

**The *Lancet* Commission on Diagnostics
Transforming Access to Diagnostics
ORAS event: October 14, 2021**



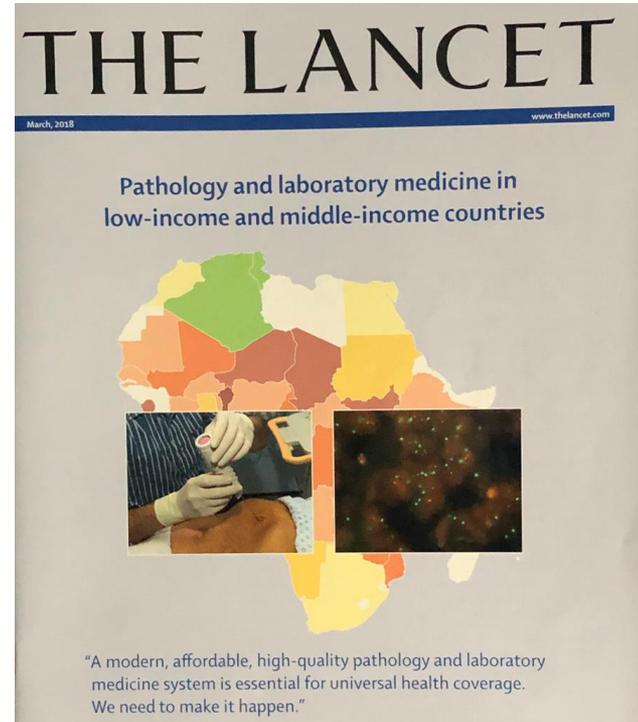
Key messages of the Lancet Commission on Diagnostics

Kenneth Fleming

Emeritus Fellow, Green Templeton College,
Oxford University

The *Lancet* Commission on Diagnostics

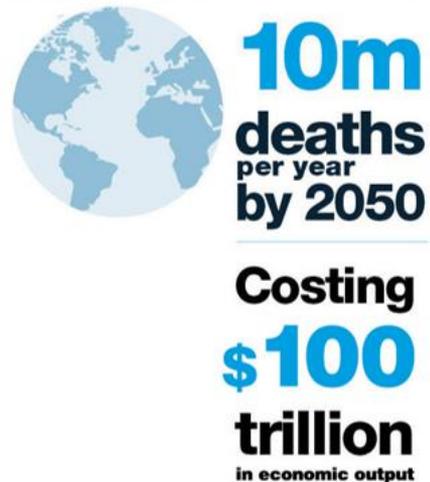
- *The Lancet* Series on Pathology and Laboratory Medicine (2018)
- Deficiencies in availability, access, staff, turn-around time, quality control, communications, supply chain
- Virtually every country
- This is not a new problem - Maputo Declaration of 2008 highlighted the issues. Little progress.
- Even fewer data on Diagnostic Imaging, but position may be worse



The *Lancet* Commission on Diagnostics



A failure to address the problem of antibiotic resistance could result in:



Innovation

UHC

AMR

Report Scope

Included:

- Pathology and Laboratory Medicine (PALM)
- Diagnostic Imaging (DI)
- Focus on access (geographical, financial)

Excluded:

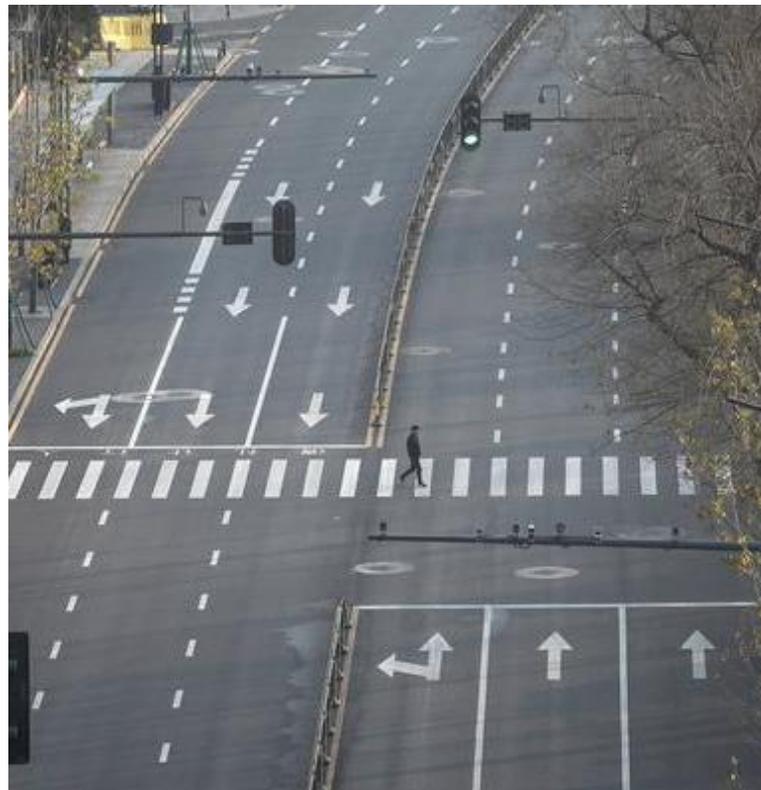
- Diagnostics used in routine clinical encounters (e.g., stethoscopes)
- Specialized diagnostics (e.g., endoscopes)
- Demand for diagnostics (patient behavior)
- Autopsy

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- 25 Commissioners, 16 countries
 - Pathology and Laboratory Medicine
 - Diagnostic Imaging
 - Public Health
 - Public Policy
 - Patient Advocacy
 - Internal Medicine, Emergency Medicine, and Surgery
 - Former Ministers of Health



Wuhan,
January 2020



Key messages of the Lancet Commission on Diagnostics

Susan Horton

Professor of Global Health Economics,
University of Waterloo, Canada

Seven Key Messages

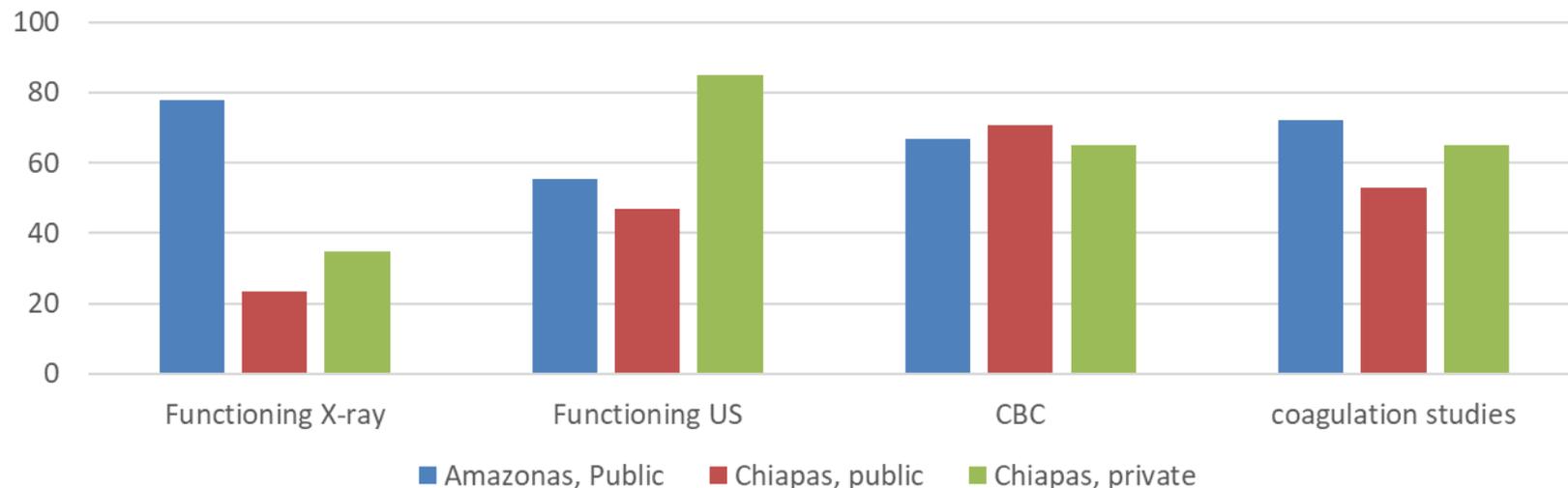
- 47% of the global population has little to no access to diagnostics
- Diagnostics are underfunded because their central importance is underappreciated
- Improving access in primary health care is the “last mile”, and critical for improving equity
- The COVID-19 pandemic has underscored how crucial diagnostics are for Universal Health Coverage

