

## Sustainable clinical laboratory capacity for health in Africa

Davies, Justine; Abimiku, Alash'le; Aloba, Moses; Mullan, Zoë; Nugent, Rachel; Schneidman, Miriam; Sikhondze, Welile; Onyebujoh, Philip

DOI:

[10.1016/S2214-109X\(17\)30024-4](https://doi.org/10.1016/S2214-109X(17)30024-4)

License:

Creative Commons: Attribution (CC BY)

*Document Version*

Publisher's PDF, also known as Version of record

*Citation for published version (Harvard):*

Davies, J, Abimiku, A, Aloba, M, Mullan, Z, Nugent, R, Schneidman, M, Sikhondze, W & Onyebujoh, P 2017, 'Sustainable clinical laboratory capacity for health in Africa', *Lancet Global Health*, vol. 5, no. 3, pp. e248-e249. [https://doi.org/10.1016/S2214-109X\(17\)30024-4](https://doi.org/10.1016/S2214-109X(17)30024-4)

[Link to publication on Research at Birmingham portal](#)

### General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

### Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

# 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 Action<sup>1</sup> 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,<sup>2</sup> 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.<sup>3</sup> However, the WHO/AFRO Laboratory Improvement Process Towards Accreditation<sup>4</sup> 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.<sup>5,6</sup> 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, Amref<sup>7</sup>), 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 diseases<sup>8</sup> and in integration.<sup>9–11</sup> 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?*

## 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

Published Online  
January 17, 2017  
[http://dx.doi.org/10.1016/S2214-109X\(17\)30024-4](http://dx.doi.org/10.1016/S2214-109X(17)30024-4)  
See [Comment](#) page e246

For the **Global Health Security Agenda** see <https://www.ghsagenda.org/>

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.<sup>12</sup> 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 leasing<sup>13</sup> 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.<sup>14</sup> 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.

Justine Davies, Alash'le Abimiku, Moses Aloba, Zoë Mullan,  
Rachel Nugent, Miriam Schneidman, Welile Sikhondze,  
\*Philip Onyebujoh

*The Lancet Diabetes and Endocrinology*, London, UK (JD); Centre for Global Health, King's College London, London, UK (JD); School of Public Health, University of the Witwatersrand, Johannesburg, South Africa (JD); Institute of Human Virology, Abuja, Nigeria (AA); Africa NCD Open Lab, GSK, Nairobi, Kenya (MA); *The Lancet Global Health*, London, UK (ZM); Chronic Non-communicable Diseases Global Initiative, RTI International, Seattle, WA, USA (RN); Nutrition and Population Global Practice, World Bank Group, Washington, DC, USA (MS); National TB Control Program, Ministry of Health (WS); and WHO/AFRO/CDS Laboratories Focal Point (HIV/TB/Hepatitis), WHO Regional Office for Africa Inter-country Support Team for East/Southern Africa, Harare, Zimbabwe (PO) onyebujohp@who.int

The views expressed herein are those of the authors and do not necessarily represent the organisations to which they are affiliated. MA is an employee of GSK. The other authors declare no competing interests.

© 2017 World Health Organization; licensee Elsevier. This is an Open Access article published under the CC BY 3.0 IGO license which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. In any use of this article, there should be no suggestion that WHO endorses any specific organisation, products or services. The use of the WHO logo is not permitted. This notice should be preserved along with the article's original URL.

- 1 African Society for Laboratory Medicine. Ministerial call for action: strengthening laboratory services in Africa. <http://www.aslm.org/what-we-do/ministerial-call-for-action/> (accessed Jan 15, 2017).
- 2 Elbireer AM, Jackson JB, Sendagire H, Opio A, Bagenda D, Amukele TK. The good, the bad, and the unknown: quality of clinical laboratories in Kampala, Uganda. *PLoS One* 2013; **8**: e64661.
- 3 Schroeder LF, Amukele T. Medical laboratories in sub-Saharan Africa that meet international quality standards. *Am J Clin Pathol* 2014; **141**: 791–95.
- 4 Ndiokubwayo J-B, Maruta T, Ndlovu N, et al. Implementation of the World Health Organization Regional Office for Africa Stepwise Laboratory Quality Improvement Process Towards Accreditation. *Afr J Lab Med* 2016; **5**: a280.
- 5 Nkengasong JN, Skaggs BA. Are post-Ebola reconstruction efforts neglecting public health laboratories? *Lancet Glob Health* 2015; **3**: e678.
- 6 Schneidman M, Dacombe RJ, Carter J. Laboratory professionals in Africa: the backbone of quality diagnostics. Washington, DC: World Bank Group, 2014.
- 7 Amref. Laboratory courses. <http://training.amref.org/index.php/laboratory-courses> (accessed Jan 15, 2017).
- 8 Hall MD, Dufton AM, Katso RM, Gatsi SA, Williams PM, Strange ME. Strategic investments in non-communicable diseases (NCD) research in Africa: the GSK Africa NCD Open Lab. *Cardiovasc J Afr* 2015; **26** (2 suppl 1): S15–17.
- 9 Parsons LM, Somoskovi A, Lee E, et al. Global health: Integrating national laboratory health systems and services in resource-limited settings. *Afr J Lab Med* 2012; published online June 11, 2012. <http://dx.doi.org/10.4102/ajlm.v1i1.11>.
- 10 Onyebujoh PC, Thirumala AK, Ndiokubwayo J-B. Integrating laboratory networks, surveillance systems and public health institutes in Africa. *Afr J Lab Med* 2016; **5**: a431.
- 11 Adesina A, Chumba D, Nelson AM, Orem J, Roberts DJ, Wabinga H, et al. Improvement of pathology in sub-Saharan Africa. *Lancet Oncol* 2013; **14**: e152–7.
- 12 Makuwaza L, Musarurwa C, Gomo Z. Evaluation of cost per test of clinical biochemistry tests at Parirenyatwa Central Hospital Laboratory, Harare, Zimbabwe. *Cent Afr J Med* 2009; **55**: 59–63.
- 13 Ravishankar N, Lehman JT. Opportunities abound: public private partnerships (PPP) for laboratory services in East Africa. Washington, DC: World Bank Group, 2015.
- 14 Kumar M, Lehman JT, Rucogoza A, Kayobotsi C, Das AK, Schneidman M. East Africa Public Health Laboratory Networking Project: evaluation of performance-based financing for public health laboratories in Rwanda. Washington, DC: World Bank Group, 2016.