SHORT COMMUNICATION

‘Task shifting’ in an antiretroviral clinic in Malawi: can health surveillance assistants manage patients safely?H. Tweya,^{1,2} C. Feldacker,^{2,3} A. Ben-Smith,⁴ R. Weigel,^{2,5} M. Boxshall,² S. Phiri,² A. Jahn^{2,3}<http://dx.doi.org/10.5588/pha.12.0018>

Malawi has a critical shortage of clinicians and nurses. This study evaluated whether health surveillance assistants (HSAs) could provide antiretroviral therapy (ART) efficiently and safely for stable patients. HSAs could identify patients with previously established criteria requiring clinical management, including ART initiates, children and patients on second-line treatment. HSAs were not capable of correctly identifying current complications, including potentially severe side effects and toxicities, and inappropriately referred stable patients to clinicians, reducing efficiency. While task shifting to HSAs appears promising, to be safe and efficient, additional clinical training is needed before potentially task shifting stable ART patient care to less skilled health care cadres.

In Malawi, there are approximately 3800 nursing and midwifery personnel and 257 physicians for 15 million people.¹ Despite health care worker shortages, 225 000 patients had been managed on antiretroviral therapy (ART) by mid-2010.² The majority of ART reviews are completed by nurses; children and patients who require screening for ART eligibility, clinical staging, treatment initiation or non-standard regimens are always reviewed by clinicians. To further expand ART coverage, delegation of specific tasks from more to less skilled health workers, task shifting³ may be necessary.

The Lighthouse Trust, a large public provider of ART in Lilongwe, Malawi, conducted a study to explore the safety and efficiency of using health surveillance assistants (HSAs) to provide ART for stable patients. In Malawi, HSAs are the only other cadre of professional health workers apart from clinicians and nurses. Nationwide, HSA qualification requirements include a Junior Certificate of Education (obtained by examination after 2 years in secondary school) and a 10-week HSA training course. Many primary health services in Malawi are already provided by HSAs.⁴ Shifting care for stable patients on ART to HSAs could potentially reduce the burden on nurses and enable more patients to be properly managed on ART.

METHODS

Study design

A standardised checklist was designed as a rapid triage tool for HSAs, divided into two sections: eligibility and stability. The tool aimed to identify three types of patients: 1) patients who always required management by a clinician rather than a nurse, according to

established clinical criteria (eligibility for HSA review); 2) patients with current clinical complications requiring clinical management for a specific visit (stability); and 3) stable patients who did not require clinical care at this specific visit and therefore might be able to receive ART from an HSA in the future (stability).

Four HSAs, including one female, with 5–12 years of work experience, were newly recruited for the study and trained for an additional 5 weeks, using a specifically designed curriculum based on the Malawi Ministry of Health's national ART guidelines,⁵ to provide them with the fundamentals of basic ART clinical assessment. The HSAs then received supervised, practical training experience for 4 months. After completion of on-site training, one Lighthouse ART clinic room was staffed by one of the four HSAs, with a clinician seated in an adjacent room. Patients who consented entered the HSA's room or one of the three standard nurse review rooms, according to room availability, per usual practice.

The HSAs and the clinicians assessed ART patients for both eligibility and stability. Patients who presented with medical complaints during non-antiretroviral (ARV) dispensing visits were not further assessed for stability. The HSA and the clinician recorded their assessment for each patient independently using the standardised symptom checklist. Unique patient IDs linked HSA and clinician assessments. All completed forms were collected separately and double-entered into a Microsoft Access database (Microsoft Corp, Redmond, WA, USA).

Ethical clearance was obtained from the Malawi Health Sciences Research Committee.

Data analysis

For each patient visit, HSA and clinician assessments were compared, using the clinicians as the gold standard. Strength of agreement was expressed using the κ coefficient. Efficiency of HSA assessment was defined as the ability of the HSA to correctly rule out the need for clinical management; a specificity of 90% was considered efficient. Safety of HSA patient assessment was defined as the ability of the HSA to correctly identify patients who required review by clinical staff: a sensitivity of 95% was considered safe. Data were analysed using STATA 9.2 (Stata Corporation, College Station, TX, USA).

RESULTS

A total of 4014 patient visits were recorded for 26 clinic days, from 28 August to 2 October 2007. Of these, 1567

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Conflict of interest: none declared.

KEY WORDS

task shifting; Malawi; quality care; antiretroviral treatment; AIDS

Received 28 May 2012
Accepted 27 November 2012

PHA 2012; 2(4): 178–180
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(38.7%) entered the study. The four HSAs assessed 469 (29.9%), 419 (26.7%), 383 (24.4%) and 296 (18.9%) cases, respectively.

Of the 1567 study patients, clinical management based on established criteria was required for 847 patients (54.1%), according to the clinicians (Table 1). HSAs were highly capable of identifying these patients. Agreement between HSAs and clinicians was near perfect ($\kappa = 0.95$). HSAs correctly identified 556 of 598 uncomplicated ARV-dispensing visits that could be seen by an HSA alone at the visit (93.0% specificity, 95% confidence interval [CI] 91.7–94.2). Although the specificity was above the 90% level required for HSAs to efficiently assess patient stability, 42 patients would have been referred to a clinician unnecessarily.

