REPUBLIC OF KENYA

MINISTRY OF HEALTH

KENYA QUALITY MODEL FOR HEALTH

A TRAINING COURSE FOR THE HEALTH SECTOR

Empowering Health Workers to Improve Service Delivery

FACILITATOR'S MANUAL

Revised March 2014

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Editing, design and layout by Esther Kahinga, USAID Applying Science to Strengthen and Improve Systems Project- University Research Co., LLC.

Recommended citation:
Kenya, Ministry of Health. (2014). *Kenya Quality Model for Health: A training course for the health sector. Facilitator's manual.* Nairobi: Government of Kenya.

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FOREWORD

Capacity building and technical assistance to counties is a function of the national government, as enshrined in Schedule 4 of the constitution. Improvement in the quality of health services to the highest standard is among the specific strategies for the health sector under the social pillar of the *Kenya Vision 2030*. The concept of quality and the benefits it would confer to the health providers' work and positive outcomes for their patients have not been completely understood by health managers and providers. As such, a need was identified to develop a training course to build the capacity of the health sector in quality management.

The precursor to the Kenya Quality Model for Health (KQMH) was the Kenya Quality Model (KQM) that was designed and developed under the leadership of Dr. Tom Mboya Okeyo. This KQMH course has been designed to address training needs at three levels of health service delivery: policy, management and implementation. It embraces the use of the 5S (Sort, Set, Shine, Standardize, Sustain), Continuous Quality Improvement (CQI), Total Quality Management (TQM) and ISO 9001:2008 approaches as important instruments of quality management for use at various KEPH levels. The 5S–CQI–TQM–ISO quality management systems approach has been adopted to operationalize KQMH in pursuit of quality excellence in health service delivery in Kenya.

The KQMH Training Course is a compilation of revised and updated versions of the piecemeal curricula that have been in use within the quality improvement sector. It incorporates important topics that are relevant in ensuring policy makers, national and county managers, middle-level managers and health facility managers and providers are equipped with the necessary knowledge, skills and attitudes to deliver quality health services.

This KQMH Training Course will guide the national government in addressing the capacity gaps in quality management within the health sector. We therefore recommend the use of this course by all organizations and institutions involved in the delivery of health services. This will ensure that there is adequate capacity to design, plan, and implement quality management systems within the sector for improved quality of health services to the highest attainable standard.

Prof. Fred H. K. Segor
Principal Secretary
Ministry of Health

ACKNOWLEDGEMENTS

Development and finalization of this KQMH Training Course marks an important milestone in efforts by the health sector to ensure quality health services are provided to all Kenyans. Its use is expected to contribute to the attainment of the highest standards of health services delivery as envisaged in the Constitution of Kenya.

The development of this training course began in Nakuru in February 2010 when a team from the Department of Standards and Regulatory Services and development partners designed the first draft of the course. This team later became the Quality Management Technical Working Group chaired by Dr Lucy Musyoka and included Dr Gideon Toromo, Dr John Gatere, Dr David Mwangi, Mr Francis Muma, Mr Dan Owiti, Mr Isaac Mwangangi, Mr George Ogoye and Mr Joachim Mwanza of the Ministry of Health. Others included Dr Naphtali Agata and Mr Elijah Kinyangi from the Japanese International Cooperation Agency–Kenya, and Cyrus Wambari from the Kenya Bureau of Standards. This first draft was piloted through training 12 groups from the Kenya Essential Package for Health (KEPH) level 4 and 5 hospitals, and 6 county health management teams and coaches who would be instrumental in quality improvement initiatives in health facilities within their counties. Follow-up workshops to refine the course were held in Mombasa and Naivasha. A final review workshop was held in Limuru by the Quality Management Technical Working Group led by Mr Peter Shikuku of IntraHealth International–FUNZOKenya in June 2013.

We wish to thank everyone who contributed to the successful development and finalization of this training course. Special thanks go to Dr Pacifica Onyancha, head - Directorate of Health Standards, Quality Assurance and Regulation, Dr. Charles Kandie, head - Division of Health Standards and Quality Assurance, and all the other staff in the directorate; the Directorate of Preventive and Promotive Health Services; the National Hospital Insurance Fund; management and staff of Mathari and Coast Provincial General Hospitals who piloted the 5S–CQI–TQM approach; the University of Nairobi – College of Health Sciences; the Kenya Medical Training College; the Kenya Bureau of Standards; Christian Health Association of Kenya; Kenya Conference of Catholic Bishops; JICA–Kenya office; the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), PharmAccess Foundation; Liverpool VCT Care and Treatment; IntraHealth International; FUNZO Kenya; and USAID Applying Science to Strengthen and Improve Systems Project – University Research Co., LLC.

