

Continuous quality improvement in AIDSRelief supported HIV treatment clinics in Uganda: an evaluation of “See-Try-Observe- Continue” (STOC) model in patient care

Constance Shumba MS c¹, Dr Peter Memiah PH², Ruth Atukunda MPH¹, Richard Imakit B Sc¹, Jairus Mugadu MBChB³, Kristen Stafford MPH^{3,4},

¹University of Maryland, Institute of Human Virology, Uganda program, Outcomes and Evaluation

²University of Maryland, Institute of Human Virology, Baltimore Outcomes and Evaluation

³Bushenyi Medical Centre, Medical Department

⁴University of Maryland School of Medicine, Department of Epidemiology and Public Health

ABSTRACT

Aim: To evaluate the effectiveness of the STOC model for continuous quality improvement in improving patient care in two AIDSRelief (AR) HIV treatment facilities in Uganda **Methods:** In the initial stages, health workers in 17 AIDS Relief HIV treatment facilities were trained in continuous quality improvement (CQI). Consequently, the health workers built CQI teams and used a See Try Observe Continue (STOC) model adapted from the Plan Do Study Act (PDSA) approach to improve gaps identified for change and evaluated their success. A simple excel tracking tool was developed to follow up on the progress of the use of paediatric pharmacy order forms in Bushenyi Medical Centre (BMC) as well as missed ARV pick up in Kabarole hospital. Both descriptive and graphical findings were recorded during the pre and post follow ups. **Results:** The different clinics implemented at least one cycle of STOC for specific problems and registered improvements in patient care. At BMC, there was an improvement of usage of the paediatric pharmacy order forms from <5% to >50% of the paediatric patients seen in each month as well as improved recording of children’s weight and height, parameters crucial in growth monitoring. There was a significant reduction in number of patients who missed picking their ARVs from 28/1000 in Month 1 to 5/1000 in month 7 to 1/1000 patients in month 10. **Conclusion:** STOC model encourages and enhances evidence-based practices in the AR clinics. CQI activities enhanced by implementation of STOC to improve identified gaps at the facilities are imperative to achieving effective patient care.

Key words: Continuous quality improvement, PDSA, teams

AIM

Background

Continuous quality improvement (CQI) programs have the potential to increase consistent delivery of standard clinical practices.^[1] Continuous Quality Improvement (CQI) has undergone a series of transformations over

time with a special emphasis on structure, process and outcome.^[2] CQI in health care focuses on 3 pillars: community, service delivery and management.^[3] It endeavours to improve local performance by continuous review and improvement of process related to service provision within a given clinical site to routinely meet the needs of patients seeking healthcare.^[3] The complexity and scale of HIV care and treatment impacts the workforce in terms of skills and experience in structuring and providing high quality care. Health workers need to have first-hand knowledge on implementing evidence-based practices, such as person-centred care in the antiretroviral therapy ART settings.^[4] Quality improvement interventions can cover a diverse range of approaches that variously target patients, healthcare providers, clinical teams, and

Address for correspondence: xxx

xxx

xxxx

xxxx

E-mail: xxx

DOI: 10.5530/ijmedph.2.1.5

organizations across clinical fields and therefore training on improvement models is imperative to advance the field of CQI.^[5] It is within this context that CQI training and small tests of change based on an adapted Plan Do Study Act (PDSA) cycle were implemented in 17 AIDSRelief (AR) antiretroviral therapy (ART) clinics in Uganda. The aim was to develop the capacity of health care organizations and individuals in the ART clinics in CQI.

Local problem

Prior to implementation of combined antiretroviral therapy (cART) for management of HIV/AIDS through the PEPFAR programming, there was low demand for and use of data for clinical management by staff of AR clinics in Uganda. Decision making was hampered by the lack of data use which should ideally form the basis for quality improvement at clinics. We discuss our experiences in introducing the concept of CQI using examples from two of the 17 clinics.

Assessment of problems

Baseline assessments were conducted using a range of tools and techniques including a mix of trend charts and group self-analysis.

