Structure and performance of infectious disease surveillance and response, United Republic of Tanzania, 1998

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Objective To assess the structure and performance of and support for five infectious disease surveillance systems in the United Republic of Tanzania: Health Management Information System (HMIS); Infectious Disease Week Ending; Tuberculosis/Leprosy; Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome; and Acute Flaccid Paralysis/Poliomyelitis.
Methods The systems were assessed by analysing the core activities of surveillance and response and support functions (provision of training, supervision, and resources). Data were collected using questionnaires that involved both interviews and observations at regional, district, and health facility levels in three of the 20 regions in the United Republic of Tanzania.
Findings An HMIS was found at 26 of 32 health facilities (81%) surveyed and at all 14 regional and district medical offices. The four other surveillance systems were found at <20% of health facilities and <75% of medical offices. Standardized case definitions were used for only 3 of 21 infectious diseases. Nineteen (73%) health facilities with HMIS had adequate supplies of forms; 9 (35%) reported on time; and 11 (42%) received supervision or feedback. Four (29%) medical offices with HMIS had population denominators to use for data analyses; 12 (86%) were involved in outbreak investigations; and 11 (79%) had conducted community prevention activities.
Conclusion While HMIS could serve as the backbone for IDSR in the United Republic of Tanzania, this will require supervision, standardized case definitions, and improvements in the quality of reporting, analysis, and feedback.

Keywords Communicable diseases/epidemiology/prevention and control; Epidemiologic surveillance; Information systems; Information management; Evaluation studies; United Republic of Tanzania (*source: MeSH, NLM*).

Mots clés Maladie transmissible/épidémiologie/prévention et contrôle; Surveillance épidémiologique; Système information; Gestion information; Etude évaluation; République-Unie de Tanzanie (*source: MeSH, INSERM*).

Palabras clave Enfermedades transmisibles/epidemiología/prevención y control; Vigilancia epidemiológica; Sistemas de información; Gerencia de la información; Estudios de evaluación; República Unida de Tanzanía (*fuente: DeCS, BIREME*).

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Introduction

The surveillance of infectious diseases has recently assumed greater importance because of emerging and re-emerging infectious diseases, and because strains of pathogens causing TB, malaria, cholera, dysentery, and pneumonia have developed resistance to antibiotics (*1–3*). But in Africa, where infectious diseases continue to be a major health problem, many of the national surveillance systems ensure neither timely detection nor an effective response to them (*4*). To address this issue, in 1998 the World Health Organization Regional Office for Africa approved the Integrated Disease Surveillance and Response (IDSR) strategy for strengthening infectious disease surveillance and response capacity among its 46 Member States and requested that Member States conduct assessments of their IDSR systems (*5*), the findings of which would act as a baseline for reform plans. The IDSR strategy is to link an integrated and action-oriented infectious disease surveillance system with response at the district level. This approach takes into account the decentralization of government functions — including activities related to public health (e.g. surveillance, response, budgeting, planning, and management) — that is currently under way in many African countries.

In 1998, the Ministry of Health of the United Republic of Tanzania used five separate surveillance systems to monitor infectious diseases: Health Management Information System (HMIS); Infectious Disease Week Ending (IDWE); Tuberculosis (TB)/Leprosy; Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS); and Acute Flaccid Paralysis (AFP)/Poliomyelitis). As part of health sector reform, the Ministry of Health requested support from the United States Agency for International Development (USAID), WHO, and the United States Centers for Disease Control and Prevention (CDC) to conduct the assessment of these disease surveillance systems and their response capacity,

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and also requested help in developing a plan of action. This report describes the results of the assessment, the first IDSR assessment in Africa.

Methods

A functioning infectious disease surveillance system includes the following core activities: detection; confirmation and registration of cases; reporting; data analysis and interpretation; feedback; and dissemination. Core activities of the associated response capacity include immediate responses (e.g. outbreak investigations) and planned responses (e.g. community prevention activities). Health authorities support the surveillance and response system by providing training, supervision and resources (*6*).

