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Health Information Systems Knowledge Hub

School of Population Health
University of Queensland

Strengthening Control of Neglected Tropical Diseases in the Asia-Pacific Region: Implications for Health Information System Priorities and Strategies

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Maxine Whittaker, Robert Bergquist, Michael Buttsworth

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INTRODUCTION

- Over two billion people in the world are affected by infections collectively known as the *neglected tropical diseases* (NTDs):
- A common denominator for being at risk for NTDs is poverty.
- Health information systems (HIS) play a pivotal role in disease control by providing evidence for decisions and interventions.
- Based upon an expert workshop and extensive literature reviews, this presentation will discuss several, often coinciding, reasons why NTD indicator data are poorly collected, leading to significant underestimations of burden.
- Finally, the implications for HIS development will be detailed using the Health Metrics Network framework.

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Box 2: Differences in NTD Burden in the Asia-Pacific region compared to Africa

- Greater biological diversity
- Geographic disparities
- Microenvironment on islands
- Large number of marginalised vulnerable people

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Box 1: The 17 neglected tropical diseases covered by WHO NTD Department

1. Buruli ulcer (*Mycobacterium ulcerans* infection)
2. Chagas disease (American trypanosomiasis)
3. Cysticercosis/Taeniasis
4. Dengue/Severe dengue
5. Dracunculiasis (guinea worm disease)
6. Echinococcosis
7. Food-borne trematode infections
   - Clonorchiasis
   - Fascioliasis
   - Opisthorchiasis
   - Paragonimiasis
8. Human African trypanosomiasis (Sleeping sickness)
9. Leishmaniasis
10. Leprosy (Hansen's disease)
11. Lymphatic filariasis
12. Onchocerciasis (river blindness)
13. Rabies
14. Schistosomiasis (bilharzia)
15. Soil-transmitted helminthiases
16. Trachoma
17. Yaws

Source: WHO n.d.