These revealed obstacles and opportunities for clinical improvement. Assessments included reviewing medical records for completeness, accuracy and feedback of this information to staff to improve patient and program outcomes. All 17 clinics were not using data collected to improve outcomes. The clinics only collected data for reporting purposes and complete documentation remained a challenge for these clinics. AR technical assistance teams therefore focused upon data collection related to specific key indicators to be presented to site staff to assist them in visualizing their current performance.

METHODS

The See-Try-Observe-Continue (STOC) model used by AIDSRelief was adapted from the Institute for Healthcare Improvement's Plan-Do-Study-Act cycle developed by Associates for Process Improvement.^[6] The STOC acronym was derived to reinforce the "small test of change concept" inherent in the PDSA improvement model as a process for making small changes in clinic process that can be tested quickly to change the quality of patient care in the work setting. The improvement cycle starts by identifying key indicators from the database and comparing these with established performance levels in the program and other health care organizations.

These indicators allow for identification, tracking, monitoring and evaluating for improvement opportunities. Cycles are continuous and consistently look for new opportunities for improvement in how care is offered to patients and their families. Data is gathered monthly and reviewed to understand possible reasons for improvement or no improvement. This leads to identification of possible areas for improvement.

Since May 2007, CQI teams were initiated at seventeen AR clinics in Uganda. These teams coordinate the implementation of STOC for all aspects of clinical care at AR clinics to improve quality of HIV care using data for decision-making. It is important to note that training began with the technical assistance team in Uganda in 2005 on CQI. However, like most new initiatives, it took a number of years to take hold and develop a level of local ownership. Teams are multi-disciplinary consisting of staff from providers, nursing, community outreach, counsellors, administrators, and CQI staff responsible for monitoring and evaluation. Each site has implemented at least one STOC since May 2009. Targeted processes include: improving patient waiting time; more frequent CD4 monitoring; and reduction in number of missed appointments.

As part of the CQI initiative, health workers in the clinics were trained to gather both qualitative and quantitative information using participatory methods to capture dynamic and complex processes within the ART clinics in Uganda. The process introduced included: 1) clarification of key indicators; 2) training local staff regarding CQI using the STOC model adaptation; 3) collecting information regarding selected indicators; 4) providing on-going coaching and mentoring with regards to use of these methods. The coaching and mentorship sessions are part of a data-driven technical assistance model whereby five-day quarterly visits are carried out to clinics by multi-disciplinary teams consisting of doctors, nurses, laboratory specialists, community based treatment services specialists and continuous quality improvement specialists. During these visits, technical assistance teams spend time with the health workers during their daily work and offer their support for eight hours in the five days. Each clinic is visited at least four times a year. CQI teams provide feedback on progress using a simple excel worksheet that contains narratives and charts to demonstrate trends to follow up on the progress of the targeted activities. Best practices are shared among clinics enabling them to improve patient care. As an example we described STOC on use of paediatric pharmacy order forms and missed ARV pick up in two randomly selected clinics.

RESULTS

STOC example 1: BUSHENYI MEDICAL CENTRE (BMC) KATUNGU

BMC is located in Bushenyi-Ishaka municipality, Bushenyi district. Between July 2005 and 31st October 2010, the ART program enrolled 2232 active adults and children in care; 1503 (67%) of whom were on ART. A facility based CQI team was established in August 2009 and identified that paediatric pharmacy order forms were rarely used in children’s files in both the clinic and outreaches. The triage nurses would forget to use the forms and clinicians would go ahead and prescribe on adult forms. In addition, adult pharmacy order forms were preferred for older children on adult regimens. Most staff felt adult pharmacy order forms could still be used and they do the same work as paediatric order forms. Not much attention was given to the important details on paediatric pharmacy order forms such as weight upon which paediatric drug dosages are based.