The assessment tool used in this study was based on these core activities of surveillance and response and support functions (provision of training, supervision, and resources). The assessment indicators were designed to measure the performance of core activities and support functions objectively. Data were collected using questionnaires that involved both interviews and observations. The questionnaires were pretested in Dar es Salaam and Coast Regions and were modified before the field assessment. Before conducting the assessment we held meetings with stakeholders (for example, governmental and nongovernmental organizations and private practitioners) and also learnt about the structure of the health care services and the infectious diseases surveillance systems in the United Republic of Tanzania.

Study setting and scope

We assessed the existence and performance of the five infectious disease surveillance systems used by the Tanzanian Ministry of Health in 1998: HMIS; IDWE; HIV/AIDS; TB and Leprosy; and AFP/Poliomyelitis. The infectious diseases under surveillance in HMIS included measles; acute respiratory infections; diarrhoeal diseases; pneumonia; eye, ear, and skin infections; fungal infections; sexually transmitted infections; urinary tract infections; pelvic inflammatory diseases; schistosomiasis; TB; leprosy; and HIV/AIDS.

Diseases under surveillance in IDWE were cholera; plague; relapsing fever; yellow fever; AFP; dysentery and other diarrhoeas; malaria; measles; meningococcal meningitis; neonatal tetanus; rabies; and typhoid fever. TB/Leprosy, HIV/AIDS, and AFP/Poliomyelitis surveillance systems conducted surveillance for their respective diseases.

The assessment was carried out at the regional, district, and health facility levels in three of the 20 regions in the United Republic of Tanzania (i.e. Dodoma, Kilimanjaro, and Mwanza). The regions were selected by the Tanzanian Ministry of Health to reflect the range of infectious disease surveillance and response capacity in the United Republic of Tanzania. Within each region, we assessed an urban district and two or three randomly selected rural districts. Within each district we randomly selected three or four health facilities for assessment. Assessment teams interviewed the administrative head of each of the five surveillance systems and made observations at each site they visited. We created frequency distribution tables for the performance indicators, stratified by health care level. Data from the assessment were entered into an Epi Info version 6.04 database (*7*).

Results

Structure of the Ministry of Health, United Republic of Tanzania

The Tanzanian Ministry of Health was organized into one central level with 20 regional medical offices, 115 district medical offices, and 3997 health facilities (195 hospitals, 302 health centres, and 3500 dispensaries; Fig. 1), and had an estimated population to health facility ratio of 7500:1 (*8*). Teams gathered complete data from 46 of 50 sites surveyed (3 regions, 11 districts, and 32 health facilities). The health facilities included 10 hospitals (6 government, 4 private), 8 health centres (5 government, 3 private) and 14 dispensaries (8 government, 6 private). In addition, the teams surveyed 21 laboratories: 12 primary laboratories (at dispensaries or health centres), 7 secondary laboratories (at district or regional hospitals), and 2 tertiary laboratories (at supraregional or zonal hospitals). Before the field assessment, national-level surveillance staff defined the surveillance and response activities occurring at each level of the health ministry (Fig. 1). The staff also revealed that the health ministry had standard case definitions for only three diseases: measles, neonatal tetanus, and poliomyelitis.

Fig. 1. **Structure of five infectious disease surveillance systems[a] by health care level, United Republic of Tanzania, 1998**

Health care level	Core activity and support	Total no. of offices or facilities	No. of offices or facilities surveyed
Central medical office	Analyses Feedback Supervision Training Resource provision	1	0 (0)[b]
Reporting			
Regional medical office	Supervision	20	3 (15)
Reporting			
District medical office	Analyses Outbreak investigation Community prevention Supervision Feedback Resource provision	115	11 (10)
Reporting			
Health facility (Hospitals, health centres, dispensaries)	Detection Registration Confirmation	3997	32 (1)

[a] The five surveillance systems were: Health Management Information System; Infectious Disease Week Ending; Tuberculosis/Leprosy; Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome; and Acute Flaccid Paralysis/Poliomyelitis.

[b] Figures in parentheses are percentages.