Seven Key Messages - continued

- Recent innovations can help transform access, and democratize diagnostics
- 1.1 million deaths annually could be averted by better diagnostic access for six key conditions
- Each dollar invested in diagnostics returns multiple dollars in benefits

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Percentage of hospitals with “always available and functioning” imaging equipment and “always able to do” key laboratory tests



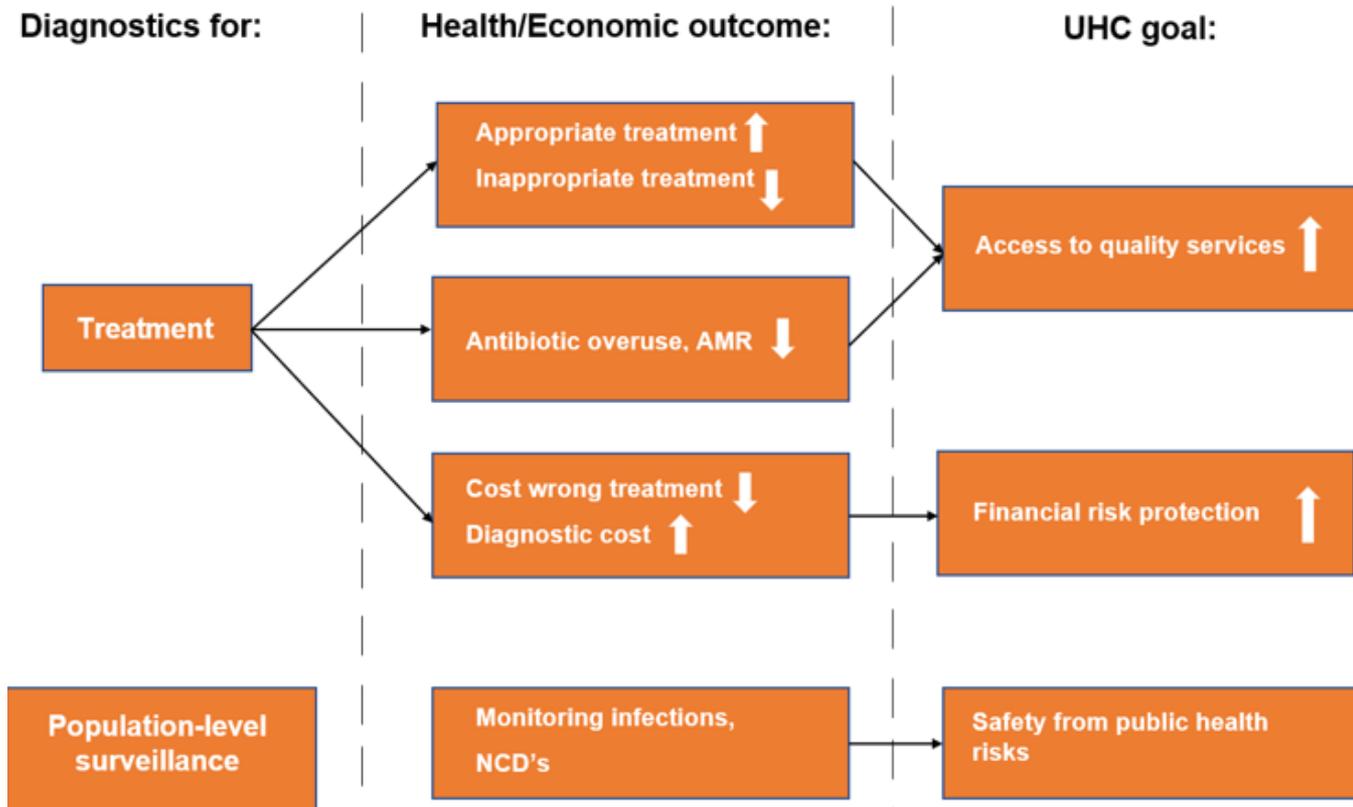
Using Roa L et al. Assessment of diagnostics capacity in hospitalsEclin Med 2020; 29-30:100620

Syphilis testing for pregnant women, Latin America

- Syphilis testing is inexpensive, and averts serious medical conditions in newborn babies: requires women to attend an ante-natal care visit AND to be tested
- 20% of women in upper-middle income Latin America are NOT tested on average (50% in Mexico – 5% in Uruguay)
- 33% in lower-middle income NOT tested
- Data: World Health Organization Global Health Observatory

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Diagnostics:
Essential for
Universal
Health
Coverage



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Availability of diagnostics in primary health care is the “last mile”, and critical for improving equity



Photo: FIND/J. Ndung'u

COVID-19 has underscored the importance of diagnostics for Universal Health Coverage