APPROACH ADOPTED

Sensitization of staff by the CQI team was done to encourage use of paediatric pharmacy order forms for children seen in the clinic. Paediatric clinic days were assigned differently from adult days every first and last Tuesday of the month. Paediatric pharmacy order forms were availed on the triage nurse desk on every paediatric clinic day and the dispenser would ensure that clinicians filled them. The monitoring and evaluation team monitored the number of children’s charts that had paediatric pharmacy order forms monthly.

Figure 1 above shows a trend of paediatric pharmacy order forms usage before and after the STOC. In June 2009 before the STOC was implemented, paediatric pharmacy order form usage was below 2% of paediatric patients seen. After the STOC was implemented there was an improvement of usage of the paediatric pharmacy forms to 91% of the paediatric patients seen in December 2009. This STOC enhanced documentation of paediatric outcomes, proper accountability of drugs at the clinic and tracking of paediatric patients. This further improved on the process of stocking drugs.

STOC example 2: Example of missed ARV pick up by patients

Kabarole ART clinic is located in Kabarole municipality, FortPortal district. Between 1st July 2005 and 31st December 2010 the ART program enrolled 1299 active adults and 192 active children in care; (81%) of whom were on ART. A facility based CQI team was established in 2009.

A monthly report is generated at the clinic regarding the number of ART prescription refills not picked up from the pharmacy using IQCare, a data capture and reporting system developed by AIDSRelief, programmed and maintained by Futures Group International. This report documents patients who are at least 14 days late for their refill appointment. Over a two month period at Kabarole ART clinic 29/900 and 28/1000 patients failed to pick up their ARVs. The clinic CQI team chose this as an indicator to be monitored more closely in an attempt