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Surveillance and response at health facilities

The HMIS was found most frequently at the health facility level (26 of 32 health facilities (81%)) with the four other surveillance systems occurring far less often (Table 1). All health facilities with the HMIS and TB/Leprosy surveillance system had outpatient registers and 83% of them had an adequate supply of outpatient register books in the 6 months preceding the assessment.

Although a majority (86%) of the personnel using the five surveillance systems found the reporting forms easy to use, all found that completing them was too time consuming (except for the IDWE form). Compliance with the requirement of submitting a report was also poor: the submission rate was highest for the HMIS, but even then only 9 of 26 health facilities (35%) submitted all four previously required reports (Table 1). "Zero" reporting (reporting that the number of cases of disease was zero) was frequently found in all surveillance systems. Receipt of feedback at health facilities ranged from 20% to 100%.

Supervision was regularly conducted in the TB/Leprosy surveillance system (in two of the three health units with the TB/Leprosy surveillance system; Table 2). In health facilities

Table 1. **Infectious disease surveillance at 32 health facilities,[a] United Republic of Tanzania, 1998: performance of core activities**

Core activity	Surveillance system				
	HMIS[b] *n* = 26	IDWE[c] *n* = 1	TB[d]/Leprosy *n* = 3	HIV/AIDS[e] *n* = 5	AFP[f]/Poliomyelitis *n* = 5
Detection and registration					
Community-reported cases of disease	17 (65)[g]	1 (100)	1 (33)	3 (60)	1 (20)
Had an outpatient register	26 (100)	NA[h]	3 (100)	NA	NA
Had adequate supply of outpatient registers in previous 6 months	23 (88)	NA	3 (100)	NA	NA
Reporting					
Had adequate supply of reporting forms in previous 6 months	19 (73)	1 (100)	3 (100)	3 (60)	4 (80)
Found reporting forms easy to use	18 (69)	1 (100)	3 (100)	3 (60)	5 (100)
Found reporting forms too time consuming	15 (58)	0 (0)	2 (67)	1 (20)	3 (60)
Submitted all four previously required reports[i]	9 (35)	0 (0)	1 (33)	1 (20)	1 (20)
Had zero reporting[j]	25 (96)	1 (100)	3 (100)	3 (60)	4 (80)
Feedback					
Received feedback from higher levels	11 (42)	1 (100)	2 (67)	2 (40)	1 (20)

[a] Health facilities include hospitals, health centres, and dispensaries.
[b] HMIS = Health Management Information System.
[c] IDWE = Infectious Disease Week Ending.
[d] TB = Tuberculosis.
[e] HIV/ AIDS = Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome.
[f] AFP = Acute Flaccid Paralysis.
[g] Figures in parentheses are percentages, calculated from the total numbers of health facilities with the respective surveillance system.
[h] NA = not applicable.
[i] Demonstrates complete reporting.
[j] Zero reporting = reporting that the number of cases of disease was zero.

Table 2. **Infectious disease surveillance at 32 health facilities,[a] United Republic of Tanzania, 1998: performance of support activities**

Support activity	Surveillance system				
	HMIS[b] *n* = 26	IDWE[c] *n* = 1	TB[d]/Leprosy *n* = 3	HIV/AIDS[e] *n* = 5	AFP[f]/Poliomyelitis *n* = 5
Supervision (by district level)					
Surveillance activities supervised in 6 months before the assessment	11 (42)[g]	0 (0)	2 (67)	1 (20)	2 (40)
Surveillance activities reviewed during three prior visits	22 (85)	0 (0)	3 (100)	2 (40)	1 (20)
Surveillance data reviewed during past year	21 (81)	0 (0)	3 (100)	2 (40)	1 (20)
Feedback provided on surveillance during past year	21 (81)	0 (0)	2 (67)	2 (40)	0 (0)
Implementation of prior recommendations checked during most recent visit	16 (62)	0 (0)	2 (67)	2 (40)	0 (0)
Training					
Received post-basic training in general epidemiology	0 (0)	1 (100)	0 (0)	1 (20)	0 (0)
Received post-basic training in surveillance	21 (81)	1 (100)	2 (67)	3 (60)	2 (40)
Satisfied with surveillance system	10 (38)	0 (0)	1 (33)	1 (20)	3 (60)

