The rapid rise in diabetes prevalence poses a huge challenge to healthcare services in India, but quality improvement initiatives are under way. Dr Kavita Singh, Public Health Foundation of India and Centre for Chronic Disease Control, and Professor Nikhil Tandon, Department of Endocrinology and Metabolism, All India Institute of Medical Sciences (both in New Delhi, India), describe how technology and task-shifting are starting to transform the delivery of diabetes care in the country.
This trial demonstrated that a health system approach involving DSS and non-physician care coordinators significantly improved cardiometabolic risks and quality of life, and may lower diabetes morbidity and mortality.
The mPower Heart project
The mPower Heart project was carried out in the Solan District, Himachal Pradesh, India, with the primary objective of designing a feasible and sustainable evidence-based, decision support-enabled, healthcare delivery model for the management of hypertension and diabetes in community health centres (the secondary level of care in Indian health care setting)6.

Components of the project were:
- setting up of a non-communicable disease outpatient service at eight outpatient clinics within five community health centres of Solan District
- quality improvement strategies for care delivery at community health centres through a structured training programme for the healthcare team and use of clinical management guidelines
- deployment of laptop/smartphone based DSS at non-communicable disease clinics to facilitate evidence-based care.

The mPower DSS was used by nurses in these clinics and had important features, such as:
- screening for hypertension/diabetes and suggestions for diagnostic investigations
- a guidelines-based management plan for hypertension and diabetes
- longitudinal health records
- lifestyle advice tailored to patient profile
- quality assurance checks.

Trained nurses carried out opportunistic screening of 22,009 patients (aged 30 or older) with the help of mPower DSS at non-communicable disease clinics over a period of 21 months and identified 6,797 patients with either hypertension and/or diabetes. A total of 6,016 patients had hypertension (mean systolic bp 146.1mmHg, mean diastolic bp 89.52mmHg), and of whom 3,152 (52 per cent) individuals were newly diagnosed. Similarly, 1,516 patients had diabetes (mean fasting plasma glucose 177.9mg/dl) and of whom 450 (30 per cent) were newly diagnosed. The changes in systolic bp, diastolic bp and mean fasting plasma glucose observed at 18 months of follow-up were -14.6mmHg, -7.6mmHg, and -50.0mg/dl, respectively, and were statistically significant, even after adjusting for age, sex, and location.

The mPower Heart project demonstrated that a nurse-facilitated, DSS enabled intervention is feasible and effective in the management of patients with hypertension and diabetes at primary care setting in India. In addition, we are evaluating the effectiveness of other technology innovations (geographic information systems, DSS for the co-management of diabetes and depression and referral links between primary, secondary and tertiary care clinics using DS-EHR tools), and task-shifting approaches at secondary and primary care levels in India.

Scaling up technology and task-shifting interventions in India
We are now in the process of scaling up and evaluating the DSS intervention, via primary care, at the district level, leveraging ongoing non-communicable disease programmes. We are also developing and testing models to manage multiple conditions simultaneously (eg, diabetes, hypertension and depression; or diabetes and TB), as many people have more than one chronic condition. Technology (eg, cell phones or web-based approaches) provides an important means of helping strengthen the system, and connecting the various interfaces (eg, patient and physician; primary and secondary care).

Our team has put in great efforts in customising and making the mHeaith and DSS interventions provider friendly. For example, we have migrated the DSS system to tablet computers for easier viewing and improved acceptability by busy practitioners. DSS is now also available in a Windows version. We are considering adding other common co-morbidities to the DSS, including chronic kidney disease, chronic obstructive pulmonary disease and asthma. Our efforts have been recognised by the adoption of m-Health
Our research endeavours involving decision-support electronic health records and non-physician care coordinators in diabetes and hypertension care has focused on helping patients and providers deal successfully with the complexities of the condition.

Technology for screening and management of hypertension and diabetes in two states in India – Tripura and Mizoram, covering 40 and 16 community health centres, respectively. Furthermore, our mHealth-based innovation was selected by the National Health Systems Resources Centre, Government of India, as a ‘Best Practice’ example for presentation and discussion at the National Summit on Good and Replicable Practices and Innovations in Public Healthcare Systems, 2017. To develop a robust strategy for scale up of these evidence-based interventions and to evolve a consensus for future collaborative research in India, active consultations with multiple stakeholders (government, academia, other health organisations, media, industry) is needed. The central Government of India recently made two major announcements:

1. To complement the national programme on non-communicable diseases, the existing 155,000 sub-centres (the lowest institution in the Indian health system) served by auxiliary nurse midwives (village level female health worker) are to be transformed into ‘health and wellness’ centres.

2. Universal screening for hypertension, diabetes and three types of cancers (oral, cervix and breast) is to be introduced. This would widen the range and scope of health services, so technology and task-shifting interventions can be incorporated and delivered to improve patient outcomes. Healthcare providers like AYUSH doctors (traditional Indian healthcare practitioners trained in Ayurveda, Yunani, Siddha and Homeopathy), nurses and community health workers can be trained in using technology interventions for the management of non-communicable diseases, which could enhance patient’s adherence to prescribed therapy. Also, the front line healthcare worker can make appropriate referral of high-risk individuals as identified in community screening to the nearest health centre.

Conclusion

As India moves ahead with the digital health agenda, operational research needs to be embedded alongside technology. Rapid development and advances in information and communication technology offer a unique opportunity to overcome the traditional barriers of reach, access and lack of trained manpower for prevention and management of diabetes.

Technology-assisted chronic disease management has the potential to improve care processes, delay complications, and save healthcare costs. Our research involving decision-support electronic health records and non-physician care coordinators in diabetes and hypertension care has focused on helping patients and providers deal successfully with the complexities of the condition. This approach has augmented care delivery, providing protocol-based management at all levels of the health system hierarchy, and empowering patients to engage in self-care behaviours.

REFERENCES