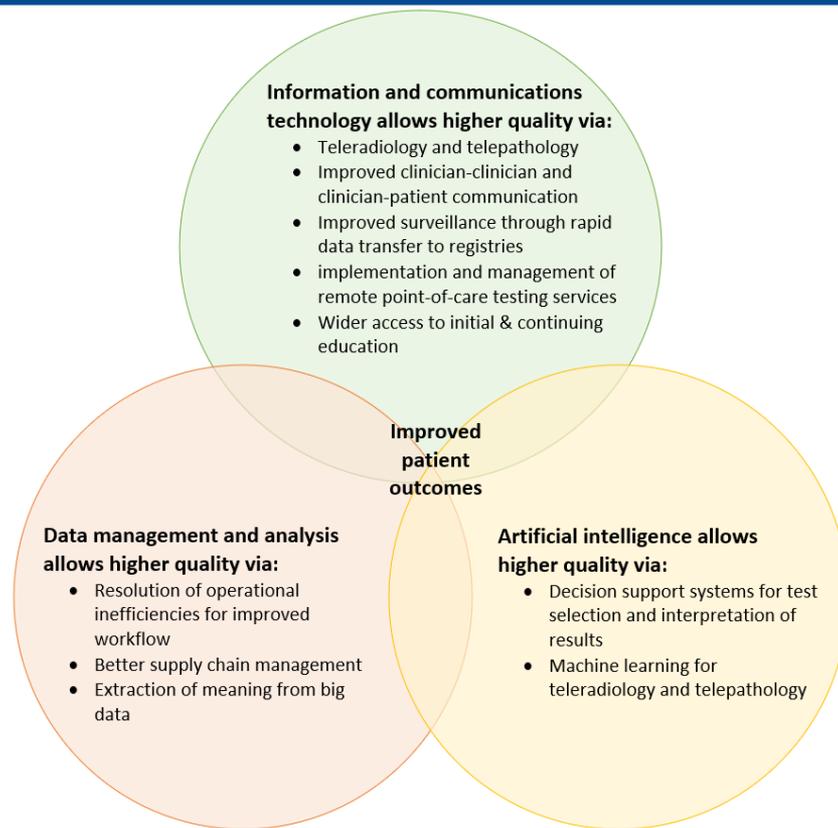


Photo: Reuters Healthcare & Pharmaceuticals

Recent innovations can transform access and democratise diagnostics

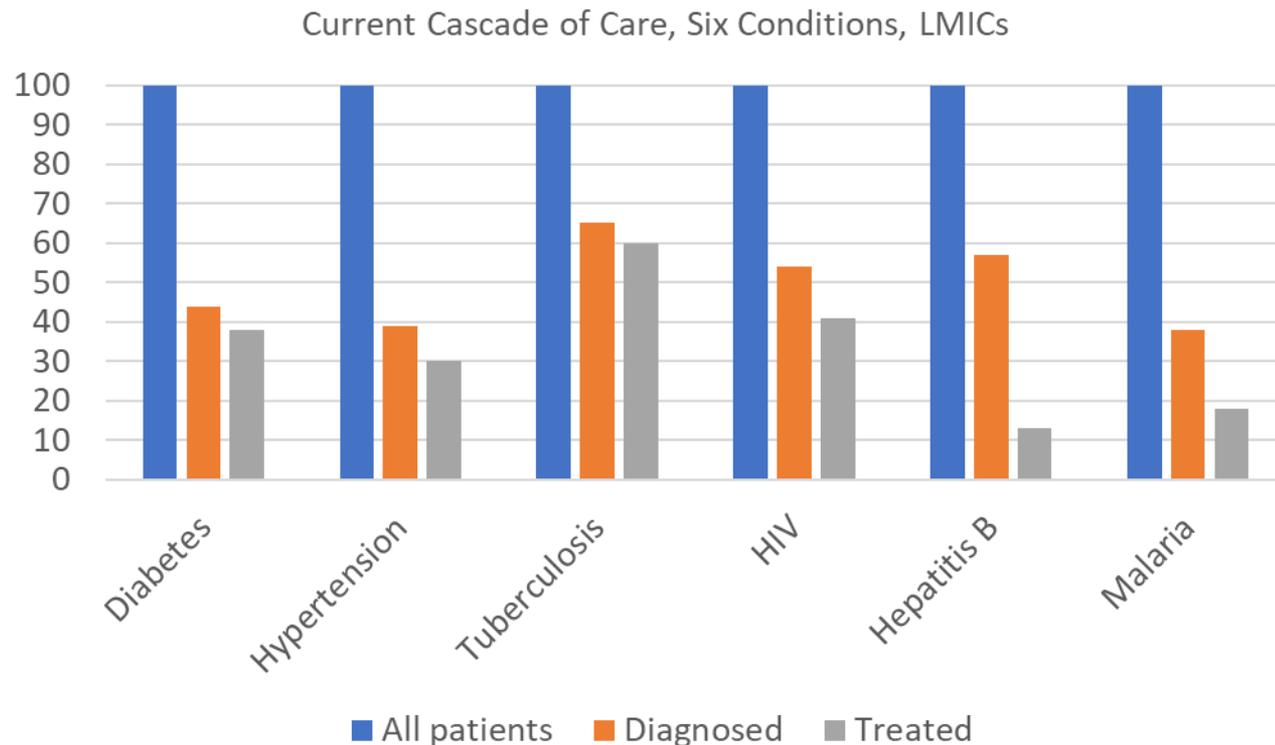
In particular:

- Digitalisation
- Point-of-care testing
- Democratisation (self-testing, self-sampling)



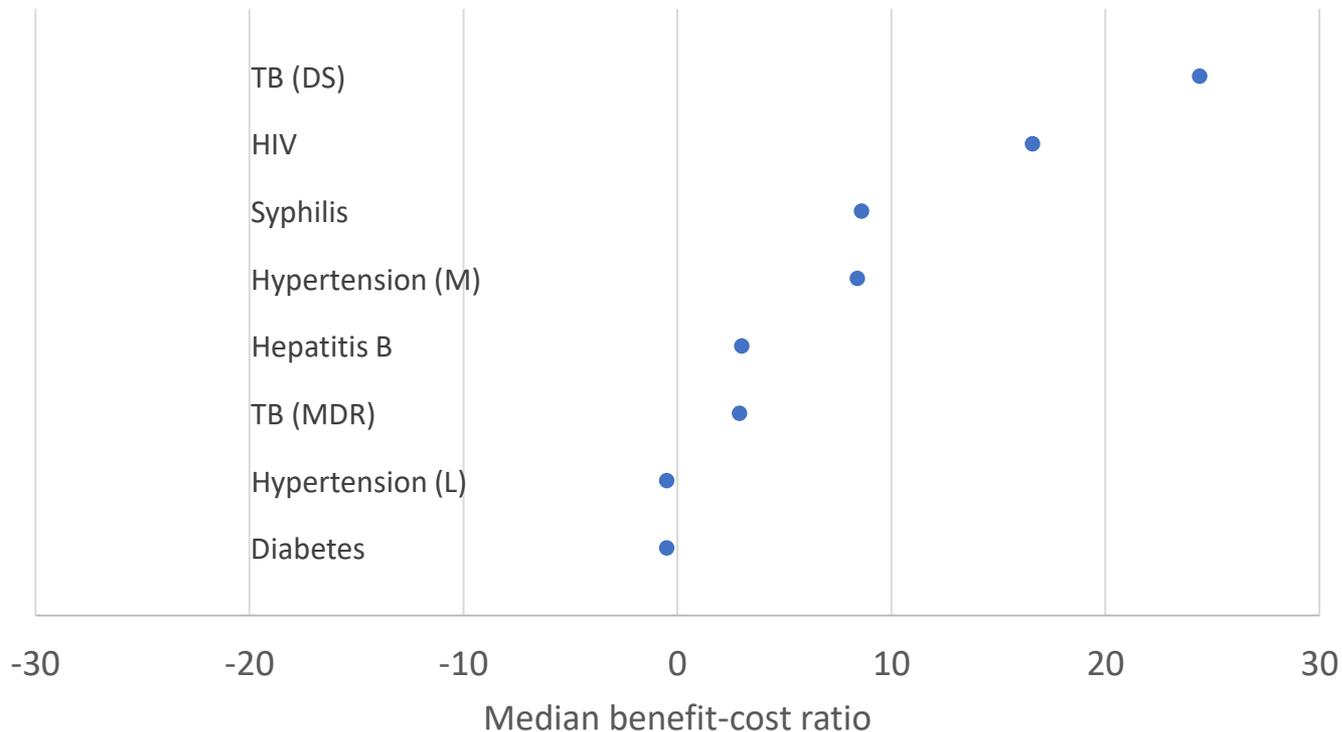
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If we could diagnose 90% of people with 6 key conditions, this could save 1.1m lives globally, each year



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Diagnostic tests are an excellent investment



L - low income countries
M - middle-income countries
DS - drug sensitive tuberculosis (TB)
MDR - multidrug resistant TB

