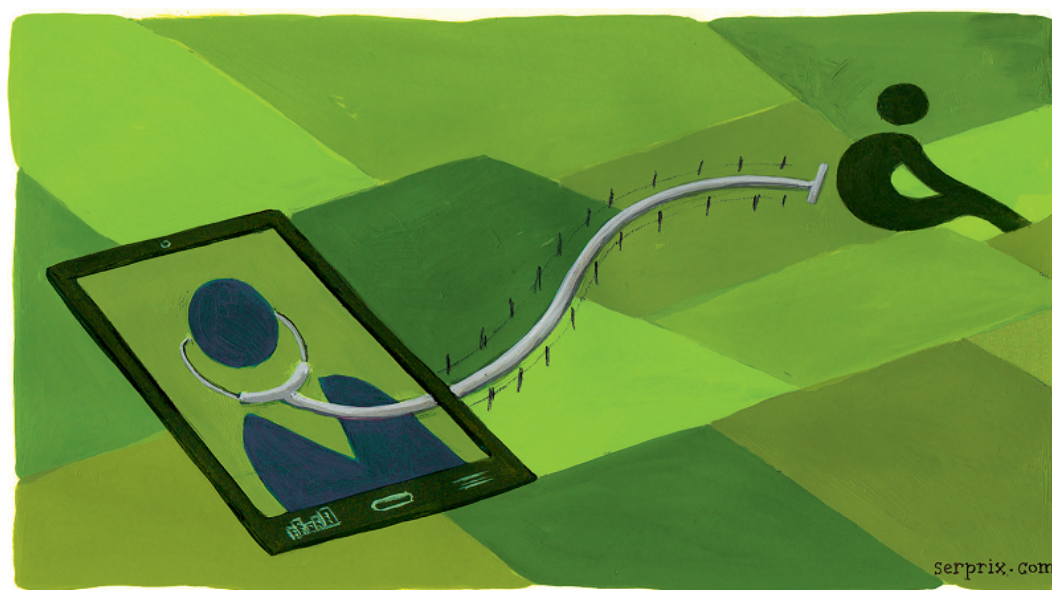# Can healthcare policy and technology heal rural-urban divides?

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Telehealth is not a substitute for seeing real doctors, but can play a valuable role in patient-centred healthcare and in closing the rural-urban divide as well. But it will require investment and determined policies.

A shift of health services and professionals from rural and small town communities towards larger, more centralised services in urban settings may have advantages for cost-effectiveness, but is it patient-centred? Or is it fuelling the already expansive gap between country and city communities, and a sense of abandonment and resentment as people are forced to travel far to get the same care quality as city citizens? This rural-urban divide was evident in recent elections in the US, Brexit and the French regional elections in 2016. Could healthcare policy, bolstered by smart technology, help overcome this "geography of discontent"?

One group on the rural disparity radar is teenage girls. The teen birth rate in the US's small towns is 63% higher than in its biggest cities, according to a 2016 report from the Centers for Disease Control and Prevention reported in the *Los Angeles*

Times. Rural women experience poorer health outcomes and have less access to healthcare than their urban counterparts, one reason being the limited numbers of healthcare providers, and in particular women's health providers. They are also less likely to receive contraceptive services, and typically have to travel further than their urban counterparts to access reproductive health services. To overcome this inequitable status, several US states, such as Arkansas, are using telehealth programmes.

While the gadgets supporting telehealth and mobile health–mobile phones, tablets, personal digital assistants and the wireless infrastructure–are new, the concept of using telecommunication and multimedia technologies to reach patients virtually is not. As far back as in 1878, The Lancet reported on the use of telephones to reduce unnecessary visits, and during the mid-20th century NASA used remote monitoring systems to measure astronauts' physiological functions.

So could the new technology and wellness gadgets be the answer to healthcare inequality? While telehealth is not yet a substitute for a doctor who might need to perform a procedure and though it is as yet impossible to download a medicine, the evidence shows that smart communications technology can play a valuable role for patients.