[a] See footnote a, Table 1.
[b] See footnote b, Table 1.
[c] See footnote c, Table 1.
[d] See footnote d, Table 1.
[e] See footnote e, Table 1.
[f] See footnote f, Table 1.
[g] See footnote g, Table 1.

using the HMIS, the frequency of supervision was relatively low, but the supervisors also provided the most written feedback on surveillance performance. On average, 70% of personnel using the systems at health facilities had received some training in surveillance, which consisted mainly of workshops on how to use the surveillance systems. However, only two people in all five surveillance systems had received training in general epidemiology. Few users (0–38%) reported that they were satisfied with the surveillance systems, with the exception of those using the AFP/Poliomyelitis system (60% were satisfied) (Table 2).

Regional and district medical offices

All regional and district medical offices surveyed used the HMIS; 10 offices used TB/Leprosy and IDWE; fewer than 10 offices used the other systems. The majority of health personnel operating the surveillance systems at the regional and district medical offices had an adequate supply of surveillance forms and found them easy to use and not too time consuming to complete. The submission of reports, however, was poor. For example, only 40% of regional and district medical offices with the IDWE system submitted all four previously required reports (Table 3). Most users of the five systems at the regional and district medical offices analysed data on site by person and by time. However, apart from users of the HIV/AIDS system, few users prepared trends. Incidence and prevalence were rarely calculated in any system, even though some users had appropriate population data.

At district and regional levels, most users of the HMIS, IDWE, and AFP/Poliomyelitis systems had been involved in outbreak investigation, and most HMIS and IDWE users had endeavoured to modify community education after outbreaks (Table 3). Health personnel using IDWE (70%) and HMIS (93%) had held meetings with the community in the previous year. Local data were used to implement community prevention and control measures in 50–80% of the regions and district surveyed.

Receipt of feedback from a higher administrative level by users of the surveillance systems at the regional and district level is presented in Table 4. At least 60% of health personnel using the surveillance systems, except for the HIV/AIDS system, updated their staff on findings of outbreak investiga-

Table 3. **Infectious disease surveillance and response at 14 regional and district medical offices, United Republic of Tanzania, 1998: performance of core activities**

Core activity	Surveillance system				
	HMIS[a] *n* = 14	IDWE[b] *n* = 10	TB[c]/Leprosy *n* = 10	HIV/AIDS[d] *n* = 8	AFP[e]/Poliomyelitis *n* = 9
Reporting					
Had adequate supply of reporting forms in previous 6 months	10 (71)[f]	5 (50)	8 (80)	4 (50)	7 (78)
Found reporting forms easy to use	12 (86)	7 (70)	8 (80)	5 (63)	9 (100)
Found reporting forms too time consuming	2 (14)	2 (20)	4 (40)	1 (13)	2 (22)
Submitted all four previously required reports[g]	3 (21)	4 (40)	2 (20)	0 (0)	2 (22)
Had zero reporting[h]	13 (93)	10 (100)	NA[i]	NA	9 (100)
Analysis					
Analysed data by person	10 (71)	9 (90)	7 (70)	4 (50)	7 (64)
Analysed data by place	7 (50)	2 (20)	4 (40)	2 (25)	5 (55)
Analysed data by time	9 (64)	7 (70)	7 (70)	5 (63)	9 (100)
Prepared trend data	0 (0)	0 (0)	2 (20)	5 (63)	3 (33)
Had population denominator data	4 (29)	3 (30)	0 (0)	5 (63)	3 (33)
Calculated case fatality rates	2 (14)	1 (10)	0 (0)	0 (0)	0 (0)
Calculated incidence or prevalence values	0 (0)	1 (10)	2 (20)	0 (0)	1 (11)
Outbreak investigation					
Conducted or been involved in an outbreak investigation	12 (86)	9 (90)	NA	NA	5 (56)
Modified community educational activities after outbreak	12 (86)	9 (90)	NA	NA	1 (11)
Community prevention and control					
Implemented community prevention and control measures based on local data	11 (79)	8 (80)	5 (50)	5 (63)	6 (67)
Conducted community survey within past 2 years	10 (71)	2 (20)	NA	NA	1 (11)
Conducted at least one meeting with community in past year	13 (93)	7 (70)	2 (20)	3 (38)	4 (44)
Feedback					
Received feedback from a higher level	5 (36)	5 (50)	7 (70)	4 (50)	6 (75)
Updated health staff on outbreaks or local data	11 (79)	7 (70)	6 (60)	3 (38)	7 (78)

