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Assessment of in-country capacity to maintain communicable disease surveillance and response services after polio eradication—Somalia

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Abstract

One objective of the 2013–2018 Global Polio Eradication Initiative (GPEI) Strategic Plan was the transition of GPEI polio essential functions to other public health programs [1]. For many developing countries, in addition to polio essential functions, GPEI funding has been supporting integrated communicable disease surveillance and routine immunization programs. As GPEI progresses toward polio eradication, GPEI funding for some polio-free countries is being scaled back. The Somalia Polio Eradication Program, led by international organizations in collaboration with local authorities, is a critical source of immunizations for >2.5 million children. In addition, the polio program has been supporting a range of communicable disease surveillance, basic health services (e.g. routine immunizations) as well as emergency response activities (e.g. outbreak response). To assess current capacities in Somalia, interviews were conducted with representatives of relief organizations and ministries of health (MoHs) from Somaliland, Puntland, and South-Central political zones to elicit their opinions on their agency's capacity to assume public health activities currently supported by GPEI funds. Seventy percent of international and 62% of representatives of domestic relief agencies reported low capacity to conduct communicable disease surveillance without GPEI funds. Responses from MoH representatives for the three zones in Somalia ranged from "very weak" to "strong" regarding capacity to conduct both polio and non-polio related communicable disease surveillance and outbreak response activities. Zones programs are unprepared to provide communicable diseases services if GPEI funding were substantially reduced abruptly. Polio transition planning must strategically plan for shifting of GPEI staffing, operational assets and funding to support identified gaps in Somalia's public health infrastructure.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Keywords

Polio; Eradication; Transition; Somalia; Capacity

1. Introduction

Somalia has been in civil unrest since the 1980s; the central government was overthrown in 1991 and instability has continued, primarily in the South-Central zone. Each of the three current political zones of Somalia has an autonomous government (Fig. 1). Somaliland has an estimated total population of 3.5 million; Puntland of 2.3 million; and South-Central of 8.2 million. Access to health services varies by zone because of population displacement due to political instability and ongoing armed conflict, as well as migration among pastoralist populations. Approximately 9% of Somalia's population is displaced by conflict and 25% of the population practices pastoralism [2]. Routine infant immunization coverage for all antigens is suboptimal and varies widely (40–60%) among the zones [3]; approximately 15% of the 2.9 million Somali children <5 years of age have been unreached for immunizations for several years [4]. The last detected evidence of indigenous wild poliovirus (WPV) transmission was in 2002, but two subsequent outbreaks occurred after WPV importations during 2005–2007 and 2013–2014 [5]; WPV cases were last detected in Somalia in early 2014 [6]. As an indication of very low population immunity, outbreaks of circulating vaccine-derived poliovirus (cVDPV) of both types 2 and 3 began in October 2017 and continue to date [7].

The Somalia Polio Eradication Program, led by the World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) in collaboration with local authorities, is the main supporter of childhood immunizations, communicable disease surveillance and emergency response activities [8]. Relief organizations and MoH, funded through GPEI, provide limited public health services including nutrition, child-maternal health and communicable disease prevention. To assess the readiness to transfer responsibility for communicable disease activities, including immunizations, from GPEI to other agencies in Somalia, informational interviews were conducted with representatives of domestic and international relief organizations and zonal MoHs to assess their current capacities. Additionally, to assess community awareness of communicable disease services, focus group discussions (FGDs) were conducted with community members in each zone. The major themes of discussion were provisions of public health services (including immunizations, maternal and child health, and supply of nutritional support and medicines), and clinical services.

2. Methods

Data collection (interviews and FGDs) was conducted during August–December 2017. A comprehensive list of relief agencies working in the health sector in each zone was developed through consultation with each zonal MoH and with zonal WHO and UNICEF offices. A trained data collector conducted structured interviews with relief agencies and MoH representatives in each zone to assess their organization's perceived current capacity

to carry out polio eradication and non-polio communicable disease control activities. One representative with at least managerial leadership was interviewed from each of the 42 relief agencies identified. Interviewers recorded responses to multiple-choice questions using Open Data Kit® on Android smartphones. Quantitative data was analyzed in Microsoft Excel (2016).