Urban-rural digital divides pose a challenge, however. Roughly half of total EU population live in rural, remote and mountainous areas, and only 25% of such areas are covered by fast broadband, compared with some 70% coverage in urban areas. Regions are responding; Bavaria is promoting broadband expansion with €1.5 billion by 2018, for instance. In the US, attention is also focusing on closing the rural-urban digital gap, with advantages for healthcare.

Remote monitoring is one of the most common uses of telehealth , and is becoming increasingly pertinent as the level of chronic disease increases alongside a globally ageing population. In the US, more than 70% of deaths are associated with chronic diseases, which account for up to 75% of annual healthcare expenses, according to the Journal of Medical Internet Research. The journal points out that in the EU, chronic illness is a factor in around 87% of all deaths.

> **Remote monitoring is one of the most common uses of telehealth**

Telemedicine can also help doctors in rural areas gain access to specialist knowledge and diagnostic facilities. In India, the G Kuppuswamy Naidu Memorial Hospital has established a live interaction by satellite with the Swami Dayananda Jayavarthanavelu Tribal Rural Hospital in Anaikatti for this purpose, with communication support from the Indian Space Research Organisation (ISRO).

Over the past decade in the EU, information technology solutions and telehealth technologies have reached a high degree of integration between hospitals and municipalities. An example is the Renewing Health project, which involved eight countries (Denmark, Finland, Germany, Greece, Italy, Norway, Spain, Sweden)

and 7,000 patients suffering from chronic obstructive pulmonary disease (COPD), diabetes or heart diseases. Under the project patients were able to see their own data, and as a result, healthcare professionals reported that patients took greater responsibility for their own health. When they could not see their data, patients were less responsible for their healthcare and the two-way communication was limited.

Technology and gadgets continue to develop, from smartphones and portable diagnostic machines to smart pills such as one by US company, Proteus Digital Health that when dissolved in the stomach transmits data and enables patients and their clinicians to monitor prescriptions and how patients are doing. But there are obstacles to overcome before telehealth can reach more remote communities.

One is to ensure the technological capacity needed to accommodate bandwidth-heavy telehealth programmes for smaller towns, villages and farmsteads. Another problem is the lack of acceptance of these technologies by patients and clinicians, and even by healthcare reimbursement systems, and the need for patients, particularly older people, to develop the skills and knowledge needed to use them.

Moreover, the interoperability between electronic patient record systems and particular technologies is limited. In the UK, the Whole System Demonstrator telehealth project was carried out with 3,230 patients between 2008 and 2009, according to the Journal of Medical Internet Research. It showed that patients' primary concerns were personal and about privacy in relation to identity theft, as well as independence. Reticence about self-care and technical competence were also concerns.

In any case, people want access to physical doctors and nurses. In France, where city-rural divisions are also influencing the electoral map, the government introduced "A chance for France" in March 2015, which aims to improve healthcare in rural areas where doctors and other public services are scarce. France is one of the OECD countries with the most doctors per head of population and has a highly regarded healthcare system, but "medical deserts" forming in regional towns and surrounding rural communities are a concern, particularly in regions such as Picardy, Normandy and the north, as well as some overseas departments. In fact, while Paris has nearly 800 doctors per 100,000 inhabitants, departments in these regions can have fewer than 200. A new medical "pact" includes such measures as making trainee doctors fulfil part of the training in needy areas, providing incentives and investing in local doctors, hospitals and ambulatory services. Digital improvements will also be key, and the government has announced plans to get rid of so-called white zones: areas in 169 municipalities with no 2G connection, or no telecommunications at all.

One innovation that can help bridge the urban-rural divide comes in the form of online health communities. Communities, such as dailystrength.org or patientslikeme.com, can empower and inform patients, and create networks too.

People, proximity and physical reality are all important for healthcare, but telehealth matters too. Being online does not remove care professionals, but may in fact demand an extensive care team, and new skills and business services too. Telehealth is not cost free but it could help to stimulate patient-centred healthcare throughout the land.

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