[a] See footnote b, Table 1.
[b] See footnote c, Table 1.
[c] See footnote d, Table 1.
[d] See footnote e, Table 1.
[e] See footnote f, Table 1.
[f] See footnote g, Table 1.
[g] See footnote i, Table 1.
[h] See footnote j, Table 1.
[i] See footnote h, Table 1.

Table 4. **Infectious disease surveillance and response at 14 regional and district medical offices, United Republic of Tanzania, 1998: performance of support activities**

Support activity	Surveillance system				
	HMIS[a] *n* = 14	IDWE[b] *n* = 10	TB[c]/Leprosy *n* = 10	HIV/AIDS[d] *n* = 8	AFP[e]/Poliomyelitis *n* = 9
Supervision (by national level)					
Surveillance activities supervised in 6 months before the assessment	3 (21)[f]	2 (20)	7 (70)	2 (25)	4 (44)
Surveillance activities reviewed during three prior visits	8 (57)	3 (30)	8 (80)	2 (25)	5 (55)
Surveillance data reviewed during past year	8 (57)	4 (40)	8 (80)	1 (13)	5 (55)
Feedback provided on surveillance during past year	6 (43)	3 (30)	7 (70)	0 (0)	5 (55)
Implementation of prior recommendations checked during most recent visit	5 (36)	2 (20)	7 (70)	0 (0)	3 (33)
Training					
Received post-basic training in general epidemiology	0 (0)	3 (30)	3 (30)	1 (13)	1 (11)
Received post-basic training in surveillance	8 (57)	4 (40)	4 (40)	3 (38)	9 (100)

[a] See footnote b, Table 1.
[b] See footnote c, Table 1.
[c] See footnote d, Table 1.
[d] See footnote e, Table 1.
[e] See footnote f, Table 1.
[f] See footnote g, Table 1.

tions or local data (e.g. trends in diseases in their locality). Supervision of surveillance at the regional and district medical offices was most regularly performed in the TB/Leprosy system and least regularly performed in the HIV/AIDS system (supervision rates in the previous 6 months of 67% and 20%, respectively). Very few health personnel at regional and district medical offices had received post-basic training in general epidemiology. Although all users of the AFP/Poliomyelitis surveillance system at the regional and district level had received post-basic surveillance training, personnel training levels in the other systems ranged from 38% to 57%.

Overall, more resources were available at the regional and district medical offices than at the health facilities (Table 5). Not every health facility had paper necessary to register patients and not every health facility had access to public transport or postal services required for reporting to the district. Although all regional and district medical offices had a motor vehicle, only 69% had regular funds for fuel. Calculators were available for data analyses at all the regional and district medical offices. Only five health facilities and four district offices had working computers. Resources for reporting were optimal at district and regional medical offices (all had access to the postal service), 77% had working telephones, and 31% had radio-call facilities.

We also evaluated 21 laboratories (12 primary, 7 secondary, and 2 tertiary) (Table 6). We found that all 12 primary laboratories could test for malaria, all seven secondary laboratories could test for TB in addition to malaria, and both tertiary laboratories could test for every infectious disease evaluated, except poliomyelitis and yellow fever. A few laboratories could perform drug susceptibility testing for *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Mycobacterium tuberculosis*. One tertiary laboratory could perform in vitro drug susceptibility for *Plasmodium falciparum*.

