

Comparing laboratory surveillance with the notifiable diseases surveillance system in South Africa

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Outline

- Background
- Objectives
- Methods
- Key Results
- Conclusion
- Recommendations
- Acknowledgements





Background

- Global emergence of infectious disease epidemics underscore need for strong country-based, notifiable diseases surveillance systems (NDSS)
- Regular evaluation of NDSS needed
- In South Africa - no systematic and objective evaluation of the National NDSS





Objectives

- Determine and compare the NDSS and laboratory system attributes of:
 - data quality
 - stability
 - representativeness
 - sensitivity
 - positive predictive value (PPV)





Methods

- Retrospective record review- study period: 1 January 2013 - 31 December 2013
 - NHLS Central Data Warehouse
 - Records of notifications at Department of Health
- Comparison of 3 tracers:
 - Measles-clinical suspicion
 - Meningococcal meningitis-clinical suspicion
 - Typhoid-laboratory confirmation
- Matched each case in NDSS with lab records
 - Sensitivity (proportion of cases detected)
 - PPV (proportion of cases that actually have the disease)
- **Exclusion criteria : inconclusive diagnosis**





Data Analysis

- Microsoft Excel
 - completeness (quality)
 - stability (reliability in providing diagnostic result) and
 - representativeness (coverage per province)
- Stata 14
 - Nonparametric Wilcoxon test - completeness
 - Chi-square test – stability and representativeness
 - P-values < 0.05 significant
 - 95% CI – sensitivity and PPV





Key Findings – Sample

- NHLS laboratory tests 2013
 - 8 310 measles
 - 8 862 meningococcal
 - 24 516 typhoid
- Final sample size - excluding inconclusive diagnosis
 - 8 228 measles;
 - 8 714 meningococcal
 - 24 264 typhoid





Key Findings – Cases

Tracer	Laboratory	NDSS
Measles	173	113
Meningococcal meningitis	233	128
Typhoid	64	28



Key Findings - Attributes

Attributes	Measles			Meningococcal Meningitis			Typhoid		
	NDSS	Lab	p-value	NDSS	Lab	p-value	NDSS	Lab	p-value
	Completeness Median %	47	63	<0.001	57	63	<0.001	63	60
Stability %	24	100	<0.001	74	100	<0.001	36	100	<0.001
Representativeness %	67	100	0.058	56	100	0.023	44	100	0.009

Key Findings - Attributes

Attributes	Measles		Meningococcal Meningitis		Typhoid	
		95% CI		95% CI		95% CI
Sensitivity %	50	15.7 - 84.3	98	90.9 - 100	93	66.1 - 99.8
Positive Predictive Value%	20	5.7 - 43.7	57	46.7 - 66.6	81	54.4 - 96.0





Conclusion

- Compared to laboratory surveillance, the NDSS performed poorly on most system attributes
- Results suggest poor clinician compliance with the NDSS in spite of legal obligation





Recommendations

- Revitalisation of NDSS should address key attributes
- Need to compel laboratories to notify
 - Requires revisions of regulations
- Address factors influencing clinicians' compliance

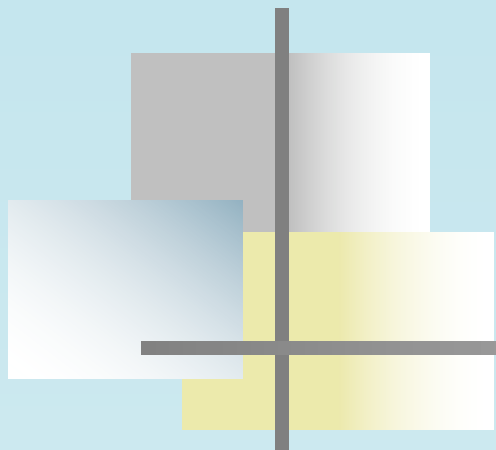




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