



SMART *health*

A case study on the prevention of cardiovascular disease through the SMART*health* primary care program



The George Institute
for Global Health



Chronic diseases and primary care in Indonesia



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The problem

In Indonesia, serious chronic conditions frequently kill or disable people of working age. In 2016, ischemic heart disease and cerebrovascular disease (stroke) were the 2 **leading causes of premature death in Indonesia**, as well as the leading causes of death and disability combined. High blood pressure (or hypertension) is a key driver of this cardiovascular disease burden.

These conditions are largely preventable by people adopting healthier lifestyles as well as **treating high risk individuals with blood pressure lowering and other preventive medications.**

Primary care system in Indonesia

Critically, effective preventive care for common cardiovascular diseases must be delivered through a strong primary healthcare system. In the Indonesian public sector, providers of primary care include *puskesmas* (primary health care centres, staffed by doctors and nurses) and their linked networks of community based services (staffed by nurses and /or volunteer community healthcare workers, or Cadre).

These are organized in hierarchical networks covering defined areas. The system is primarily geared towards meeting the needs of maternal and child health, as well as providing care for acute episodic illnesses. The system is inadequate for chronic management of mostly asymptomatic people with or at



high risk of cardiovascular and other non-communicable diseases. In addition, the current primary system is heavily reliant on doctors at the *puskesmas*. Given their extremely limited numbers and capacity, alternative workforce strategies are urgently required.

What is SMARThealth



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What is SMARThealth?

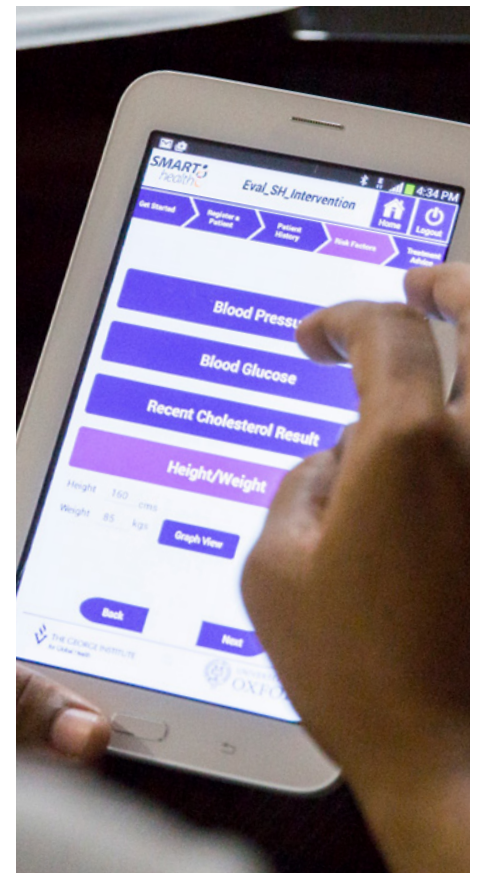
SMARThealth is a technology-enabled ecosystem that aims to improve the delivery of consistent high-quality essential primary healthcare to communities. SMARThealth supports the provision of preventive care at the community and household level by strengthening existing health systems. SMARThealth was initially designed with a focus on cardiovascular disease (CVD) prevention and management, but is expanding into many other areas.

The CVD intervention consists of:

- Enabling Cadre, nurses and *puskesmas* doctors to assess CVD risk using basic medical equipment and a sophisticated but simple-to-use clinical decision

support system application on a mobile tablet device.

- The application allows Cadres to collect essential health-related information, inform the subject of their risk status, provide lifestyle advice for prevention of CVD, and refer high risk patients for nurse or physician consultation.
- A shared electronic record functionality allows synchronous or asynchronous capture of patient data that are securely sent to and accessed from a central server.
- The nurses and doctors also use a mobile application to receive decision support around lifestyle advice and appropriate prescription of preventive



medications, using data collected by the Cadre as well as new information captured during patient consultations. Treatment plans are immediately available to Cadre ensuring follow-up and continuity of care in the community.

- An automated system alerts high risk individuals to attend follow-up visits with the Cadre, nurse or doctor and provides reminders aimed at improving medication adherence.
- This cycle of care is underpinned by community-wide health promotion, training of and provision of performance-based incentives to healthcare workers, and support of essential medication supply management.

What did we find?