Data collectors conducted FGDs with community members in each zone to assess their views on the ability of relief agencies and MoHs to provide health services. For each FGD, five participants were selected arbitrarily from town residents in a market, and each of the selected participants was asked to identify another person of the same sex who met the inclusion criteria (age > 35 - years, who were parent of at least one child under 5 years age). In total, six focus groups were constructed; each group consisted of 8–10 participants of the same sex. Participants gave verbal consent to participate and recording the FGD sessions; these were conducted in Somali, transcribed and translated into English and deidentified ensuring anonymity of participants. This activity was reviewed in accordance with the Centers for Disease Control and Prevention (CDC) human research protection procedures and was determined to be a non-research, public health program evaluation activity. FGD text was then coded according to themes representative of the question goals and analyzed using NVivo.® Weighted percentages were calculated based on the frequency of the word relative to the total words counted in that response. The scale was adjusted to not include words comprised of less than four letters and to include similar words (e.g. vaccine, vaccinate, vaccination).

3. Results

3.1. Structured interviews

Of the 42 representatives of relief agencies interviewed, 25 were from international agencies and 17 from domestic agencies. Sixteen (38%) international agencies and seventeen (40%) domestic agencies reported an average annual budget of $4.6 million (range: $1800–$6,000,000) targeting communicable diseases. Twenty-two (88%) international relief agency representatives and 13 (76%) domestic relief agency representatives reported that there would be significant resource gaps (e.g., logistics, disease surveillance, laboratory testing) when polio eradication funding from GPEI ceased.

Fourteen of 20 international agency representatives (70%) and 10 of 16 domestic agency representatives (62%) reported that their capacity to carry out overall communicable disease surveillance was very weak or weak (Fig. 2). When asked about their ability to conduct outbreak investigations, 14 of 19 representatives of international agencies (74%) and 11 of 16 local agencies (69%) reported very weak or weak ability (Fig. 2). Fourteen of 15 representatives of international agencies (94%) and 11 of 14 local agencies (79%) reported very weak or weak capacity to respond to a case of polio.

MoH representatives from the Somaliland and South-Central regions rated preparedness to conduct polio surveillance and response activities as mostly very weak or weak. Puntland rated their capacity to conduct AFP surveillance, including AFP case investigation, and routine immunization as strong; their capacity to conduct all other polio related activities

was rated weak (Table 1). For capacity to conduct non-polio communicable disease activities Somaliland gave mostly very weak and weak ratings, South-Central gave mostly weak and fair ratings. Puntland reported mostly strong capacity for all activities except lab testing and scientific innovations where they reported weak capacity.

3.2. Focus group discussions

All FGD groups (6/6) identified WHO and MoH as active health agencies within their communities. Individuals in two of the three zones also recognized other agencies such as Action Against Hunger, World Vision, UNICEF and Save the Children as having a role in health care in their communities. Among crosscutting health services, most frequently emphasized in FGDs were delivery services (weighted percentage 6%), vaccinations (6%), child health (4%), clinical treatment (3%), maternal health (2%), medicines (2%), and nutritional support (1%) (Table 2).

FGD participants felt there were not enough free services and medicine for adult populations; a lack of infrastructure providing needed facilities, clinicians and emergency night services; and too much emphasis on vaccination but not enough on clean water or adult health conditions. Participants did not fault medical staff or agencies for absent services, but rather a lack of resources and funding. For example, participants recognized that "*need for services far outstrips what the agencies can provide* (Somaliland/male) ", and "…*they have limited resources compared to the needs… the medicine or nutritious food might be inadequate; when it happens they try to solve it very quickly by reaching out to other actors* (Puntland/female) ". Participants across the three zones felt doctors were underpaid, not given enough free time, and lacked necessary supplies.

Participants were all aware that WHO led polio eradication efforts in collaboration with the MoH. When asked about public health services provided by polio staff, the most frequently mentioned activities were polio vaccination (5%), door-to-door vaccination campaigns (1%), community health education (1%), and polio eradication (1%). Among non-polio activities, general child health (3%), measles vaccination (2%), disease control (2%), clinical treatment (1%), care for diarrheal diseases (1%), and outbreak control (1%) were the most frequently mentioned activities.