Table 5. **Resources available for infectious disease surveillance and response at health facilities and at regional and district medical offices, United Republic of Tanzania, 1998**

Resource	Health facilities *n* = 32	District and regional medical offices[a] *n* = 13
Paper	25 (78)[b]	11 (85)
Calculator	25 (78)	13 (100)
Telephone	14 (44)	10 (77)
Radio-call facilities	2 (6)	4 (31)
Electricity	22 (69)	11 (85)
Motor vehicle	11 (34)	13 (100)
Motor cycle	5 (16)	8 (62)
Funds for fuel	9 (28)	9 (69)
Public transport	26 (81)	12 (92)
Postal service	22 (69)	13 (100)
Computer	5 (16)	4 (31)

[a] Complete data were obtained from 13 of the 14 regional and district medical offices.
[b] Figures in parentheses are percentages.

Discussion

In the United Republic of Tanzania, none of the five surveillance systems was adequately implemented and none of the core or support activities was adequately performed at any level of the health care system. Furthermore, although data analysis was carried out, incidence and prevalence were rarely calculated. Trends in disease outbreaks were also seldom tracked. At district and regional levels, there was a paucity of critical resources for surveillance activities and personnel lacked training in epidemiology.

Nevertheless, the assessment revealed strengths: notably the availability of registers; laboratory facilities for confirming infectious diseases; widespread training in surveillance; reports of outbreak investigations; and the institution of community

Table 6. **Laboratory capacity for confirming infectious diseases, United Republic of Tanzania, 1998**

Laboratory capacity	Type of laboratory		
	Primary[a] *n* = 12	Secondary[b] *n* = 7	Tertiary[c] *n* = 2
Tests for:			
Cholera	1 (8)[d]	5 (71)	2 (100)
Plague	1 (8)	1 (14)	2 (100)
Relapsing fever	4 (33)	5 (71)	2 (100)
Yellow fever	0 (0)	0 (0)	0 (0)
Poliomyelitis	0 (0)	0 (0)	0 (0)
Dysentery	7 (58)	4 (57)	2 (100)
Malaria	12 (100)	7 (100)	2 (100)
Meningitis	2 (17)	6 (86)	2 (100)
Typhoid	3 (25)	4 (57)	2 (100)
Trypanosomiasis	1 (8)	3 (43)	2 (100)
Tuberculosis	5 (42)	7 (100)	2 (100)
Leprosy	3 (25)	7 (100)	2 (100)
Onchocerciasis	1 (8)	0 (0)	2 (100)
Drug susceptibility tests for:			
Plasmodium falciparum	0 (0)	0 (0)	1 (50)
Streptococcus pneumoniae	1 (8)	2 (29)	2 (100)
Mycobacterium tuberculosis	0 (0)	1 (14)	1 (50)
Haemophilus influenza	1 (8)	1 (14)	2 (100)

[a] At dispensaries or health centres.
[b] At district or regional hospitals.
[c] At supraregional or zonal hospitals.
[d] Figures in parentheses are percentages.

prevention and control activities at district and regional levels. These strengths, together with resources available as part of the worldwide effort to eradicate poliomyelitis, can be used as a starting point to strengthen infectious disease surveillance and response in the United Republic of Tanzania.

Several areas in the five surveillance systems were amenable to integration, which would lead to better use of scarce resources. The HMIS could form the core of a reformed and integrated disease surveillance system, since most health facilities were already using the system. Personnel using the HMIS should be provided with standardized case definitions; access to laboratories for confirming disease diagnosis; simplified forms and reports; improved methods of reporting; regular supervision and feedback; and more resources.

At the district and regional levels, the five surveillance systems functioned with similar levels of performance, suggesting that some activities may be duplicated and scarce resources wasted (although we did not assess waste directly). Integration could begin by combining the support functions of the five surveillance systems (supervision, training, and resource provision), which would improve efficiency. Surveillance requires dedicated personnel and we propose that the districts provide a full-time coordinator for all infectious disease surveillance programmes. The coordinator could receive data and turn them into information (e.g. trends and rates) that district authorities could use to take appropriate action. Coordinators would require training in general epidemiology and surveillance and data analyses, and would also require regular supervision, which improves dedication and performance of public health duties (*4, 9*). To attract dedicated people, surveillance coordinators should be incorporated into the public-service sector with a defined career path.