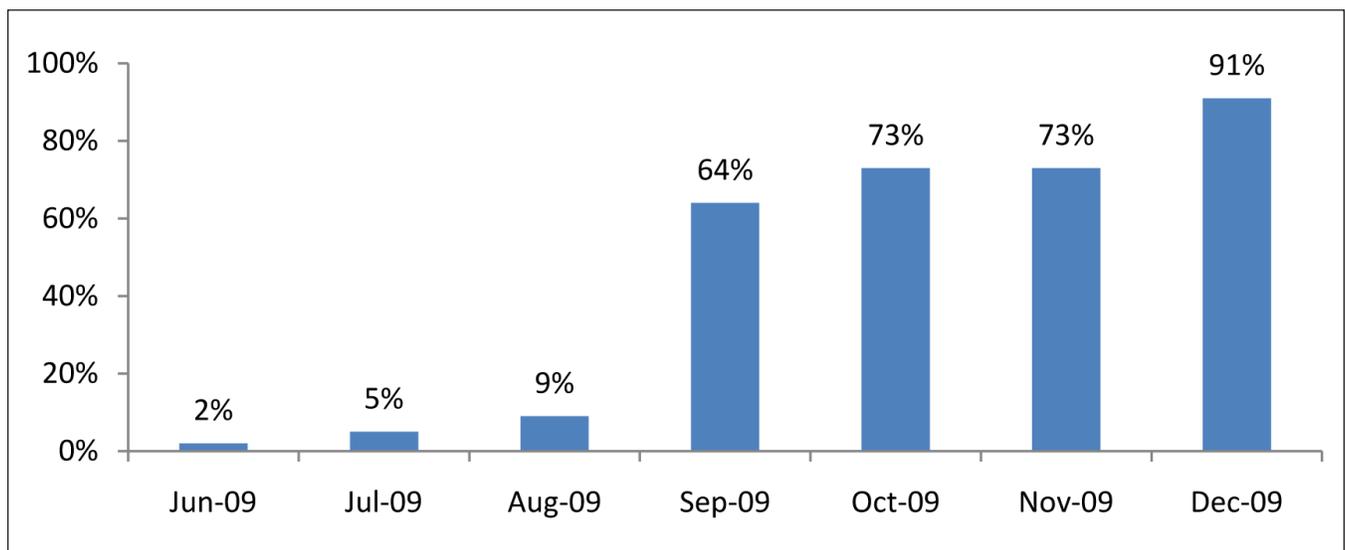


Figure 1: Paediatric Pharmacy Order Form Usage

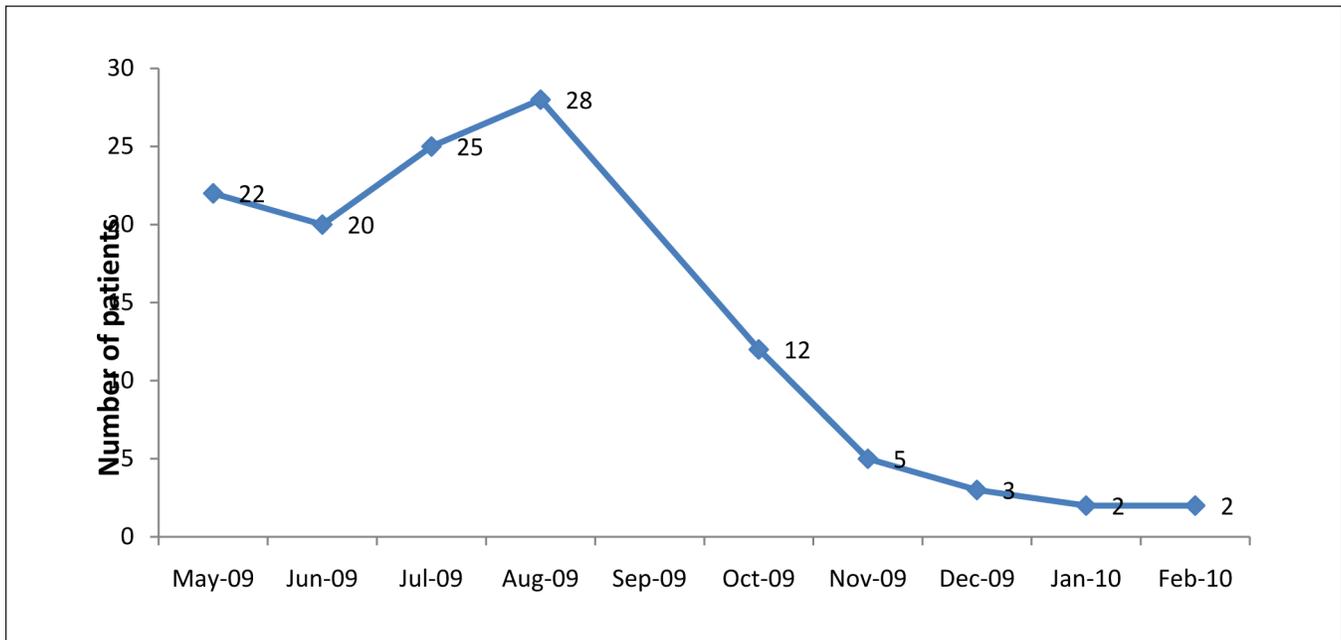


Figure 2: Patients missing Scheduled Appointments/ARV pick up

to understand the problem. The aim was to improve patient adherence to ART by increasing the number of clinic appointments kept and reducing the number of patients who missed ARVs pick up by 50% in the next month.

There was an upward trend of patients who had missed scheduled clinic appointments which are linked to ARV refills. This was identified during the CQI meetings that are held at the clinic monthly. The CQI team therefore brainstormed and agreed that the problem was Missed scheduled appointment/ARV pick up. They discussed the problem and thought that this problem might have been caused by several factors included limited financial support to patients, inadequate social support, limited HIV knowledge, poor physical health, difficulty in accessing health care, poor health and cultural beliefs.

Strategies

Since the implementation of the “Missed ARV Pick up” STOC, there was an increase in filing accuracy to reduce missing charts. Community volunteers and records clerks were trained on procedures for filing patient charts. A monitoring and evaluation report was generated daily on those missed ARV and their scheduled appointment. This list was then verified with the community nurse to ensure proper data tracking. Those who truly missed their appointments were followed up by community volunteers. Continuous patient education was carried out on the importance of adhering to ARVs pick up appointments.