Lastly, participants were asked what they thought about the possibility of transferring polio and non-polio activities to other agencies or the MoH. All participants positively referenced current polio eradication staff and stated that they are well integrated into their communities and possess extensive training and experience. Most respondents said they cannot and should not be replaced: the "*ministry doesn't have capacity to accommodate them* [the polio staff] (Somaliland/male)", and the staff are still needed to protect children from polio and support with other community health services (such us providing other vaccinations). In two instances, participants thought the MoH could take over or other agencies could support but comments were followed with worry about funding or skills transition.

4. Discussion

Interviews with relief agency staff and MoH representatives in each political zone in Somalia revealed their agency's inability to maintain polio essential functions and other communicable disease surveillance and outbreak response activities if polio eradication funds were withdrawn quickly. Participants of FGDs indicated their perception of the importance of outside support to the MoH in all three political zones which roughly mirrored the MoHs' assessments. Conclusions drawn from FGD participants' responses suggest that communities are concerned about losing progress that was gained during the polio eradication initiative, and the negative impact on other health services that could occur if polio resources are withdrawn. These services would collapse if the MoH was expected to fill gaps after cessation of polio funding. Overall, participants believed that the need for services was much larger than what the relief agencies could handle, and that those providing the services needed further support. These findings are supported by conclusions made from the Workshop on Developing Polio Transition Strategies for Somalia which convened its first meeting in April 2018 and was attended by Somalia's MoH, UNICEF, WHO and the CDC [8]. The objective of the workshop was to match the existing polio assets and functions with Somalia's health priorities. Experts from the workshop concluded that 36–50% of Somalia's coverage under non-polio health priorities grouped in the three major health priorities of disease surveillance, basic health services and emergency response, risked being lost after GPEI support ended.

Proper polio transition through careful planning in program structure and finances would be essential to maintain non-polio health priorities in the country. Within the program structure, staffing is critically important for the public health activities to be successful. It is fortunate that a significant number of Somali polio personnel already possess the skillsets to cover non-polio health priorities [8]; careful planning is needed to transition these staff to broader public health roles. In other words, polio staff and infrastructure that are already engaged in non-polio activities should be incorporated into the broader public health planning with clearly defined broader roles. Although some polio staff have already begun taking responsibility in non-polio activities (e.g., surveillance and investigation of reportable communicable diseases), the official terms of reference and job descriptions need to be revised to reflect the integration. Financial support also needs to continue for non-polio and polio-related public health activities; however, there is no foreseeable, dependable source of continued support for non-polio activities once GPEI funding stops. The 2015 annual external funding requirements for Somalia's polio eradication efforts (AFP surveillance, social mobilization, technical assistance, oral polio vaccine and operational costs) were $22.8 million which has the second highest polio budget among the 26 African countries reliant on external funds (totaling $446 million) [9]. Even when removing polio immunization campaign costs which make up the bulk of the funding, the annual polio budget in Somalia is still over $7 million [8].

Mapping the key assets is essential to determine specific future priorities and help direct conversations with stakeholders to redirect GPEI assets to cover the identified priorities [8,9]. Somalia asset maps show an alarming trend of GPEI funding ramp-down from $25.2 million in 2016 to $10.2 million in 2019, a 60% decrease [10]. The Somali government

currently cannot sustain even the smallest budgetary needs without external funding support. To avoid delays or interruptions in public health services, the GPEI has developed guidelines in transitioning polio assets to other areas of public health. Furthermore, participants of the Somalia transition workshop have initiated steps towards polio transition with the goal of achieving full transition of polio assets between 2021 and 2023 [8]; however, realistic concerns regarding the success of this planning include other competing country priorities and a lack of government capacity and ownership of transition activities [11].