Achieving change: changes at national level

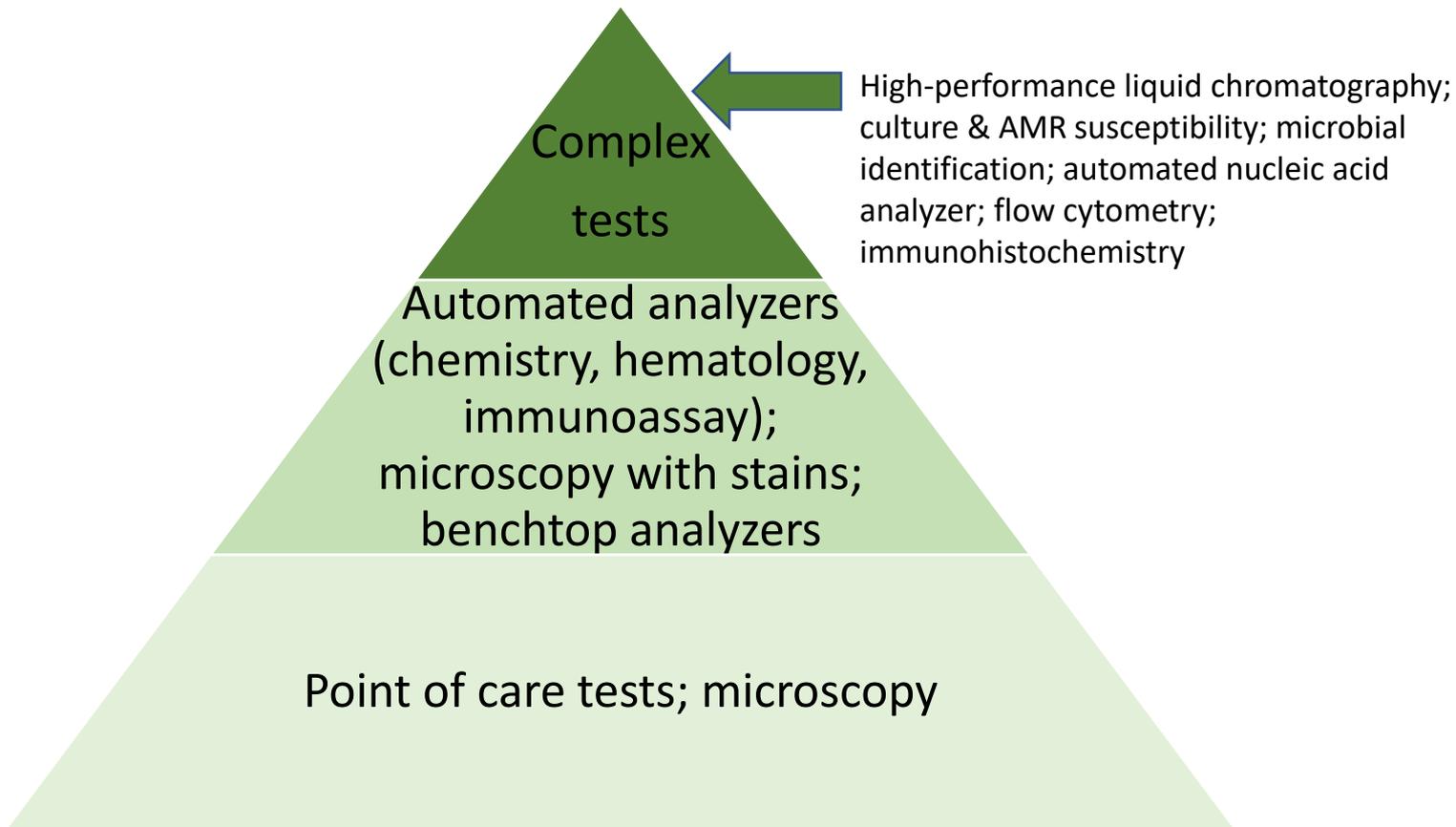
Michael L Wilson

Professor and Director of Pathology and Laboratory Services,
Denver Health and Hospital Authority, USA

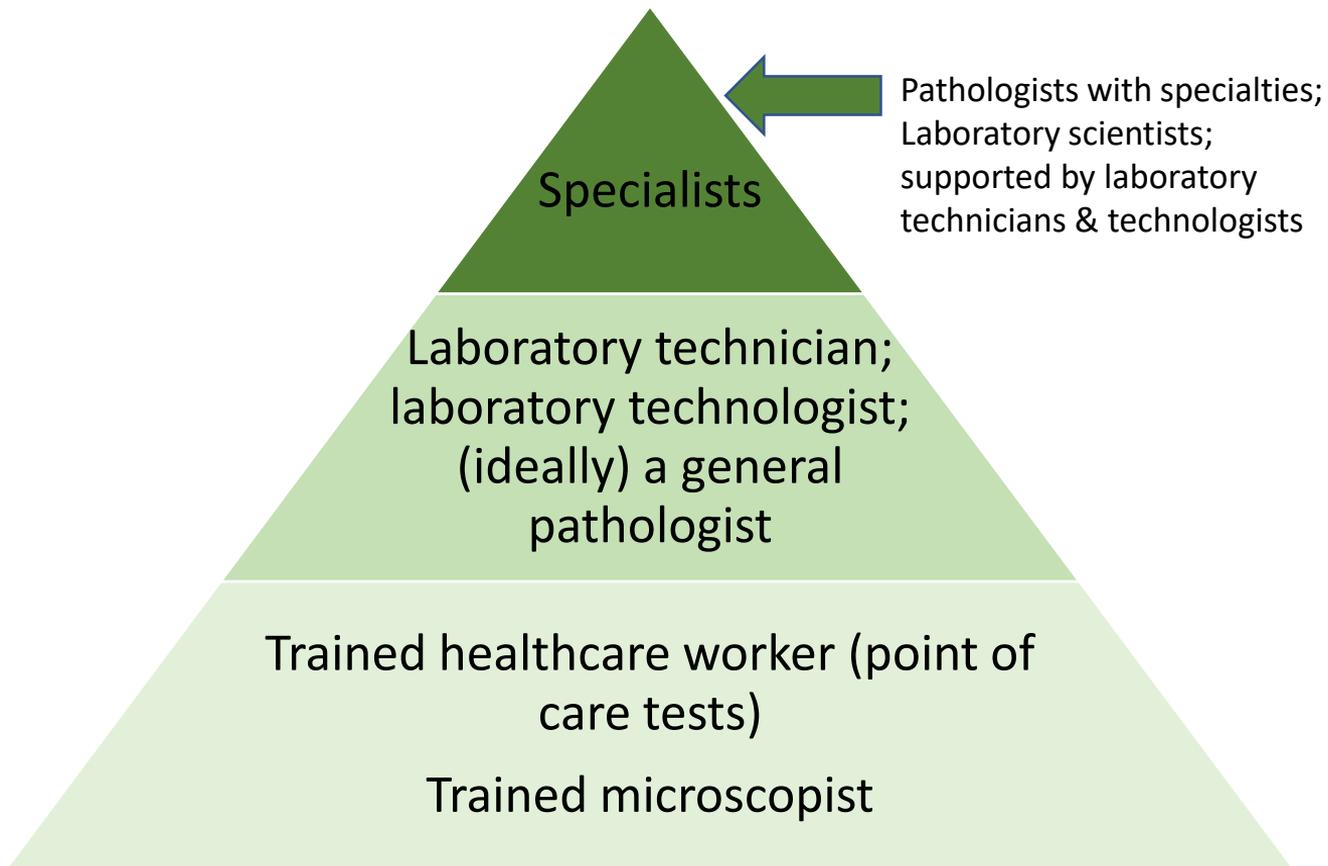
National Essential Diagnostics Lists (EDLs)