Before collecting data, districts would have to decide to which data they have the capacity to respond. This would lead to an infectious disease surveillance system that is "action-led" (i.e. only data required to initiate action are collected), rather than "data-led" (i.e. comprehensive data are collected). For the IDSR to be effective, coordination of epidemic preparedness and response, and the sharing of resources (e.g. vehicles, supervisory visits, and training), would have to be encouraged. An example of an action-led integrated disease surveillance and response system that was built off disease surveillance is in the Indian state of Tamil Nadu (*10*). In addition to vaccine-preventable diseases, surveillance is conducted in Tamil Nadu for encephalitis, meningitis, hepatitis, rabies, typhoid, malaria, and HIV/AIDS. Sentinel laboratory surveillance of cholera is also carried out and antimicrobial resistance patterns of selected pathogens are performed within government and private health facilities. This system has visible public health interventions in response to the data collected and regular monthly feedback from the health authorities is given to the health workers collecting the data.

Traditionally, surveillance has been evaluated in terms of qualitative attributes (simplicity, flexibility, and acceptability), quantitative attributes (sensitivity, positive predictive value, representativeness, and timeliness) and features of usefulness and cost (*11*). However, the traditional approach is limited because in most instances it can only evaluate one surveillance system at a time, does not allow for country-level, intersystem comparisons, and may not identify areas amenable to integration. Furthermore, the traditional approach does not consider infrastructure and it requires the presence of a gold standard for comparison, which is seldom available in developing countries.

Nevertheless, using the traditional approach for comparison purposes, we can assume the sensitivity of the infectious disease surveillance systems in the United Republic of Tanzania might be high, because a large proportion of health facilities had outpatient clinic registers and could potentially record all patients who came to the facility (though not patients in the community). Conversely, because of the lack of standardized case definitions (the Ministry of Health used only three), the specificity and predictive value for infectious diseases surveillance was probably poor. The timeliness of all the five systems was poor: at all health care levels, most personnel had not submitted the four previously required reports. It is also likely that the surveillance system in the United Republic of Tanzania does not represent actual disease status, because four of the five systems were not widely implemented at health facilities (the exception was the HMIS) (Table 1).

While most users of the surveillance systems found the questionnaire forms easy to use, users at the health-facility level found the forms too time consuming to complete, which had a negative impact on measures of questionnaire simplicity and acceptability. Indeed, a majority of personnel were not satisfied with the systems (Table 2), implying that the acceptability of the surveillance systems was poor. In contrast, most personnel using the HMIS, IDWE, and AFP/Poliomyelitis systems reported having been involved in outbreak investigations, and personnel at all five surveillance systems were involved in community prevention and control activities (Table 3). The surveillance systems could thus be described as useful. However, we did not evaluate whether the data were used to

make programme decisions, which would more directly determine their usefulness.

The surveillance assessment tool used in this report had limitations. For example, the indicators used to measure the performance of core activities and support may require further refinement. The assessment was also incomplete, since we did not evaluate the central level of the Tanzanian Ministry of Health. Furthermore, the laboratory component of the assessment did not describe the laboratory networks that may have been present, nor did it evaluate specimen collection and transport methods.

The findings of the Tanzanian Ministry of Health infectious disease surveillance assessment were used to develop a 5-year plan of action to improve infectious disease surveillance and implement the IDSR strategy in the United Republic of Tanzania (*12*). The methods and the tools used for the assessment have been improved, including the addition of a detailed laboratory section and a pilot questionnaire to evaluate the central level, and subsequently adopted for infectious disease surveillance and response capacity assessments in several countries in Africa, as they implement IDSR (*13, 14*). ■

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Conflicts of interest: none declared.

Résumé

Structure et performance des systèmes de surveillance et de riposte concernant les maladies infectieuses, République-Unie de Tanzanie, 1998

Objectif Evaluer la structure et la performance de cinq systèmes de surveillance des maladies infectieuses en République-Unie de Tanzanie ainsi que leurs fonctions d'appui : système d'information pour la gestion de la santé (HMIS) ; système de notification hebdomadaire des maladies infectieuses (IDWE) ; tuberculose/ lèpre : virus de l'immunodéficience humaine/syndrome d'immunodéficience acquise ; paralysie flasque aiguë/poliomyélite.