Limitations of the assessment presented in this study are that data collected represent opinions of only a single representative from the international/domestic relief agencies and MoH. FGDs were also limited to a purposeful sample of the community and might not be representative of the opinions of the general community. In addition, this study could have benefitted from an in-depth asset mapping and matching current assets and infrastructure with country priorities; however, this study was conducted before transition was ever done in Somalia. The primary objective of our study was to gain a general understanding of Somalia's capacity. Therefore, a detailed asset mapping was beyond the scope of this study. Finally, FGD translation into English could affect the NVivo® analysis based on variation between translators.

The 2019–2023 polio endgame strategy addresses obstacles facing the interruption of all endemic WPV transmission and integrating polio program resources into health and development programs [12]. A Post-Certification Strategy was developed specifying global functions that are essential to maintain a polio-free world, and that will be incorporated into existing health structures [13]. To continue these functions, low-resource countries previously at high-risk for poliovirus circulation such as Somalia should continue to receive some external funding for these polio-essential and integrated functions after global certification of the interruption of WPV transmission. Global partners in polio eradication and public health must apply the decades of experience gained through the GPEI so that resource transition is done effectively and is most impactful. The findings of this assessment underline the critical importance of proper planning to sustain polio-essential and other communicable disease control functions in a country where capacity for communicable disease prevention, surveillance and outbreak response is weak.

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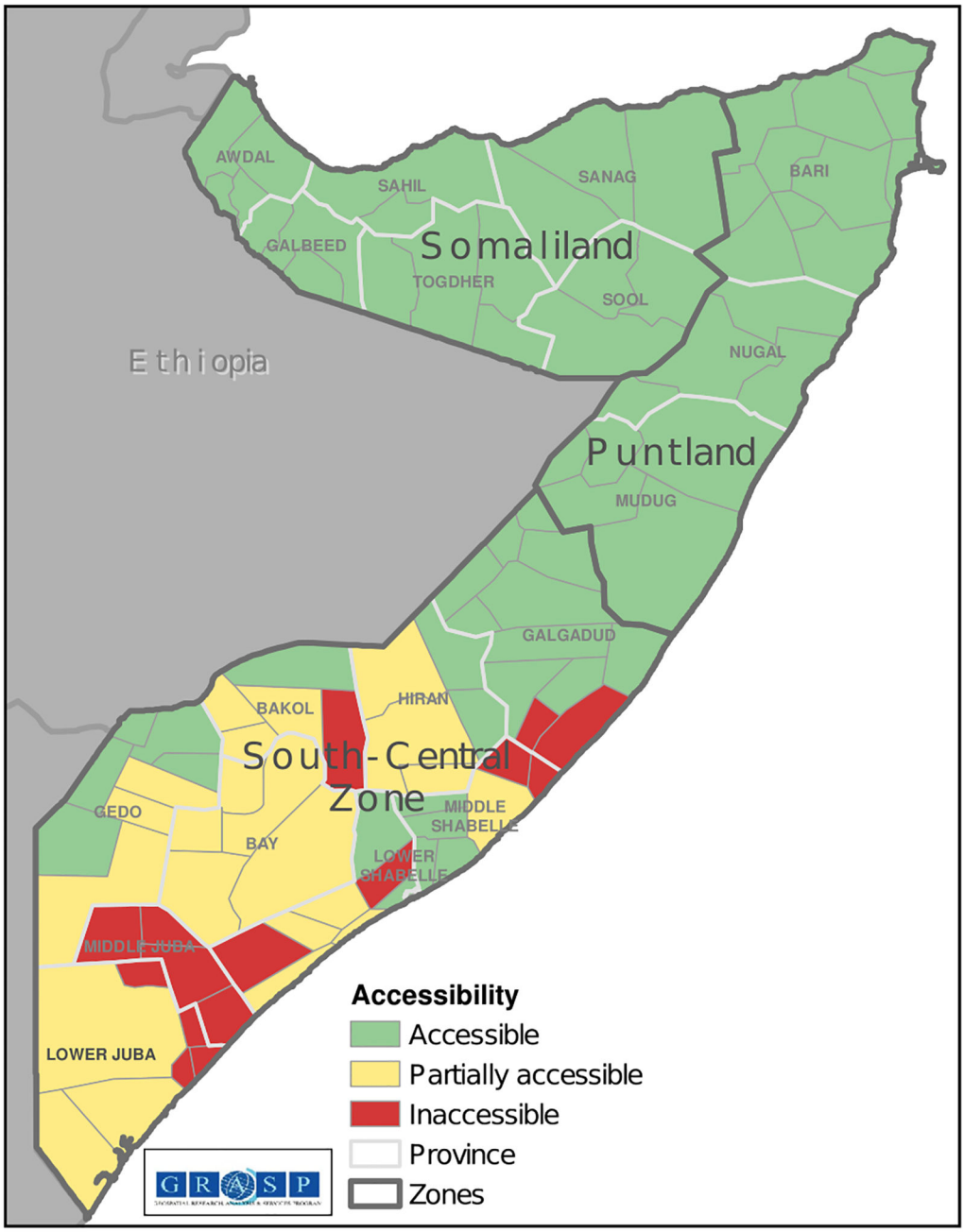

