contraception,[4] other considerations are important for those who need emergency contraception and are not using hormonal methods; for instance the progestogen-only pill can be started just 48 h before sex, which would be compatible with infrequent planned sex, or with the start of a relationship where future sexual activity is uncertain.

The Bridge-It trial shows that supplying contraception in an innovative way has the potential to improve uptake. The question remains on how to improve uptake further and ensure diverse needs are met. There is little community participation in designing contraceptive services[5] and knowledge is limited on how different types of contraception—and patterns of health care—suit different people's lives and preferences.

Researchers, policy makers, and service providers should work with communities to identify and codesign more interventions to meet people's needs.[6] Future efforts need to include the voices of people who use and those who do not use existing services, and take an intersectional approach to identify and address contraceptive needs that are likely to differ depending on characteristics such as age, relationship type, gender identity, disability, cultural background, employment status, and the ability to attend clinics.

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The Riyadh Declaration: the role of digital health in fighting pandemics

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For the **Riyadh Global Digital Health Summit** see https://rgdhs2020.com/

The COVID-19 pandemic has exposed weaknesses in health and care systems and global public health responses, some of which can be addressed through data and digital science. The Riyadh Declaration on Digital Health was formulated during the Riyadh Global Digital Health Summit, Aug 11–12, 2020, a landmark forum that highlighted the importance of digital technology, data, and innovation for resilient global health and care systems.

Our panel of 13 experts articulated seven key priorities and nine recommendations (panel) for data and digital health that need to be adopted by the global health community to address the challenges of the COVID-19 pandemic and future pandemics.

The first priority is for the health and care sectors to adopt applied health intelligence (HI). HI represents a systematic approach and comprehensive methodology applied to the collection, linkage, analysis, and use of appropriate health data. HI is used for the surveillance, monitoring, and improvement of population and patient outcomes, and for assessing the efficiency and effectiveness of policies, programmes, and services.[1]

The second priority relates to interoperable digital technology and for this technology to be scaled up and sustainable. Digital health tools and services require a secure, trusted flow of data with scalability and interoperability support. The advent of commercial cloud computing services and distributed systems has paved the way for scalable, cost-effective service provision.

The third priority is to support the adoption of artificial intelligence (AI). Use of AI in health systems demands rapid access to various data types, often not possible in health-care settings with slow data flows.[2] AI also requires vast amounts of high-quality data to achieve acceptable accuracy and validity. Health-care organisations and systems need to provide the necessary technology to collect and share high-quality data.

Panel: **Recommendations from the Riyadh Global Digital Health Summit**

1. Implement data-driven and evidence-based protocols for clear and effective communication with common messaging to build citizens' trust
2. Work with global stakeholders to confront propagation of misinformation or disinformation through social media platforms and mass media
3. Implement a standard global minimum dataset for public health data reporting and a data governance structure tailored to communicable diseases
4. Ensure countries prioritise digital health, particularly, improving digital health infrastructure and reaching digital maturity
5. Enable health and care organisations by providing the necessary technology to collect high-quality data in a timely way and promote sharing to create health intelligence
6. Cultivate a health and care workforce with the knowledge, skills, and training in data and digital technologies required to address current and future public health challenges
7. Ensure surveillance systems combine an effective public health response with respect for ethical and privacy principles
8. Develop digital personal tools and services to support comprehensive health programmes (in disease prevention, testing, management, and vaccination) globally
9. Maintain, continue to fund, and innovate surveillance systems as a core component of the connected global health system for rapid preparedness and optimal global responses

Effective communication about public health crises and risk is the fourth priority. Such communication requires an understanding of risk and the timely dissemination of information; seamless digital integration of case reports and deaths; and effective data visualisation tools such as map-based dashboards.[3] Effective communication to change knowledge, attitudes, and behaviours mandates the systematic exploration of diverse digital channels and the innovative design of digital tools for citizen engagement.[4]

The fifth priority concerns health data governance, quality, policy, regulation, and use. Passively generated digital location data from mobile phones and internet services provide crucial information about human mobility and interactions.[5] However, ethics and privacy are essential and must be adhered to when using these ubiquitous data. Projections about disease epidemics require human mobility and interaction data that are aggregated in time and space to reconstruct population-level behaviour.[6]

The sixth priority relates to the quality and effectiveness of digital technology for improved patient and population outcomes. Digital technologies offer many opportunities to improve the quality and effectiveness of care, patient outcomes, and population health.[7] Digital health systems should be designed and implemented to maximise data quality and access for clinicians and patients and these systems should be interoperable.