"In this demonstration project, implementation of SMARThealth led to increases in appropriate treatment rates and reductions in blood pressure of a magnitude very rarely, if ever, seen in health service delivery interventions."

"With scale-up across Indonesia, the potential impact in avoiding premature death and disability is enormous."

SMARThealth in Indonesia

The SMARThealth program was delivered in four villages in the Malang district, East Java, Indonesia, over a 12-month period between April 2017 and March 2018. Data were also collected over this period in four similar control villages.

1. Mostly through household visits, Cadre were able to successfully screen approximately 11,000 individuals, representing 91% of the adult population aged >40 years in these communities.

2. Among community members screened by Cadres, 23% (almost 1 in 4 adults in this age group) were identified to be at high risk of CVD and were referred to nurses and doctors for further treatment. The majority of the individuals were then seen again by the Cadre in the community, ensuring continuity of care.

3. At the end of the demonstration project, many more high risk individuals were taking appropriate preventive medications in the SMARThealth villages, compared with the control villages. The impact on appropriate use of blood pressure lowering medications was particularly large.

Almost **1 in 4** adults were at high risk of CVD



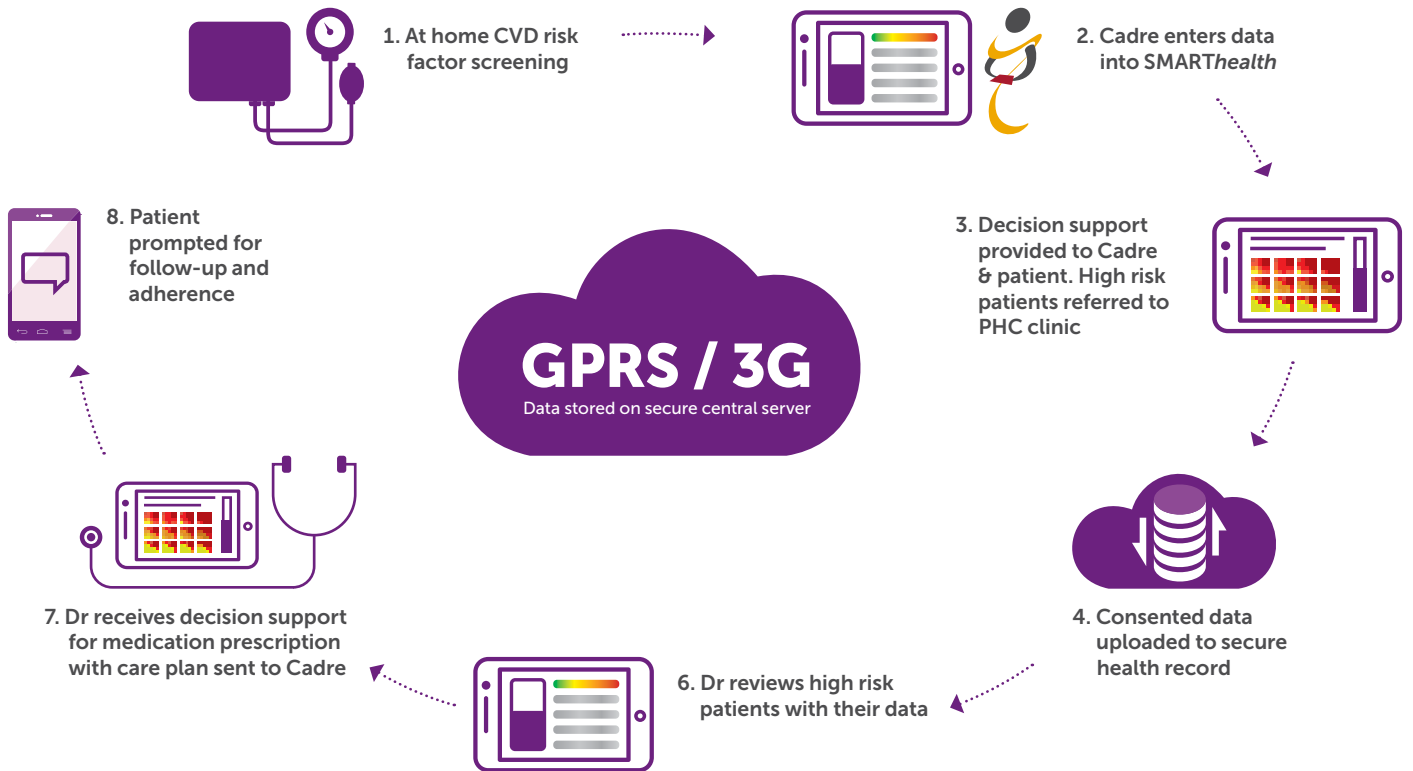
Cadres screened **11,000 people** representing 91% of the adult test population aged >40