- The Commission provides a template for identifying essential tests for three levels of health systems: primary health centres; first-level hospitals and referral hospitals
- We prioritize conditions using Global Burden of Disease data for 2030 and 2040
- We identify diagnostics required for these conditions
- We model whether a condition is triaged but not treated, treated in uncomplicated form, or treated with complications at specific healthcare levels

Laboratory technology required by health system tier



Workforce requirement by health system tier



Infrastructure

- Many health systems and facilities lack the infrastructure needed to support diagnostics
- Systemic solutions are needed: cannot be solved by piecemeal approaches
- Affordability a key issue: innovative approaches to sustainable financing will be needed

LAB. INVESTIGATION	PATIENT/CLIENT REQUIREMENT	CHARGES (KSHS)
• HAEMATOLOGY :		
- FULL HAEMOGRAM		350
- HB		200
- ESR		200
- PBF		350
- BONE MARROW ASPIRATE		1200
• BIOCHEMISTRY :		
- LFT ^s		1200
- UEC ^s		1200
- BILIRUBIN LEVELS		200
- PREGNANCY TEST		200
- RANDOM BLOOD SUGAR		100
- FASTING BLOOD SUGAR	FASTING FOR 8 Hrs.	100
- LIPID PROFILE	FASTING FOR 8 Hrs.	1200
- THYROID FUNCTION TESTS		2100
- HBA1C		1000
- PSA QUANTITATIVE		1300
- OGTT	FASTING FOR 8 Hrs.	1200

Workforce capacity

- Estimates of global shortfall by 2030 are 840,000 to 1,008,000
 - 57% in pathology and laboratory medicine
 - 43% in medical imaging
- Unrealistic to expect LMICs to increase their workforce capacity to HIC levels
- New approaches to work are needed:
 - Team-based work and task sharing
 - Changes in educational and training programs
 - Improved continuing professional development

Quality and safety

- For pathology and laboratory medicine, regulatory frameworks that create access to national or regional accreditation and EQA (external quality assessment) programmes will be essential
- For diagnostic imaging, programmes are needed for regular and systematic review of all diagnostic processes, procedures, and safety standards
- For both, programmes are needed to ensure professional certification, competency, and continuing professional development

Policy, governance, and financing

- Countries should develop National Diagnostic Strategic Plans that include:
 - National EDLs
 - Integrated and tiered diagnostic systems
 - Regulatory frameworks to help ensure quality and safety
- To avoid having too many unique national systems, align national systems with:
 - WHO prequalification
 - Regional harmonization programs

Achieving change – global health security

- In addition to COVID-19, several other infectious disease outbreaks are ongoing around the world
- Requires access to diagnostics – but also improved procedures, processes, and scale-up
- Risk is of siloed development, rather than scale-up of diagnostics overall



Photo: USAID

Recommendations – National Level

1. Create a national diagnostics strategy.
2. Make tests for key conditions available at all primary care centres.
3. Invest in workforce expansion and upskilling.
4. Commit to regulatory frameworks.
5. Roll out a national financing strategy.

Achieving change: imaging

Lluís Donoso-Bach MD, PhD

Director

Department of Medical Imaging

Hospital Clínic of Barcelona

University of Barcelona

Spain

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Results:

Diagnostic capabilities required, by healthcare sector level, to diagnose conditions managed at that level



MRI

Referral hospital

CT, MRI, other specialised imaging; high-performance liquid chromatography; culture and antimicrobial susceptibility testing; microbial identification; automated nucleic acid analyser; flow cytometry; immunohistochemistry



Nucleic acid testing



X-ray

First-level hospital

X-ray; ultrasound; automated chemistry, immunoassay, and haematology analysers; microscopy with stains; benchtop analysers; slide agglutination



Chemistry analyser



POC ultrasound

Primary health centre

POC ultrasound; POC laboratory tests; microscopy



Glucose meter

STATEMENT

Open Access

Optimizing integrated imaging service delivery by tier in low-resource health systems



Kristen DeStigter¹, Kara-Lee Pool^{2*}, Abimbola Leslie¹, Sarwat Hussain³, Bien Soo Tan⁴, Lluís Donoso-Bach⁵ and Savvas Andronikou⁶

Imaging Technology Strategy by Health System Tier

Technology Resource Need



Complex IR, Subspecialized IR,
ABI, PET, NM, Therapies



Complex IR, CT, MRI, FL, B-IR,
ABI, PET Mammography

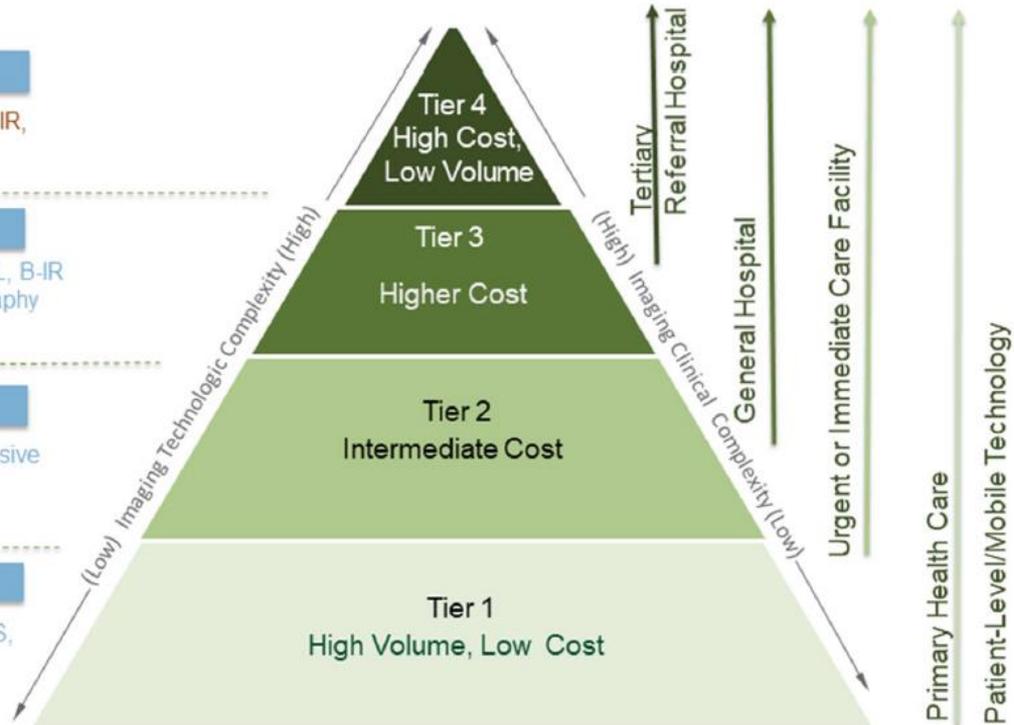


CT, MRI, FL, Comprehensive
B-IR, Ultrasound,
Mammography X-Ray



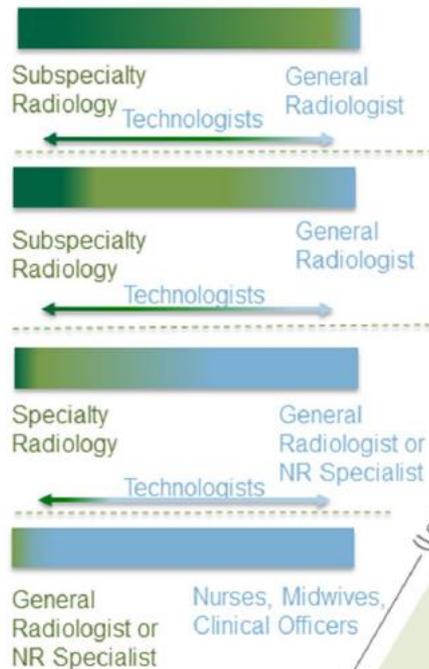
Comprehensive
Ultrasound, POCUS,
X-Ray NR-U

