentation.

HEARTS360-In-a-Box

For programs with existing electronic health records, HEARTS360-in-a-box is designed to monitor and manage hypertension and diabetes care across facilities. The system processes patient data to generate:

- **HEARTS360 dashboard:** Program managers and health workers can see WHO HEARTS performance metrics to drive decision-making and improvement.
- **Overdue lists:** Lists of patients who need follow-up to promote continuity of care.

Digital Tool	Primary Use Case	Key Features
Simple App	Healthcare workers in primary healthcare centers with limited infrastructure; new program build	Open-source software, offline-first, 7M+ patients; fast data entry; overdue lists
DHIS2 Tracker	Healthcare workers in countries with existing national DHIS2 platforms	Free, open-source software; patient-level tracking within existing infrastructure; strong government ownership
HEARTS360-in-a-box	Program management and quality improvement for programs with existing digital systems	Pre-configured WHO HEARTS indicators; real-time comparisons; daily data refresh integrates with Simple, DHIS2, and other EHRs

Practical Solutions for Long-term Patient Tracking

Enrollment and Follow-up

Effective longitudinal tracking begins with diagnosis and enables consistent data capture.

- **Facility-based screening:** measuring BP of adult patients at every visit.
- **Unique patient ID** (QR or phone-linked) enables tracking across facilities and prevents record loss.
- **Rapid digital patient registration** in under 90 seconds through minimal required fields.
- **Standardized visit records:** Every visit should record BP reading, medications, and next appointment date. Keeping data entry to these essentials maximizes completeness.
- **Monitoring drug supply** enables supply chain forecasting, distribution and inventory management.

Reducing Loss to Follow-up

Loss to follow-up is a main driver of uncontrolled hypertension. Digital tools should support:

- **Automated overdue patient lists:** enabling health workers to prioritize outreach efficiently.
- **Secure outreach calling, SMS, WhatsApp reminders:** Workers can call patients from within the app or send automatic patient reminders. Evidence shows outreach significantly improves return to care.
- **Home visit protocols:** Digital systems flag unresponsive patients for community health worker home visits, embedding digital tracking within team-based care models.

Quality Improvement and Data-Driven Management

Data collection is only valuable if it changes practice. Adopting a systematic quality model operationalizes:

- **Data review meetings:** Facility, sub-national and national managers review HEARTS dashboard indicators, identify bottlenecks (e.g. treatment inertia, loss to follow-up), and implement targeted interventions. Sri Lanka used this approach to increase medication titration rates by over 50% in a single year, raising BP control from 50% to 68%.
- **HEARTS360 dashboard benchmarking:** Pre-configured WHO HEARTS indicators produce comparisons across facilities to make gaps visible, create accountability, and enable feedback loops

- **Capacity-building:** The SCALE-HTN program builds country capacity for data-driven leadership, training national and subnational program leaders to analyze data, identifying drivers of low BP control, and run improvement cycles.

Artificial Intelligence (AI) for Program Optimization

AI is a powerful tool to bridge the gap between data collection and clinical action.

- **AI-enabled dashboards:** AI can generate automated insights directly from the HEARTS dashboard. By identifying specific indicators that require action, AI can save health officials' time, prioritizes facility visits and target interventions for better program outcomes.
- **AI-supported patient retention:** AI-enabled propensity scores can target patient tracking and automate overdue calls to improve efficiency and scalability of patient retention efforts.

Enabling Conditions for Digital Scale

- **Government ownership and integration:** Ministries should own and host digital tools and data, budget for long-term costs to build and maintain digital infrastructure, and clearly define with any implementing partners the governance, access, security, and exit terms.
- **Decide scope and define the health outcomes:** Then design the technology to solve the problem.
- **Interoperability planning:** Adopt an interoperability strategy to prevent fragmentation and duplication of patient records, including universal patient identifiers, open APIs and national/international standards (FHIR, ICD-11, national HMIS).
- **User-centric and training support:** Design with frontline staff and program managers. Provide training and support to healthworkers to maintain consistent use and troubleshoot issues.

Key Resources

- [Resolve to Save Lives Digital Tool Playbook](#) (2024): Designing an optimal digital tool for hypertension and other long-term care programmes.
- [Simple App](#): Open-source hypertension management platform, with implementer documentation
- [DHIS2 Hypertension and Diabetes Control Package](#)
- [Moran AE et al.](#) (2023): Implementation of Global HEARTS Hypertension Control Programs in 32 LMICs. JACC International
- [Burka D et al.](#) (2023): Keep it simple: designing a user-centered digital information system for chronic disease management in LMICs. BMJ Open
- [RTSL Guide](#): Management of Overdue Patients with Hypertension: strategies for reducing loss to follow-up
- [WHO toolkit](#) for the analysis and use of facility-based data on noncommunicable diseases