RESULTS

As a result of these strategies, the following changes were observed; there was a significant reduction in number of patients who missed picking their ARVs from 28/1000 in Month 1 to 5/1000 in month 7 to 1/1000 patients in month 10. There was a >60% and >80% decrease in patients who were missing scheduled appointments/ARV pick up by month 7 and month 10 respectively. There was increased frequency of patient education sessions daily. There was also increased site data use as the site held weekly meetings to review their progress and these were shared in the general monthly staff meetings and also pinned on the notice board for all to see. This all led to an improvement in monitoring of missed ARV pick up.

Lessons and messages

Lessons Learned

Using trained multidisciplinary teams of local staff to identify and monitor small tests of change for improving health delivery is possible in resource constrained settings and can improve staff morale and transparency of the health improvement process. Use of data is important in measuring change or improvement.

It is important to strengthen CQI teams at clinics through continuous mentoring and training and promote site ownership and use of the data they routinely collect. Clinics can also learn from each other hence it is necessary

to create forums for clinics to share their experiences in using STOCs.

DISCUSSION

These findings demonstrate utility of the STOC model in improving quality of care in resource limited settings. Health care workers in the AR clinics had few opportunities to acquire continuous quality improvement (CQI) training. Limited evidence existed regarding the feasibility and effectiveness of CQI initiatives in resource-limited settings.^[7] Routine use of STOC encourages ownership on the part of local staff and empowers clinics to use their own data to track their success at improving problems that have been identified. STOC encourage and enhance evidence-based practices and can be used to predict improvement resulting from a change. This generates a demand for data and information use. STOCs also enhance team work through participation of the multidisciplinary teams. The process fosters commitment of staff, accountability and transparency. As seen with other models of CQI, management and front-line staff are empowered by participation in this process in hopes of improving sustainability of the improvements.^[4] Findings from this initiative show that continuous quality improvement through STOC by local health workers is an effective mechanism for improving patient care.

CQI requires concerted, multi-disciplinary approaches in order to achieve health for all.^[4] Small tests of change give health workers the opportunity to show their routine efforts to provide better care. It is important to bring the health workers to the table and give them opportunities to showcase their efforts to improve the quality of health service delivery. CQI, through audit and feedback techniques, has also been shown to be effective in managing cardiac, diabetes and other health outcomes.^[8-10] Less is documented about the impact of CQI on organizational culture and patient outcomes in resource limited settings. This information gap may lead to under-investment in effective CQI programming and over-investment in costly interventions that are not effective. This paper aims to provide evidence to promote the use of current data evaluation and feedback.

Limitations and strengths

There is the potential of some confounding due to other interventions taking place at the hospitals at different times. While CQI teams are encouraged to select small tests of change that can be integrated into their normal daily routine, changes in human resource needs and workload

challenges when implementing the interventions were not formally assessed. It might be helpful to evaluate what if any impact these activities may have on staff workload. The initiatives did not link the improvements to patient outcomes such as viral suppression. Since this was an initial phase of implementation it was not possible to do a rigorous evaluation of the STOC utility by showing statistical significance in observed differences. As these were simple steps to improve quality, the generalizability of some of the strategies may or may not necessarily be possible.

Implications for practice

CQI is not only encouraged in the facilities but goes beyond the confines of the health facility into the communities where the service users come from.^[3] CQI efforts in community and home based care facilitate can help identify and mitigate barriers that communities engaged in long term HIV treatment face such as gaps in continuity care from the facility to the community and treatment fatigue which may at times outweigh the benefits of seeking chronic HIV care. Community CQI level initiatives could be more empowering and increase patients' participation in health.