Fig. 1.

Political zones and level of children's access† to immunization services by district—Somalia, October 2017. †The categorization of partially accessible and inaccessible districts is based on security hazards and armed conflict in the district. Partially accessible means that some settlements or other areas within the district are accessible and others are inaccessible. Zonal and provincial boundaries of districts are highlighted.

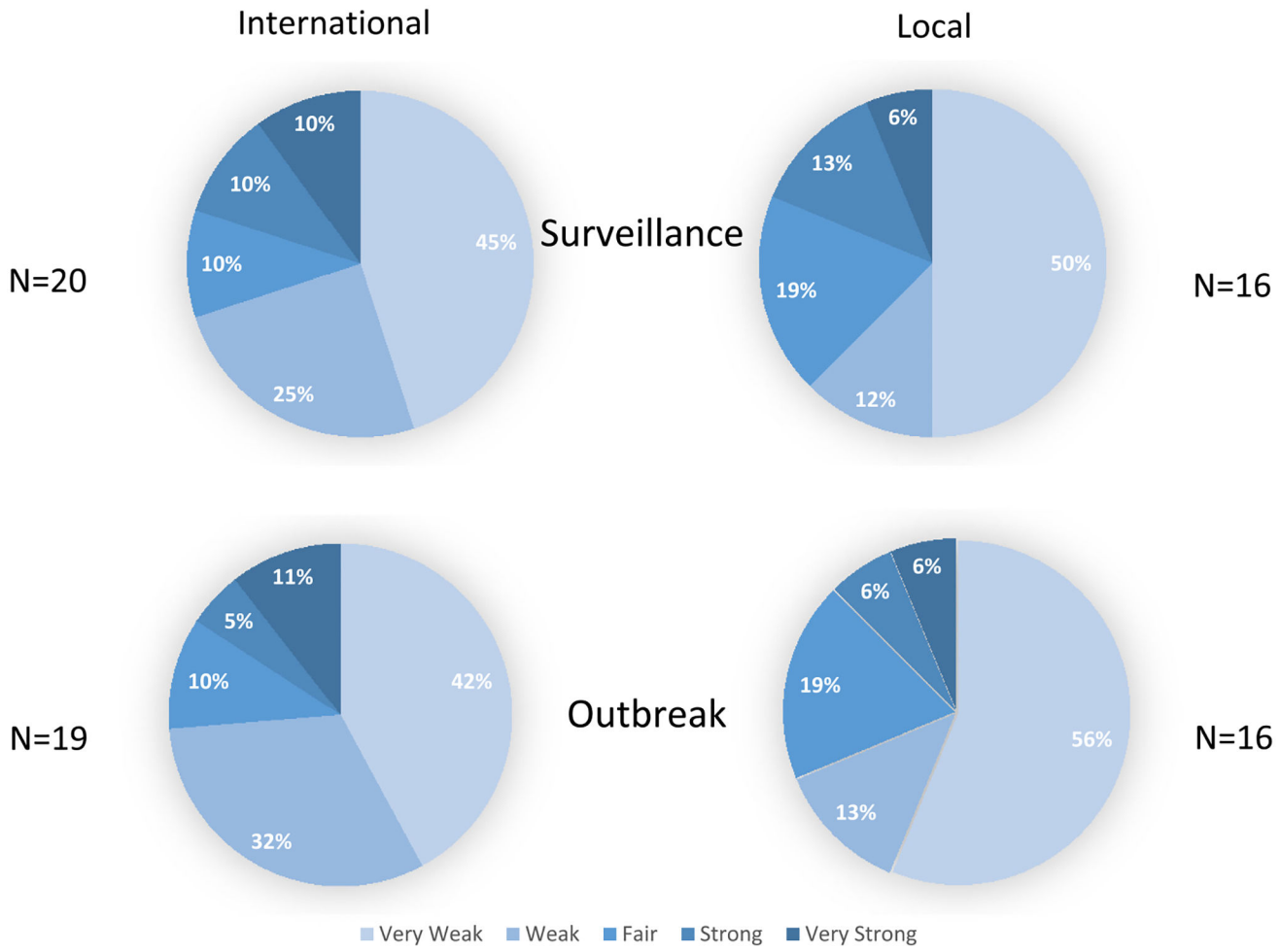

Fig. 2.

Perceived capacity by international and local relief agency representatives to conduct communicable disease surveillance and outbreak response after polio eradication is achieved - Somalia, October 2017.

Table 1

Perceptions[§] of capacity to perform polio and non-polio activities by zones per each Ministry of Health representative—Somalia, October 2017.

Polio surveillance and response activities		Somaliland	Puntland	South-Central
	Acute Flaccid Paralysis (AFP) Surveillance	very weak	strong	weak
	AFP Investigations	weak	strong	very weak
	Environmental Sampling	very weak	weak	very weak
	Specimen Testing	very weak	weak	very weak
	Case Response	very weak	weak	weak
	Routine Immunization	fair	strong	strong
	Supplemental Immunization Activity	very weak	weak	fair
Non-Polio Communicable Diseases surveillance and outbreak response activities	Surveillance	weak	fair	weak
	Outbreak	fair	strong	fair
	Vaccination Campaigns	weak	strong	very weak
	Laboratory Testing	very weak	weak	weak
	Scientific Innovation	very weak	weak	weak
	Vaccine Storage	very weak	very strong	fair
	Vaccine Delivery	very weak	strong	fair
	Logistics	very weak	strong	fair
	Provision of Financial Support	very weak	fair	weak
	Trainings	fair	strong	very weak