Of the 1567 patients assessed for eligibility, 246 (15.7%) presented with medical complaints during non-ARV-dispensing visits, and were not assessed for stability, leaving 1319 patients after removing two incomplete records. Of the 1319 patients assessed for stability, clinicians identified 302 as having a current condition that required clinical review; HSAs identified 201 of the 302 patients similarly (sensitivity 66.6%).

Overall, HSAs correctly identified 914 of 969 patients who met previously established criteria or who had a current complication requiring review by a clinician (94.3% sensitivity, 95%CI 93.2–95.5; Table 1). Although this sensitivity approached the 95% level required for HSAs to safely perform stability assessments, HSAs would have erroneously managed 55 patients who required a clinician, including patients with severe side effects. HSAs missed 35 of 89 patients with significant cough, 9 of 11 with weight loss and all 3 cases of jaundice.

DISCUSSION

To our knowledge, this is the first study to explore the potential of lay health workers to provide ART in a clinic setting. We found that HSAs were clearly capable of identifying patients who had met established criteria requiring review by a clinician (children, alternative ARV regimens, recent ART initiates), possibly enabling improved patient flow to nurses and clinicians. Although task shifting to HSAs appeared promising, task shifting to HSAs for ARV dispensing may not dramatically improve efficiency in a mature ART cohort. Only 38.2% of patients (598/1567) had no condition necessitating routine care by a clinician, contrary to our assumption that there would be a large group of stable patients who could be managed independently by an HSA. Moreover, more comprehensive clinical training would probably be needed to make HSA-based management of ART patients safe, as 55 patients in this study had a current, potentially severe side effect not recognised by the HSA.

This pilot study involved only four HSAs. However, assessment of variations between individual HSAs and a clinician showed no significant difference (Table 2). Also, we used clinicians as the gold standard and did not independently assess the validity of this approach, nor did we compare the performance of HSAs with the current standard of care provided by nurses. Lastly, although the HSAs used in this study received extra training, more on-the-job skill development and clinical mentoring could potentially fill the remaining gaps in HSA performance.

TABLE 1 Agreement on eligibility and stability assessments between HSAs and clinicians

	Clinician-identified prevalence n (%) [*]	HSA sensitivity % (95%CI)	HSA specificity % (95%CI)	κ [†]
Eligibility: criteria for always requiring clinical care from a clinician (n = 1567)				
Non-ARV-dispensing visits [‡]	246 (15.7)	98.8 (98.2–99.3)	99.9 (99.6–100.0)	0.99
ARV-dispensing visits only (n = 1319) [§]				
Paediatric patient aged <15 years	25 (1.9)	96.0 (94.9–97.2)	99.6 (99.2–99.9)	0.87
Non-standard ART regimen	125 (9.5)	99.2 (98.7–99.7)	98.7 (98.0–99.3)	0.93
Recent ART initiation	485 (36.8)	97.9 (97.2–98.7)	98.6 (97.9–99.2)	0.96
Drug adherence problem (pill count)	21 (1.6)	81.0 (78.8–83.1)	99.2 (98.7–99.7)	0.69
On maintenance therapy for cryptococcal meningitis	19 (1.4)	63.2 (60.6–65.8)	99.5 (99.2–99.9)	0.64
On chemotherapy for Kaposi's sarcoma	39 (3.0)	82.1 (80.1–84.1)	99.0 (98.4–99.5)	0.75
Total requiring care from a clinician	847 (54.1)	97.9 (97.2–98.6)	97.4 (96.6–98.2)	0.95
Stability: current clinical complications (n = 1319)				
Fever	43 (3.3)	48.8 (46.1–51.5)	98.8 (98.2–99.4)	0.51
Abdominal pain	46 (3.5)	15.2 (13.3–17.2)	99.7 (99.4–100.0)	0.24
Skin rash	58 (4.0)	58.6 (56.0–61.3)	98.4 (97.7–99.1)	0.59
Peripheral neuropathy	56 (4.3)	44.6 (42.0–47.3)	96.0 (95.0–97.1)	0.35
Cough	89 (6.8)	60.7 (58.0–63.3)	98.5 (97.9–99.2)	0.65
Jaundice	3 (0.2)	0.0 (0.0–0.0)	99.9 (99.8–100.0)	0.00
Vomiting	10 (0.8)	50.0 (47.3–52.7)	99.5 (99.2–99.9)	0.47
Diarrhoea	33 (2.5)	45.5 (42.8–48.1)	99.8 (99.6–100.0)	0.59
Lipodystrophy	3 (0.2)	33.3 (30.8–35.9)	99.9 (99.8–100.0)	0.40
Weight loss	11 (0.8)	18.2 (16.1–20.3)	99.5 (99.2–99.9)	0.20
Other significant symptoms	135 (10.2)	40.7 (38.1–43.4)	94.5 (93.2–95.7)	0.37
Total with one or more clinical complications	302 (22.9)	66.6 (64.0–69.1)	91.1 (89.5–92.6)	0.58
Requiring attention from a clinician and/or with current clinical complications (n = 1567)	969 (61.8)	94.3 (93.2–95.5)	93.0 (91.7–94.2)	0.87

^{*}Prevalence: number of cases identified and proportion of cases identified divided by total number of patients screened.