Méthodes Pour évaluer les systèmes, nous avons analysé leurs activités centrales (surveillance et riposte) ainsi que leurs fonctions d'appui (sous forme de formation, de supervision et d'allocation de ressources). Les données ont été recueillies à l'aide de questionnaires et provenaient aussi bien d'entretiens que d'observations aux niveaux de la région, du district et de l'établissement de soins dans trois des 20 régions de République-Unie de Tanzanie.

Résultats Un HMIS a été trouvé dans 26 des 32 (81 %) établissements de soins enquêtés et dans la totalité des 14 bureaux médicaux de district et de région. Les quatre autres systèmes de surveillance ont été trouvés dans moins de 20 % des établissements de soins et moins de 75% des bureaux médicaux. Des définitions normalisées de cas n'étaient utilisées que pour 3 des 21 maladies faisant l'objet d'une surveillance. Parmi les établissements disposant d'un HMIS, 19 (73 %) avaient des formulaires en quantité suffisante, 9 (35 %) effectuaient les notifications en temps voulu, et 11 (42 %) bénéficiaient d'une supervision ou d'un retour d'information. Parmi les bureaux médicaux disposant d'un HMIS, 4 (29 %) étaient en mesure d'utiliser des dénominateurs de population pour l'analyse des données, 12 (86 %) participaient à des investigations sur les flambées de cas, et 11 (79 %) avaient mené des activités de prévention dans la communauté.

Conclusion Même si le HMIS peut jouer un rôle majeur dans la stratégie de surveillance intégrée des maladies (IDSR) en République-Unie de Tanzanie, il faudra développer les activités de supervision et l'utilisation des définitions normalisées de cas et améliorer la qualité de la notification, de l'analyse des données et du retour d'information.

Resumen

Estructura y desempeño del sistema de vigilancia y respuesta para las enfermedades infecciosas, República Unida de Tanzanía, 1998

Objetivo Evaluar la estructura y el desempeño, así como el apoyo que recibían, de cinco sistemas de vigilancia de las enfermedades infecciosas implantados en la República Unida de Tanzanía: el Sistema de Información para la Gestión Sanitaria (SIGS); la Información semanal contra las enfermedades infecciosas (IDWE); Tuberculosis/Lepra; Virus de la Inmunodeficiencia Humana/ Síndrome de Inmunodeficiencia Adquirida; y Parálisis Fláccida Aguda/Poliomielitis.

Métodos Los sistemas fueron evaluados analizando las actividades básicas de vigilancia y respuesta y las funciones de apoyo (disponibilidad de capacitación, supervisión y recursos). Los datos se obtuvieron mediante cuestionarios que integraban entrevistas y observaciones efectuadas a nivel regional y distrital y en centros de salud en tres de las 20 regiones de la República Unida de Tanzanía.

Resultados Se halló un sistema de información para la gestión sanitaria en 26 (81%) de los 32 centros de salud encuestados, y en la totalidad de las 14 oficinas médicas regionales y de distrito. En cuanto a los otros cuatro sistemas de vigilancia, disponían de ellos menos del 20% de los centros de salud y menos del 75% de las oficinas médicas. Se usaban definiciones de casos normalizadas únicamente para 3 de las 21 enfermedades infecciosas consideradas. Diecinueve (73%) de los centros de salud que tenían un SIGS contaban también con suministros adecuados de formularios; 9 (35%) notificaban puntualmente los casos; y 11 (42%) recibían supervisión o retroinformación. Cuatro (29%) de las oficinas médicas con SIGS disponían de denominadores de población para el análisis de los datos; 12 (86%) participaban en investigaciones sobre los brotes; y 11 (79%) habían organizado actividades de prevención comunitaria.

Conclusión Los SIGS podrían servir de base para una estrategia de vigilancia y respuesta para las enfermedades infecciosas en la República Unida de Tanzanía, pero ello requerirá supervisión, definiciones de casos normalizadas y mejoras en la calidad de la notificación, el análisis y la retroinformación.

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