CQI can be viewed as creating partnerships for health systems and delivery change. Collective engagement in CQI must include the interests of all including the marginalized as well as create an enabling environment for participation in activities. In the transitional phases of CQI there is need for integration of health and possible best practices. This includes building skills for positive transformation and involving the custodians of health service delivery in leading and implementing CQI activities. CQI endeavours to involve the custodians in finding solutions to improving their services to their clients.

The full integration of CQI into a daily work routine can take time. It may be helpful to repeat CQI training and include CQI roles in job descriptions of health workers as a means of integrating quality processes in routine work.

The knowledge obtained on quality improvement strategies can be used to design sustainable interventions. More research and practical experiences on CQI in health care are needed to inform the roll-out of effective interventions.

While we chose to adapt the language of a well-established CQI model to cross multiple languages and cultures as a means to highlight the core concept of small tests of

change, what the steps are called is not important. What is critical is providing empowerment to the clinic staff to use their data to improve their programs. There are a number of CQI models that use the PDSA cycle as its foundation whether it is called PDSA, Measure-Test-Re-measure, STOC or any other acronym it provides the same framework based on small and rapid tests of change to support a culture of quality improvement.

CONCLUSION

Building sustainable and lasting partnerships for CQI in health systems and health delivery ought to be an integral part of the process. Without doubt, individual, collective commitment and action in CQI is imperative in order to achieve health for all. CQI should be placed as a fundamental priority in scaling up health services at primary level. CQI teams using small tests of change are an important strategy in increasing site ownership of the HIV program and empowering clinics to use their data to improve quality of care. Next steps for the further development of sustainable CQI programs will focus on engaging patient representation into the CQI teams.

ACKNOWLEDGEMENTS

AR Uganda would like to acknowledge the clinics we work with; Kristen Stafford for the STOC adaptation of the PDSA cycle and development of the UMSOM-IHV

Outcomes and Evaluation program; PEPFAR Team, and CDC-Uganda.

Conflict of interest notification None

REFERENCES

1. Atkins D, Clancy C. Multiple risk factors interventions: Are we up to the challenge? *Am J Prev Med.* 2004;**27**(2S).
2. Donabedian. Evaluating the quality of medical care. *Milbank Memorial Fund quarterly*, 1966; **44**:194–6.
3. WHO. Quality improvement in primary health care: A practical guide. Assaf F, Al-Assaf Sheikh Mubashar (Eds). *Eastern Mediterranean Series* 26, 2004.
4. HIVQUAL Workbook: *Guide for Quality Improvement in HIV Care* New York State Department of Health, AIDS Institute, Health Resources and Services Administration HIV/AIDS Bureau, September 2006.
5. Danz MS, Rubenstein LV, Hempel S, Foy R, Suttrop M, Farmer MM, Shekelle PG. Identifying quality improvement intervention evaluations: is consensus achievable? *QualSaf Health Care.* 2010;**19**:279–283. doi: 10.1136/qshc.2009.036475.
6. Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd edition). San Francisco: Jossey-Bass Publishers; 2009.
7. Davidoff, F and Batalden, P. Toward stronger evidence on quality improvement. Draft publication guidelines: the beginning of a consensus project. *QualSaf Health care* 2005 **14**: 319–325 doi: 10.1136/qshc.2005.014787. Available from <http://www.qhsc.bmj.com> [Accessed 23 November 2010].
8. O'Brien T, Oxman AD, Davis DA, Haynes RB, Freemantle N, Harvey EL. *The Cochrane Library*. Update Software; Oxford: 2003. Audit and feedback: effects on professional practice and health care outcomes (Cochrane Review).
9. Ornstein S, Jenkins RG, Nietert PF, Feifer C, Roylance LF, Nemeth L, Corley S, et al. A multimethod quality improvement intervention to improve preventive cardiovascular care. *Ann Intern Med.* 2004;**141**:523–532. [PubMed].
10. Kiefe CI, Allison JJ, Williams OD, Person SD, Weaver MT, Weissman NW. Improving quality improvement using achievable benchmarks for physician feedback: a randomized controlled trial. *JAMA.* 2001;**285**: 2871–2879. [PubMed].