[†]Results from analysis of agreement using κ coefficients interpreted as: 0 = poor; 0.01–0.2 = slight; 0.21–0.4 = fair; 0.41–0.6 = moderate; 0.61–0.8 = substantial; 0.81–1 = near perfect.

[‡]Not assessed for stability.

[§]Two cases removed because of missing data.

HSA = health surveillance assistant; CI = confidence interval; ARV = antiretroviral drug; ART = antiretroviral therapy.

TABLE 2 Agreement on eligibility and stability assessments between individual HSAs and clinicians

Prevalence*						
HSA	<i>n</i>	Clinician %	HSA sensitivity % (95%CI)	HSA specificity % (95%CI)	$\kappa^{\dagger}$	
Patients always requiring clinical care from a clinician						
1	253	53.9	99.6 (99.0–100.2)	97.7 (96.32–99.1)	0.97	
2	228	59.5	97.4 (95.8–99.0)	95.5 (93.4–97.6)	0.92	
3	199	47.5	96.0 (94.1–97.9)	96.8 (95.1–98.5)	0.92	
4	167	56	98.2 (96.7–99.7)	100 (100.0–100)	0.98	
Patients with current clinical complications						
1	93	23.7	66.7 (62.0–71.3)	94.7 (92.4–96.9)	0.65	
2	68	22.9	76.5 (71.7–81.3)	84.7 (80.6–88.8)	0.56	
3	89	23.4	48.3 (43.3–53.3)	93.5 (91.0–96.9)	0.47	
4	52	20.8	84.6 (80.1–89.1)	89.4 (85.6–93.2)	0.68	

*Prevalence = number of cases identified per clinical complication, divided by total number of patients screened by each HSA or clinician.

$\dagger$ Results from analysis of agreement using κ coefficients interpreted as: 0 = poor; 0.01–0.2 = slight; 0.21–0.4 = fair; 0.41–0.6 = moderate; 0.61–0.8 = substantial; 0.81–1 = near perfect.

HSA = health surveillance assistant; CI = confidence interval.

CONCLUSION

The possibility of task shifting the care of stable ART patients to HSAs appears promising. However, with the training given in this

study, for the time being HSAs may lack the clinical skills required to correctly identify and properly refer patients with potentially serious clinical complications. Future efforts to delegate specific aspects of ART patient management to cadres lower than nurses should include additional, comprehensive clinical training, and an extended period of on-site supervision and practical experience. With these suggested changes in task-shifting preparation and skills solidification, it is likely that HSAs and similar lower-level cadres of health care workers could help properly care for the increasing number of stable patients on ART in low-resource settings.

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Le Malawi connaît un manque critique de cliniciens et d'infirmières. Cette étude a évalué dans quelle mesure les assistants de surveillance de santé (HSA) pourraient distribuer un traitement antirétroviral (ART) de manière efficiente et sûre à des patients en état stable. Les HSA pourraient identifier les patients répondant à des critères préalable-ment établis, exigeant une prise en charge clinique, notamment les débuts d'ART, les enfants et les patients sous traitement de deuxième ligne. Les HSA n'ont pas été capables d'identifier correctement les

complications courantes, notamment les effets collatéraux potentiellement graves et les toxicités ; ils n'ont pas référé de manière appropriée les patients stables aux cliniciens, ce qui a réduit leur efficience. Alors que le transfert de tâches vers les HSA paraît prometteur, pour qu'il soit sûr et efficient, une formation clinique complémentaire s'impose avant de transférer la tâche des soins aux patients ART stables à des cadres de la santé de moindre compétence.

Malawi afronta una grave escasez de personal médico y de enfermería. En el presente estudio se investigó si los auxiliares de vigilancia de la salud (HSA) podrían realizar un suministro eficaz y seguro del tratamiento antirretrovírico (ART) a los pacientes estables. Los ayudantes de vigilancia sanitaria podrían detectar a los pacientes que precisan manejo médico con base en criterios establecidos antes, como los pacientes que comenzaron recientemente el ART, los niños y los pacientes que reciben medicamentos de segunda línea. Los HSA

no pudieron reconocer las complicaciones frecuentes, ni las reacciones adversas y las toxicidades que podrían ser graves y remitieron a los médicos, sin razón válida, pacientes estables con lo cual se redujo su eficacia. Si bien la delegación de tareas a los HSA podría parecer prometedora, a fin de velar por la seguridad y la eficiencia de la iniciativa, es preciso impartir una mayor capacitación clínica antes de confiar al personal sanitario menos calificado la atención de pacientes estables que reciben el ART.