The seventh priority is research and innovation. Investing in, conducting, publishing, and promoting transparent research are foundational to digital health advances that leverage data, analytics, and AI.[8] It can take an average of 17 years to translate a major medical research discovery to widespread delivery.[9] The competitive, commercial culture of technology revolves around disruptive innovation, iterative discoveries, and the delivery of new technologies over months, not years. To translate life-saving innovations in digital health into widespread applications, collaboration across the best of research and innovation in health and technology is essential.

The Riyadh Declaration on Digital Health is a call to action to create the infrastructure needed to share effective digital health evidence-based practices and high-quality, real-time data locally and globally to provide actionable information to more health systems and countries. Digital and data technologies have a role in promoting the coordinated development of shared global public health policies and resilient health and care systems. These technologies can support health systems and governments to perform better in future pandemics and other global health challenges. We call on state actors to ensure that digital technology and innovation become the cornerstone of a resilient global health and care system that places individual and population health at the forefront of our future endeavours.

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Evidence synthesis communities in low-income and middle-income countries and the COVID-19 response

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Evidence synthesis specialists have responded to the COVID-19 pandemic. In line with WHO's global roadmap for COVID-19 research,[1] we are working to summarise the available research to support evidence-informed decision making across all sectors for immediate and anticipated challenges, within the COVID-19 Evidence Network to support Decision-making (COVID-END). COVID-END is an umbrella organisation involving 50 evidence synthesis or evidence support organisations that are working together to promote collaboration and reduce duplication of effort in the conduct and translation of COVID-19-related evidence syntheses. As a network we have accelerated investment to enable infrastructure for evidence synthesis and to promote evidence use.

COVID-19 and its related impacts are likely to be felt for many years to come. As the low-income and middle-income country (LMIC) members of a global partnership, we believe that, for global evidence synthesis initiatives to benefit from LMIC expertise and be relevant to LMIC settings, it is important to recognise the conceptual and practical challenges that this pandemic presents to our evidence synthesis organisations.

LMIC evidence communities are well placed to support evidence-informed decision making. They include established, locally driven, experienced centres of excellence that are part of technical and regional networks and trusted by decision makers. Our teams and our strong networks are invaluable in promptly getting the best available evidence into the hands of policy makers. However, these achievements are often despite—and not because of—the circumstances in which we work.

Many of us work in countries where there are complex challenges. Weak health systems in LMICs are generally struggling to make the necessary responses to the COVID-19 pandemic and the prevalence of comorbidities are putting our populations at increased risk of the direct and indirect consequences of the pandemic.[2] Paramount to poorer and conflict-affected states are the pre-existing, and rapidly worsening, vulnerabilities due to inequalities and inequities, unemployment, hunger, and malnutrition.[3] Violence against women and children, unintended pregnancies, and risks to incarcerated populations are all escalating, as are disruptions to child vaccination programmes.[4] In addition to the mental health strain caused by a pandemic,[5] lockdowns, and resulting social and economic pressures, we are observing fear and stigma associated with COVID-19, quarantine, and isolation.[6] Home evictions linked to job losses, low levels of public health information in some settings, and the presence of migrant workers and refugees have exacerbated xenophobia and social unrest in some LMICs.[7] Older people, migrant workers, refugees, and students have all found themselves vulnerable and inadequately supported.[8]

For **COVID-END** see https://www.mcmasterforum.org/networks/covid-end