	Social Mobilization	fair	strong	fair

[§]Ministry of health representatives were asked to rate their political zone's capacity to perform the public health activity: very weak, weak, fair, strong, very strong.

Table 2

Word frequency for health services provided and services provided by polio staff, focus group discussions, Somalia, October 2017.

Category of Service	Word	Count	Weighted Percentage (%)*	Similar Words
Health Services Provided	Services	26	6	Services
	vaccines	26	6	vaccinated, vaccination, vaccine, vaccines
	children	18	4	children
	treatment	13	3	treatment
	maternity	9	2	maternal, maternity
	mothers	8	2	mother, mothers
	medicine	7	2	medicine, medicines
	nutrition	6	1	nutrition, nutritional
	communities	6	1	communities, community
	measles	5	1	measles
	polio	4	1	polio
	sensitize	4	1	sensitization, sensitize
	emergency	3	1	emergency
	medication	3	1	medical, medication
	nomadic	3	1	nomadic
	women	3	1	women
Services Provided by Polio Staff	vaccination	36	8	vaccinate, vaccinated, vaccination, vaccine, vaccines
	polio	22	5	polio
	children	14	3	children
	measles	10	2	measles
	disease	9	2	disease, diseases
	campaigns	7	1	campaign, campaigns
	educate	7	1	educate, education
	ministry	7	1	ministry
	community	5	1	communities, community
	treatment	5	1	treatment
	eradicated	4	1	eradicate, eradicated, eradicating
	diarrheal	3	1	diarrheal

Category of Service	Word	Count	Weighted Percentage (%)*	Similar Words
	outbreaks	3	1	outbreak, outbreaks

*Weighted percentages were calculated based on the frequency of the word relative to the total words counted in that response. The scale was adjusted to not include words comprised of less than four letters and to include similar words (e.g. vaccine, vaccinate, vaccination).