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Sustainable clinical laboratory capacity for health in Africa



The 2008 Maputo Declaration on Strengthening of Laboratory Systems and the subsequent 2012 African Society for Laboratory Medicine Ministerial Call for Action¹ drew attention to the importance of laboratory services. Most recently, laboratories have gained prominence in the accurate detection of infectious diseases—including emerging public health threats—and monitoring of antimicrobial drug resistance, especially within the context of the Global Health Security Agenda. Equally important, but relatively marginalised, is the role of laboratories in dealing with all diseases, in ensuring quality clinical care towards universal health coverage (UHC), and meeting the targets of Sustainable Development Goal 3.

At the African Society for Laboratory Medicine meeting in Cape Town, South Africa, in December, 2016, we met to discuss the state of laboratory services in the light of Africa's burden of both communicable diseases and non-communicable diseases. We highlighted gaps in coverage, quality, human resources, infrastructure, access, and sustainability, and discussed how these gaps could be bridged in an economically viable manner. We summarise our discussions and key messages (panel) here.

The coverage and quality of laboratory services throughout Africa is inadequately documented. Quality provided by individual laboratories is questioned,² and not all facilities are enrolled in external quality assurance schemes. For example, in 2013, an evaluation of accredited laboratories in sub-Saharan Africa indicated that 37 of 49 countries had no medical laboratories that met internationally recognised quality standards.³ However, the WHO/AFRO Laboratory Improvement Process Towards Accreditation⁴ has been expanded rapidly in many countries in Africa over the past 5 years, with promising initial results.

High-quality services are largely dependent on appropriately trained and qualified laboratory personnel, yet laboratory professionals continue to figure prominently among neglected health cadres across sub-Saharan Africa.^{5,6} There are often insufficient numbers, a skewed distribution, low level of qualifications, and limited career opportunities. Personnel often work in poorly equipped facilities, and do not systematically respect safety standards. Some organisations have developed training initiatives (eg, Amref⁷), but

investment in developing professionals needs to increase via formal education, continuing professional development, and peer-to-peer learning initiatives. More attention should also be paid to training multiskilled professionals capable of working in laboratories equipped to deal with a broad range of health conditions, not just individual communicable diseases.

There is a movement towards broadening infrastructure for non-communicable diseases⁸ and in integration.⁹⁻¹¹ But entrenched thinking in terms of the need for specialisation still needs to be overcome. Similarly, tension exists between developing centralised laboratories with broad-based services and providing the point-of-care testing necessary for patient-centred care. Where the balance lies will depend on factors such as the distribution and disease mix of the population, availability of transport, information technology, and other sociocultural and health educational factors. Ultimately, with the development of rapid transport links and good information technology structures, the necessity of proximate-to-patient services may decline. However, until such infrastructure is widely accessible, the question that should be asked is *what other tests can be done at decentralised facilities?*

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Panel: Key messages

- Clinical service laboratories should be recognised as having a key role in defining the health-care needs of populations
- Economic indicators of efficiency and financial sustainability are needed to ensure uninterrupted provision of high-quality laboratory services
- Quality, multiplatform, timely, patient-focused laboratory services should be included in UHC packages
- The rollout of technologies that increase the speed and accuracy of diagnosis of multiple conditions should be considered and strategies for strengthening the clinician-laboratory worker interface should be introduced to bolster uptake
- Each country should create a roadmap for laboratory development with well-defined targets for distribution, providers (public or private), breadth of tests covered, quality improvement and training, and finances. They should propose innovative strategies for ensuring greater autonomy, accountability, and sustainability
- Research capacity strengthening of laboratories is critical to ensuring sustainability of laboratories and the development of the best technologies for use in individual settings

As well as geographical access barriers, affordability of laboratory tests in terms of direct and indirect costs that result in high out-of-pocket payments likely remains a key obstacle to access and meeting UHC targets.¹² Economic considerations are also essential to sustainability. Economics informs which tests should be prioritised; defines where there are efficiency gains and tradeoffs; measures efficiency gains of adopting new technologies; and can evaluate the economic case for integration of services. Additionally, there is a need for a frank and open discussion about the use of public or private laboratories to achieve UHC, keeping in mind that private providers may be able to provide services that public providers cannot. They can also offer opportunities for transferring risks to the private sector through equipment leasing¹³ as well as for training and development of personnel in the public sector.

The economic viability of laboratories also hinges on allowing facilities greater autonomy and flexibility. Currently, laboratories are often passive recipients of personnel, equipment, and reagents. Initiatives giving laboratories greater ability to generate and retain funds have led to promising results and should be given greater attention. Likewise, performance-based financing could help to drive efficiency gains and may trigger a more rapid improvement in the quality improvement process towards accreditation.¹⁴ Greater attention also needs to be devoted to developing the research activities of laboratories—such as for clinical trials and product development—which could be useful sources of revenue. Active involvement of laboratory personnel in research projects is also beneficial in providing contextual information needed for the uptake of novel diagnostic technologies.

Recurring keywords from our meeting were quality, integration, patient focus, sustainability, and autonomy. Whilst recognising that there is now broad-based, albeit sotto-voce, recognition that laboratory services are essential to health systems globally, more systematic attention should be paid to the issues described in this Comment for their value to be truly realised.

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