Where care is delivered

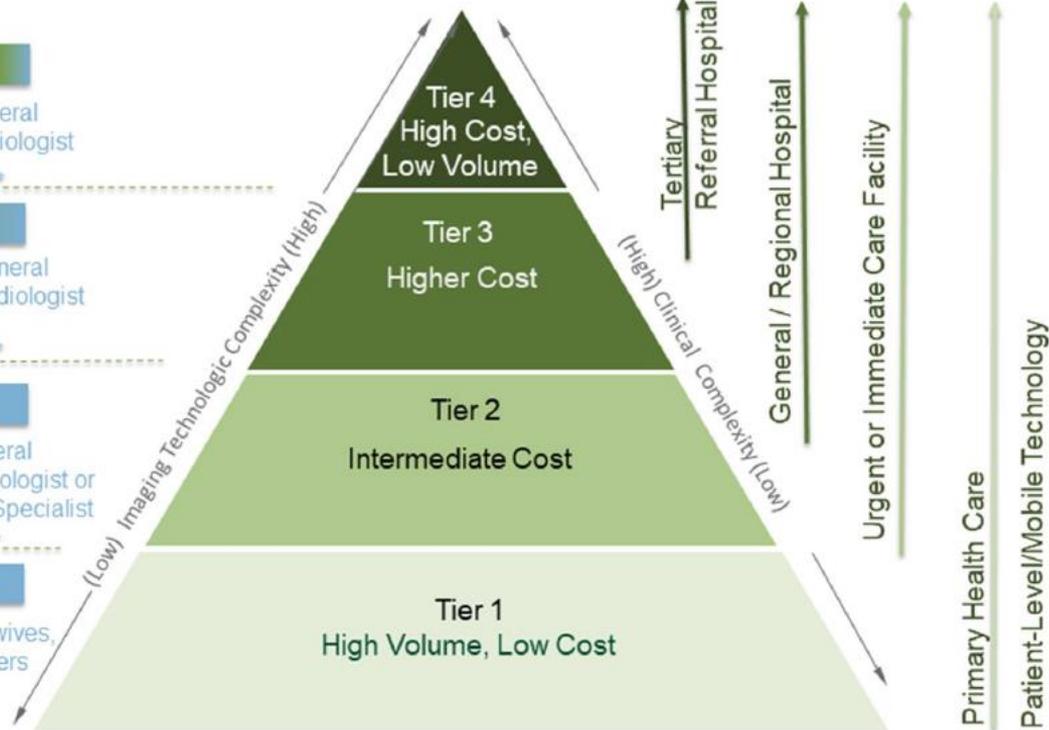


Imaging Workforce/Human Resource Strategy by Health System Tier

Human Resource Need



Where care is delivered



Strategy for Imaging Infrastructure Resources by Health System Tier

Infrastructure Resource Need

Referral Network, NM Lab



MRI Safety, EMR, Pharmacy, PALM services

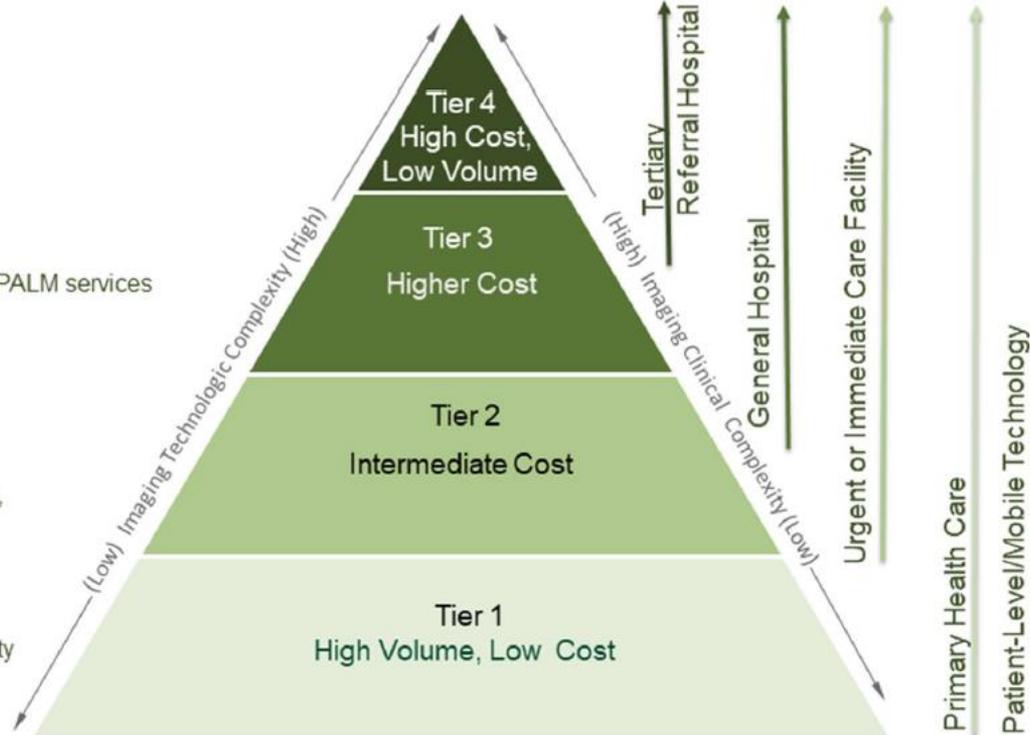


Structural, Climate Control, IT, Radiology Consumables, Maintenance; Radiation Safety, PACS, Communications



Energy Source, Internet Integrity

Where care is delivered



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Puntos Clave: diagnóstico por imagen

- Hemos comprobado que el acceso al diagnóstico por imagen permite un tratamiento más preciso, una mejor gestión y resultados de salud optimizados
- El acceso al diagnóstico por imagen en los LMIC es limitado por la falta de recursos
- Servicios de diagnóstico por imagen por niveles en entornos de bajos recursos tienen el potencial de reducir las disparidades de salud entre los países y dentro de ellos, y pueden implementarse de acuerdo con el contexto y el entorno locales
- El fortalecimiento de una política nacional de inversión en los servicios esenciales de diagnóstico por imagen por niveles, incluyendo la tecnología, los recursos humanos, las infraestructuras y la gestión de la calidad, reforzará la atención primaria y los servicios especializados a nivel poblacional.