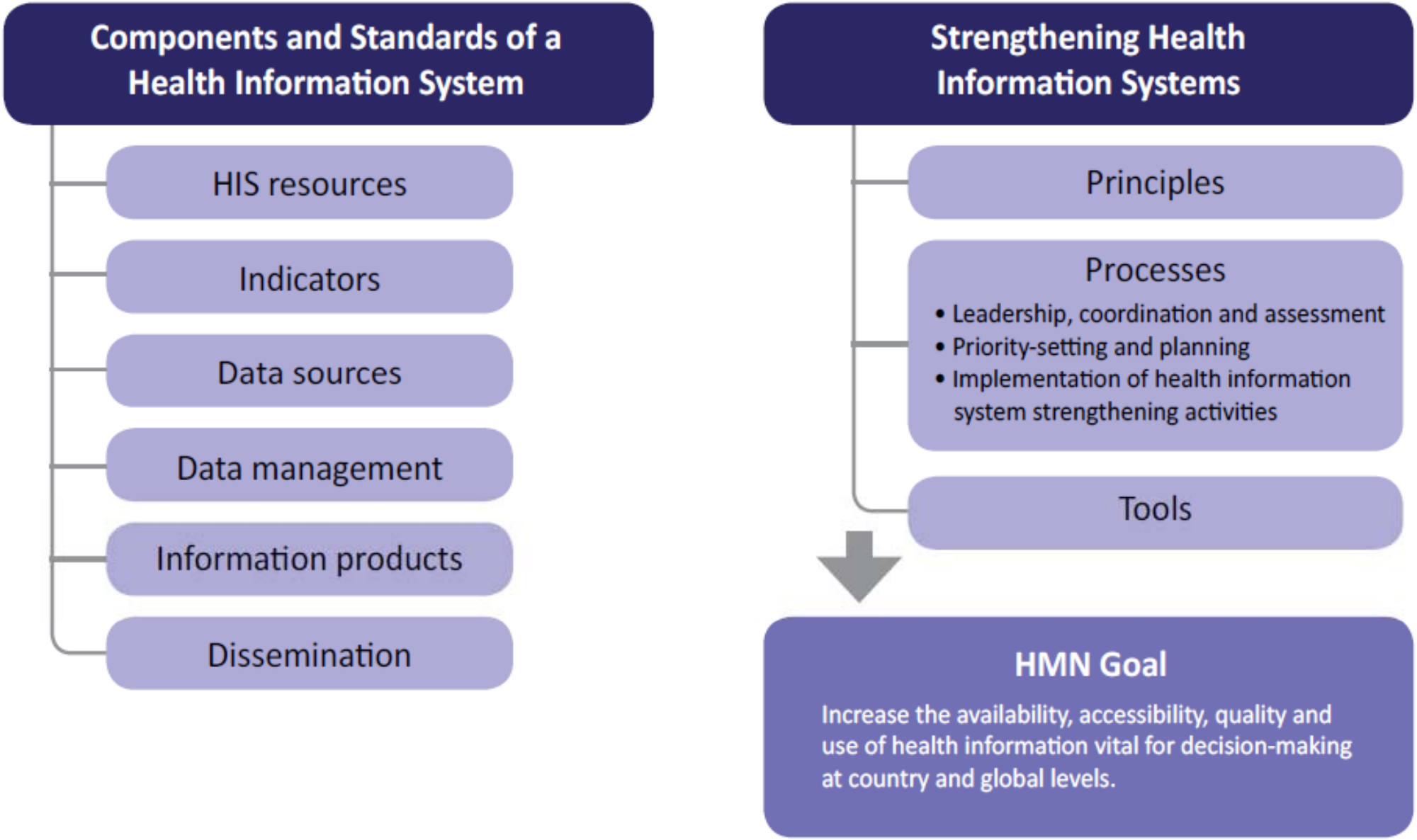

Figure 1: The HMN Framework

Source: HMN 2008, p. 4

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Box 3: HIS challenges in collecting quality NTDs indicator data

Indicator issues	• Definitions of NTDs varied
Measurement issues	• Subtle (ubiquitous) symptoms and burden
	• Chronicity
	• Small to modest levels of disability
	• Lack of reliable diagnostic tools
	• Concurrent infections/multiparasitism
Risk factor	• Community level risks (not only individual risks)
	• Animal reservoirs

Table 1: Examples of neglected tropical disease symptoms

Disease	Symptoms (CDC/WHO)																	
	Malnutrition	Anaemia	Impaired growth & mental performance	Weight loss	Malaise	Itch, rash	Cough	Haemorrhage	Bloods sputum	Pain Discomfort	Nausea & vomitting	Fever	Constipation	Diarrhoea	Skin nodules lesions plaques	Bruising	Blood in urine or stool	Swelling
Buruli Ulcer (Mycobacterium ulcerans infection															✓			✓
Chagas disease (American trypanosomiasis)																		
– early					✓							✓						✓
– late										✓	✓		✓					
Cysticercosis/Taeniasis				✓						✓	✓				✓			
Dengue/Severe dengue						✓	✓	✓		✓	✓	✓				✓		
Echinococcosis (symptoms depend on type and where occurs – these symptoms are for if it occurs in the liver or lungs)				✓	✓	✓	✓		✓	✓	✓	✓						

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Table 2: Variables affecting the assessment of the NTD burden of disease

Type of data	Quality of data	Variables that affect data completeness
Facility-based data	Coverage Diagnostic capacity	Health-seeking behaviour Ubiquitous symptoms
Prevalence, incidence, special datasets	Diagnostic tests	Need to collect test materials (blood, faeces, urine, etc.)
General surveillance	Sensitivity, specificity	Access to field-based, reliable point-of-care diagnostics Questionable performance of diagnostics at low prevalence
Outbreak monitoring	Coverage and response	Community awareness and engagement