>20x percentage increase of individuals taking all preventive medications

>5x percentage increase of individuals taking blood pressure lowering medications

The SMARThealth cycle

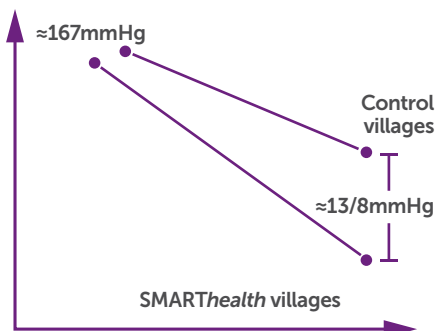


4. This resulted in much lower levels of blood pressure among high risk individuals in SMARThealth villages, compared with those in the control villages.

5. SMARThealth is projected to prevent roughly one third of heart attacks and strokes in the test population over 5 years, at an approximate cost of US\$5000 per event avoided.

6. Follow-up discussions with community members, healthcare providers and health authority district representatives revealed SMARThealth was highly acceptable. All stakeholders expressed a strong demand for continuation of the program beyond the demonstration phase.

With scale-up across Indonesia, the potential impact in avoiding premature death and disability is enormous.



1/3 less CVD events @ a cost of USD \$5000 per event



SMARThealth

Who are we?



"Our mission is to improve the health of millions of people around the world, especially those in low- and middle-income settings."

"SMARThealth is a primary healthcare ecosystem for resource-poor settings that is designed to enable the systematic medical appraisal, referral and treatment of patients at high-risk of premature death or disability."

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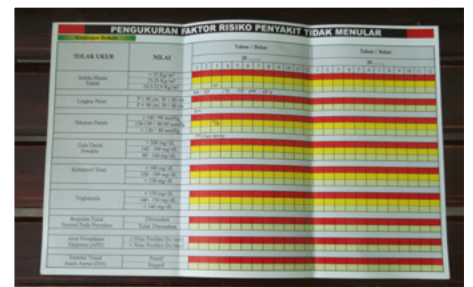
The George Institute for Global Health is an independent global medical research institute, established and headquartered in Sydney, with major centres in China, India and the UK. The George is focused on reducing the burden of the leading causes of death and disability around the world – chronic disease and injury.

Our research has driven major improvements in the prevention and treatment of heart disease, stroke, diabetes, kidney disease, and many other conditions, and our researchers have been recognised among the world's best for scientific impact and excellence. Affiliated with world class universities such as UNSW Sydney, we have over 650 staff globally, a global network

of collaborators, projects in more than 50 countries, and have raised over \$730 million for global health research. In 2017, we celebrated 10 years of impact in China and India.

To have the greatest impact on health outcomes, The George also convenes health policy forums to contribute to health care debate and evidence-based policy reform. The George Institute for Global Health has established a commercial subsidiary, George Health Enterprises to expedite the translation of some of its research findings into practice.

www.georgeinstitute.org





The University of Brawijaya

The name Universitas Brawijaya (Brawijaya University) was granted by the President of the Republic of Indonesia through a wire no. 258/K/61 sent on July 11, 1961. This name is derived from the title of Kings of Majapahit, a great kingdom in Indonesia from 12th to 15th centuries.

UB transformed into a state university on January 5, 1963, following a Presidential Decree issued earlier in the same year. This date was later promulgated as UB's anniversary (specifically called Dies Natalies among Indonesian academic society members).

UB campus is situated in the city of Malang, East Java, in a strategic location can easily be reached by public transportation.

Today, UB is one of the leading universities in Indonesia with more than 60,000 students in various degrees ranging from the Diploma Program, Bachelor's Degree Program, Master's Degree Program, Doctoral Degree Program, and Medical Specialist Program, in 12 Faculties, two faculty-level Programs, one Vocational Program, and one Postgraduate Program.

www.ub.ac.id