Global scale-up of diagnostics for impact: international recommendations to make it happen

Rifat Atun
Professor of Global Health Systems
Harvard University

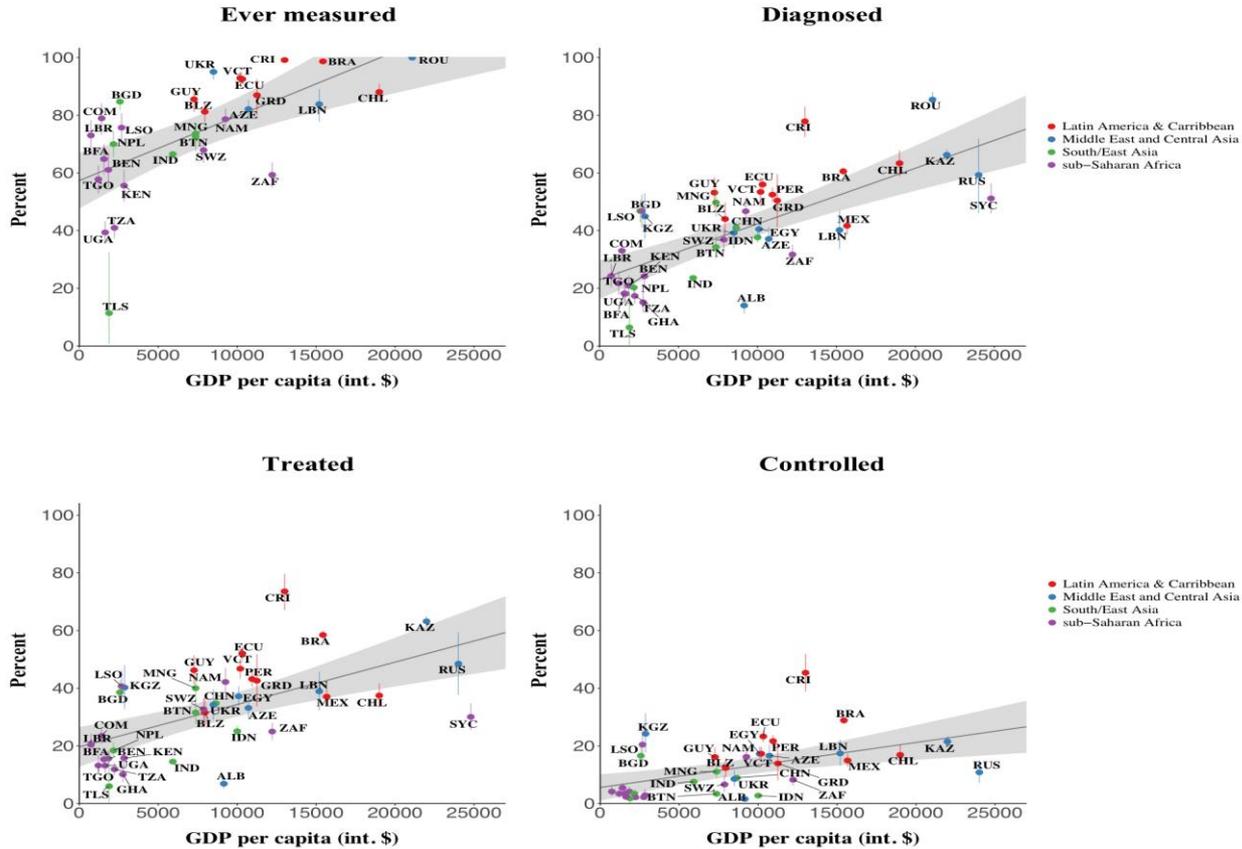
Recommendations: International level

6. Improve affordability of diagnostics.
7. Develop and use technology in ways that benefit everyone.
8. Address the needs of populations living in conflict situations.
9. Increase recognition and funding for diagnostics.
10. Establish an International Diagnostics Alliance to support and monitor all of the above.

A favourable context for change – never let a crisis go to waste

1. G20 commitment to enhanced access to diagnostics
2. Global emphasis on UHC
3. Investment in health systems to “Build back better”
4. Security concerns
5. New evidence on benefits of investing in global scale-up – for every \$1 invested a return of \$3 to \$30

How big is the challenge in Latin America? Hypertension care cascade across 44 low- and middle-income countries – by country income group



Inequalities in access to diagnostics and utilization

Socio-economic predictors of unmet need for blood pressure measurement for hypertension in 44 low-income and middle-income countries

	Adjusted odds ratio (95% CI)	Probability value
Age		
15-24 years	Ref	
25-34 years	1.39 (1.33–1.46)	<0.0001
35-44 years	1.52 (1.46–1.60)	<0.0001
45-54 years	1.57 (1.50–1.65)	
55-64 years	1.57 (1.50–1.64)	
≥65 years	1.56 (1.48–1.64)	
Sex		
Male	Ref	
Female	1.16 (1.14–1.18)	<0.0001
Education		
No formal schooling		
Primary School	Ref	
≥ Secondary School	1.08 (1.05–1.10)	<0.0001
	1.13 (1.11–1.16)	<0.0001
Household wealth quintile		
1 (poorest)	Ref	
2	1.12 (1.09–1.14)	<0.0001
3	1.18 (1.15–1.21)	<0.0001
4	1.26 (1.23–1.30)	<0.0001
5 (richest)	1.36 (1.32–1.40)	<0.0001

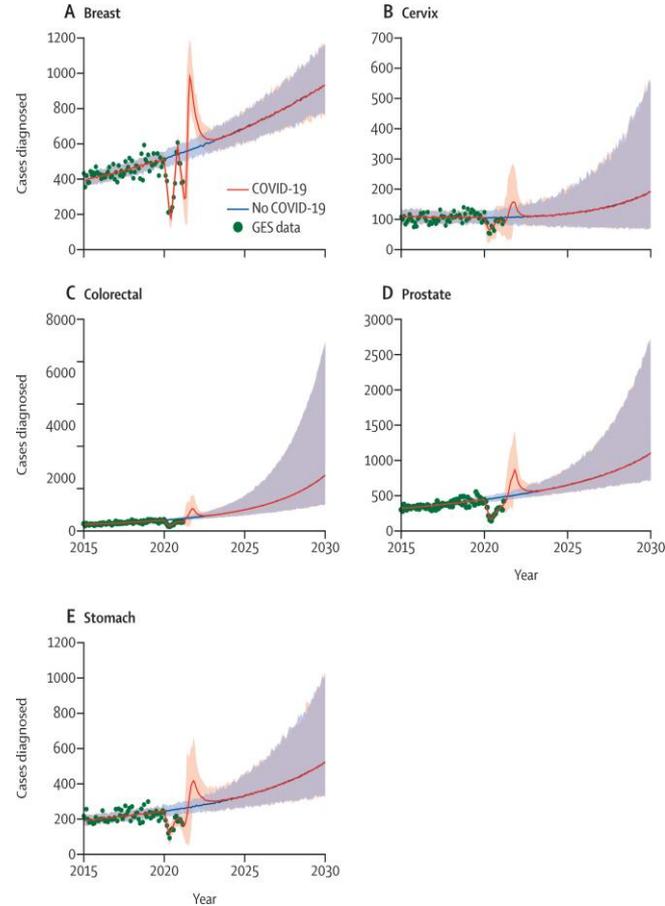
Effect of Covid-19 on Cancer Diagnosis in Chile

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Oncology

Articles

Estimating the impact of the COVID-19 pandemic on diagnosis and survival of five cancers in Chile from 2020 to 2030: a simulation-based analysis

Zachary Ward, Magdalena Walbaum, Benjamin Walbaum, Mateo José Guzmán, Jorge Jarama de la Jara, Bruno Navar, Rifat Atun