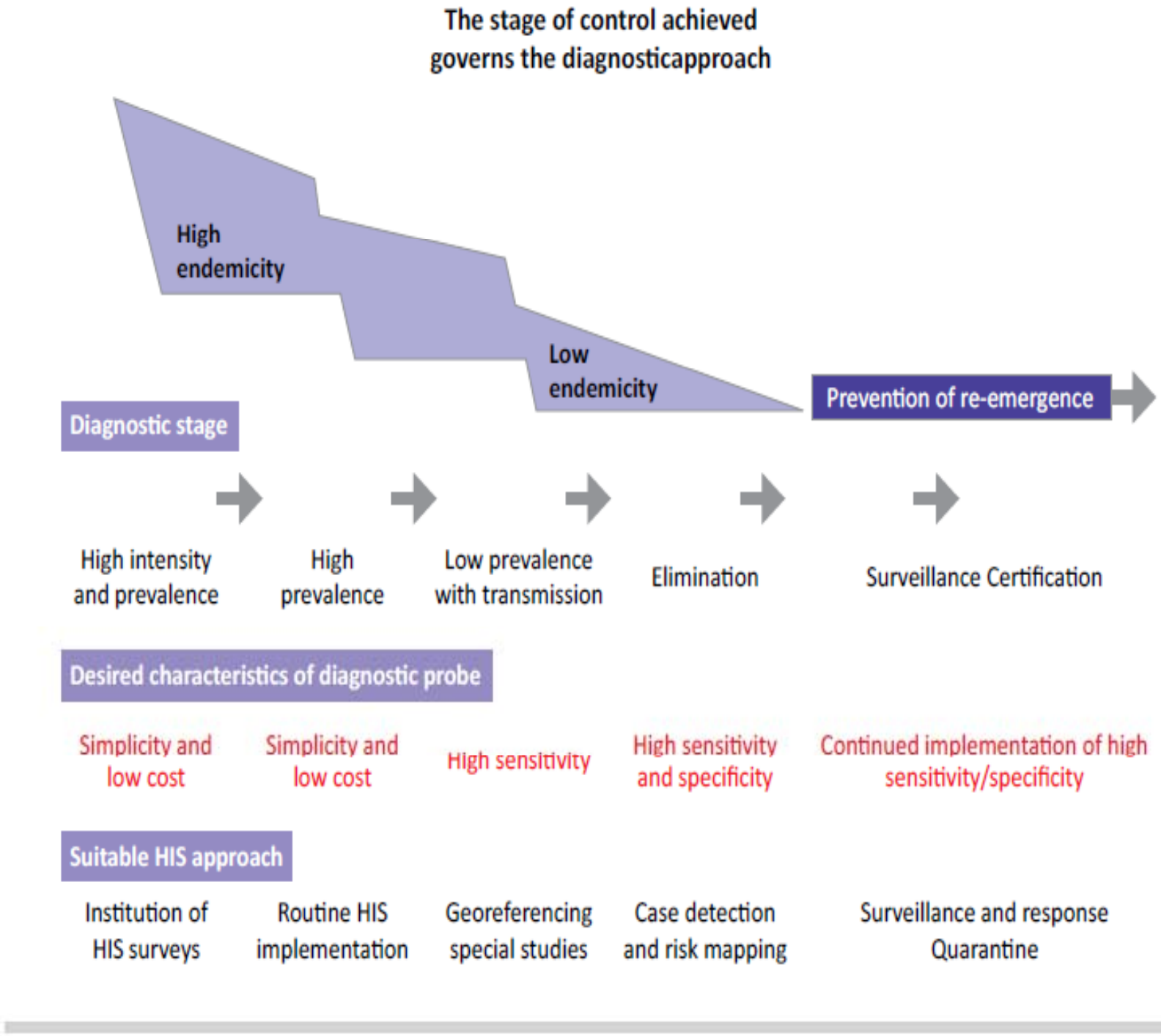

Figure 3: Stage of control and diagnostic approach

Emerging tools for supporting Health Information Systems for One Health approaches to NTDs

- Modern spatial epidemiology describes the geographical distribution and variation of a disease as a function of behavioural, demographic, environmental, genetic and socio-economic determinants and risk factors.

Spatial epidemiology can thus describe:

- areas into which certain diseases can be expected to expand, for example, schistosomiasis in northern China
- important drivers for the (re)-emergence and spread of vector-borne parasitic diseases, such as vector habitat changes
- changing distributions of previously strictly localised endemic human and livestock infections, including chikungunya, dengue,
- effects of other risk factors on distribution of parasites; for example, land surface temperature in influencing the distribution of the STHs
- Geospatial data have an increasing role in disease control programs through activities such as surveillance, targeting of prevention and response, and assisting service delivery operations.