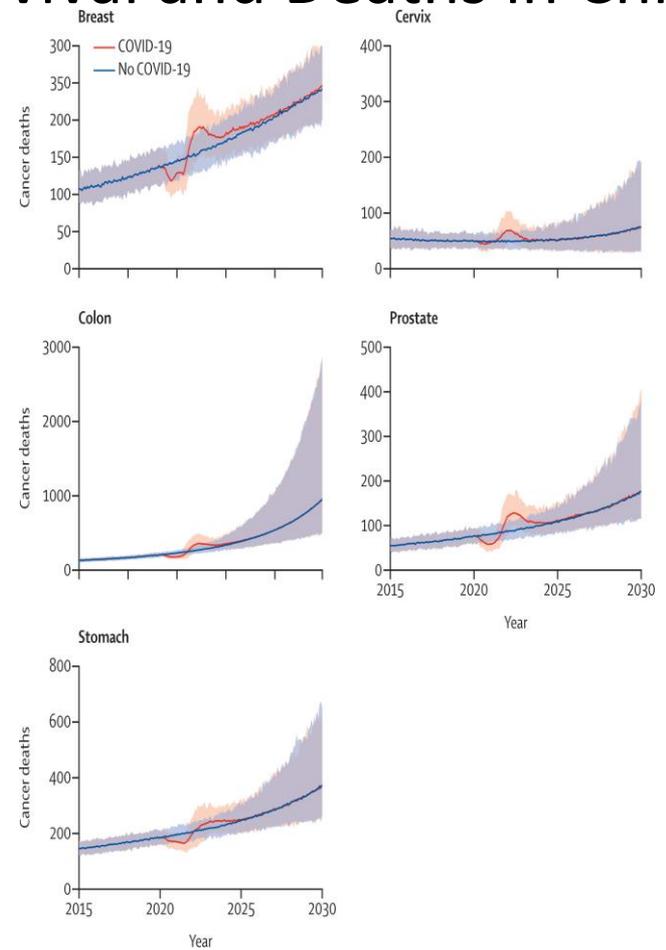
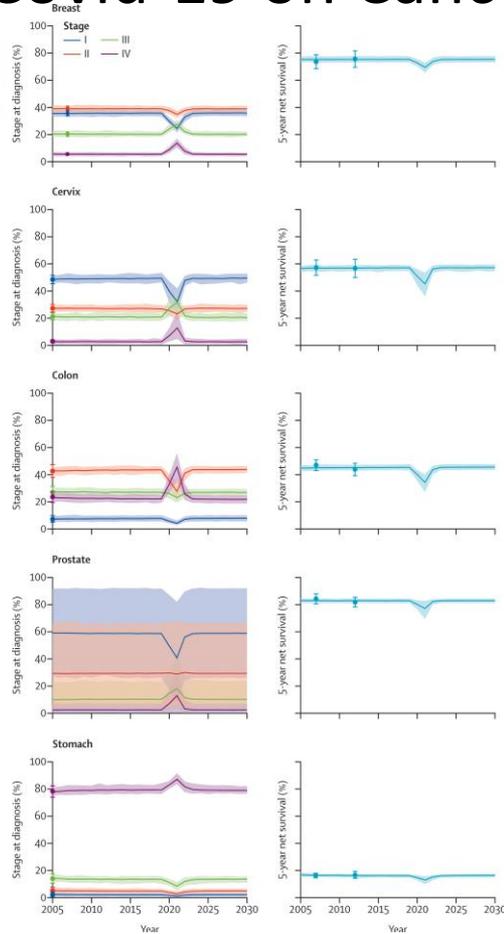
Effect of Covid-19 on Cancer Survival and Deaths in Chile

THE LANCET
Oncology

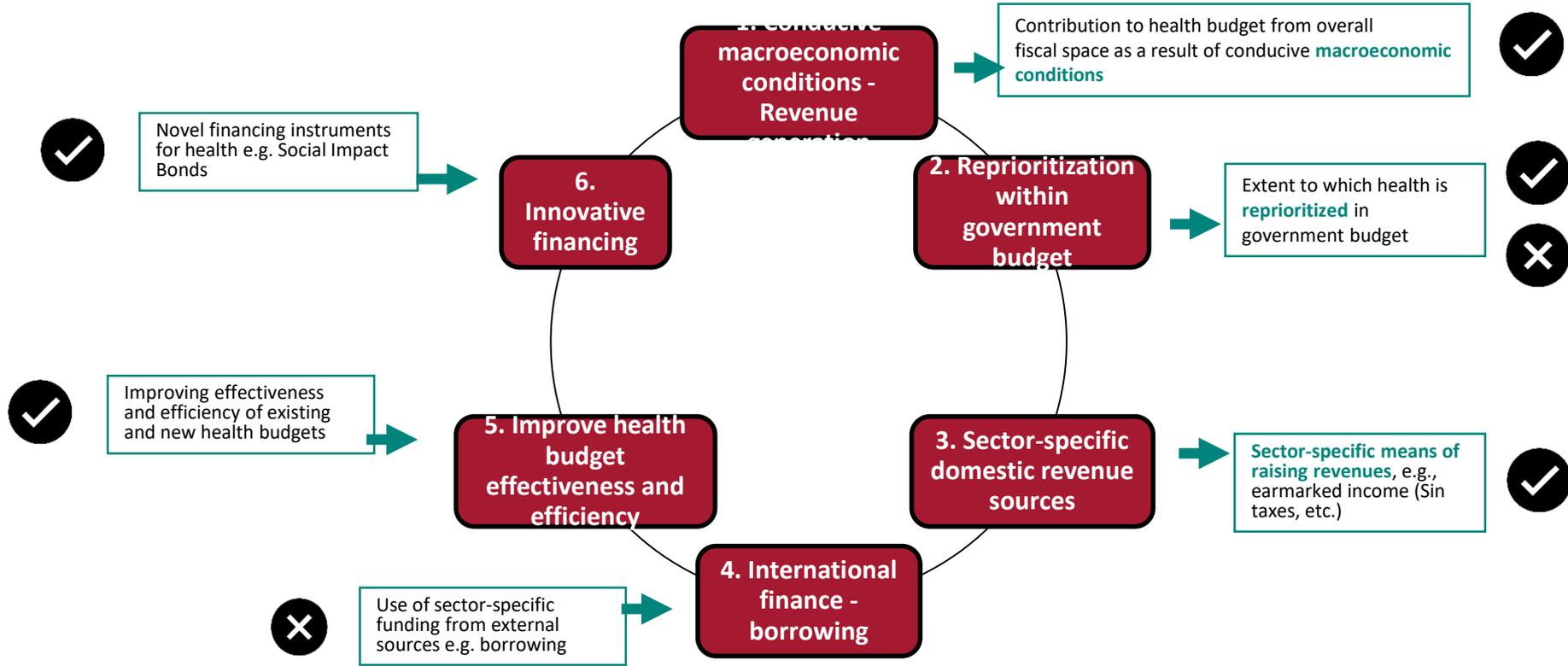


Estimating the impact of the COVID-19 pandemic on diagnosis and survival of five cancers in Chile from 2020 to 2030: a simulation-based analysis

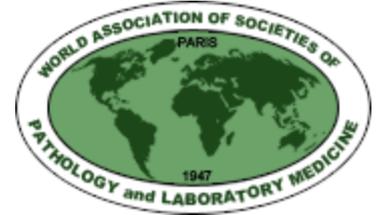
Zachary J. Ward, Magdielino Williams, Benjamin Williams, Brian Post-Grossman, Jorge Gonzalez-Solano, Bianca Nieto, Rafiq Atun



Where will the money come from?



Thanks to our Funders



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- <https://www.thelancet.com/commissions/diagnostics>
- [2-minute video](#) (subtítulos en castellano)
- www.diagnosticscommission.org (resumen ejecutivo disponible en castellano)
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