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Table 3: Examples of use of indicators to support NTD program planning and management in the Asia-Pacific region

Type of data	Suggested indicators
Resource inputs	• Human resources • Health system financing • Health facilities (e.g. absolute number, density, geographic accessibility) • Drugs and medical supplies
Health system outputs	• Crude and effective coverage of health services (vector control methods such as indoor and outdoor spraying, bed nets, etc.; case-finding coverage)
Health outcomes	• Mortality rates (infant, child, maternal, adult) • Disease prevalence and incidence • Disabilities • Nutritional status
Other health system outcomes	• Health system responsiveness • Out-of-pocket expenditures
Determinants of health	• Access to safe water and sanitation • Animal health infectious disease prevalence and distribution • Access to cooking fuel • Cultural practices, e.g. food preferences • Educational attainment • Wealth • Environmental factors (e.g. access to clean water, type of fuel used for cooking)

Source: adapted from Mokdad et al. 2009b

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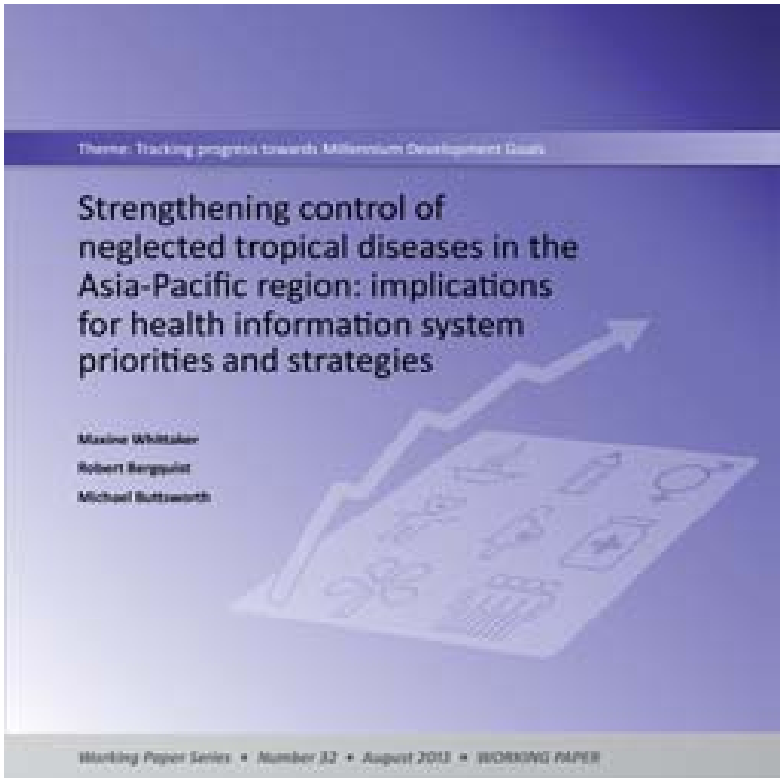
Table 4: HIS improvements to address neglected tropical diseases in low- and middle-income countries

	Components of HIS[1]	Minimum HIS improvements	Additional improvements
Inputs	Legislation/regulation	• Build on the IHR-strengthening activities in LMIC	• Improved structures for coordination • Enabling by-laws and regulations
	Information and Communication Technology (ICT)	• Use of simple software/open source to make graphs	• mHealth applications • Open-source mapping software • GIS and RS
	Human and other resources	• Existing staff trained in using existing clinical and diagnostic skills in animal and human health	• Improved diagnostic capacity and tools
Processes	Data indicators	• Use of existing data in RHIS and surveys • Risk factor data from various sectors made available to health sector	• Specific indicators based on confirmatory diagnosis for NTDs
	Data sources	• Use of data from surveys and RHIS	• Special epidemiological studies
	Data management	• Simple spreadsheet software	• Special georeferenced software • Linked data sets
Outputs	Information products, use and dissemination	• Simple graphs and diagrams • Face-to-face communication	• Interactivity

[1] See Figure 1

THANK YOU



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