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ABBREVIATIONS

5S	Sort, Set, Shine, Standardize, Sustain
CD	Compact Disk
CQI	Continuous Quality Improvement
DVD	Digital Video Disk
EBM	Evidence-Based Medicine
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GROW	Goal, Reality, Options, Will
HCI	Healthcare Improvement Project
HIV	human immunodeficiency virus
HMIS	Health Management Information System
HMT	Health Management Team
ISO	International Standards Organization
JICA	Japan International Cooperation Agency
KEPH	Kenya Essential Package for Health
KQMH	Kenya Quality Model for Health
LCD	Liquid Crystal Display
MDGs	Millennium Development Goals
MOH	Ministry of Health
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
NHSSP	National Health Sector Strategic Plan
PDCA	Plan, Do, Check, Act
PP	Patient Partnership
PPT	PowerPoint presentation
QI	Quality Improvement
QIC	Quality Improvement Cycle
QIT	Quality Improvement Team
QMS	Quality Management System
TLC	Teaching Learning Collaborative
TOT	Trainer of Trainers
TQM	Total Quality Management
URC	University Research Co., LLC
USAID	United States Agency for International Development
WIT	Work Improvement Team

PART 1

INTRODUCTION

1.0 INTRODUCTION

1.1 Background Information

The promulgation of the Constitution of Kenya on 27 August 2010 was a major milestone towards improving health standards. The chapter on the right to the highest attainable standard of health, as enshrined in the Bill of Rights in the Constitution, has raised citizens' expectations on improved quality of health service delivery. The social pillar of the Vision 2030 emphasizes the need to improve the overall livelihoods of Kenyans through provision of efficient and high-quality healthcare systems.

The concept of quality and the benefits it would confer on the health providers' work and the outcomes for their patients have not been completely understood by health managers and providers. As such, the Ministry of Health (MOH) and development partners developed the Kenya Quality Model for Health (KQMH) and a training course to guide health managers in strengthening quality management at all levels. The draft course was designed to address training needs at all levels of health service delivery, including the policy level, by embracing the use of the 5S–Continuous Quality Improvement (CQI)–Total Quality Management (TQM) and ISO 9001:2008 approaches as important instruments of quality management.

The draft course was piloted in several hospitals in different regions in the country. Suggestions were made to review and integrate changes occasioned by the introduction of devolved structures in the counties. This reviewed course incorporates these changes to ensure it is relevant and that participants have the most updated information and requisite competencies to support quality improvement within the new government structures.

1.2 The Kenya Quality Model for Health

The Kenya Quality Model for Health (KQMH) integrates evidence-based medicine through wide dissemination of public health and clinical standards and guidelines embedded with total quality management and patient partnership.

Principles underlying KQMH

- Leadership
- Customer orientation
- Involvement of people and stakeholders
- Systems approach to management
- Process orientation
- Continuous quality improvement
- Evidence-based decision making

1.3 The Purpose of KQMH Training

This training program is designed to build the capacity of program managers and health providers in quality management, and improve the provision of high-quality health services.

It is aimed at:

- Standardizing a package of quality improvement and management practices and competencies that all health care managers and providers need to know and have to deliver quality health services in Kenya
- Standardizing training delivery by employing standard training tools

This trainer's manual guides the trainer on how to deliver the KQMH course. It provides the trainer with all pertinent information to facilitate effective delivery of the course. This information includes an eclectic approach to training leaning towards a competency-based approach. The course syllabus also includes details of course description, course goal and objectives, training methodology, selection criteria, course duration, course modules and schedule, and step-by-step guidance on how to deliver each session or unit of the training course. Ultimately, the purpose of this manual is to ensure training is standardized, and health managers and providers acquire and deliver effective quality management competencies.

1.4 Training Approach

To ensure optimum use of resources and acquisition of requisite competencies in the most effective manner, the training adopts an eclectic design that combines competency-based, problem-based and participant-based approaches to learning. These approaches emphasize learning by doing as opposed to traditional didactic approaches. This eclectic design informs the selection and design of all the course elements—training objectives, content, learning experiences (both teaching methods and learning activities) and evaluation.

The facilitator's manual guides the trainer on how to deliver each unit of the course. Interactive and participatory exercises akin to adult learning are employed to evoke participants' experiences. These experiences are used as raw material for learning. Didactic lectures are used to impart concepts and principles on quality management.

A knowledge-based assessment instrument is used to test knowledge at the beginning and at the end of the training. A transfer project is required to assess acquisition and mastery of competencies. Evaluation of training is designed around KirkPatrick's four-level evaluation model described in the following table.

The transfer project is used as the ultimate assessment instrument and evaluation tool for the course; it fosters a team approach and links learning and competencies acquired in training with the workplace. Its effective implementation should result in transformation of health services. This, indeed, is the anticipated outcome and impact of the KQMH training course.

KirkPatrick's four-level evaluation model

Types of evaluation	Suggested methods	Tools used
During and at the end of the course: **Level 1: Participant reaction (Did they like it?)**	• Daily participant written or oral feedback • Daily trainers meetings • Session trainer evaluation • End of course evaluation/ informal discussions	• End of module evaluation tool • Facilitator evaluation tool • Daily recaps
Level 2: Participant learning (Did they learn?) Understanding of principles, facts, demonstration of skills and techniques and the ability to apply them	• Knowledge-based assessment instruments (pre-and post-course tests) • Competency-based skills assessment (e.g. checklist)	• Pre- and post-test • Peer assessment tool for attitudes • Checklist to evaluate transfer project
Post – Training **Level 3: On-job performance (Are they using it?)** Application of competencies acquired at workplace measured through job performance	• Site visit evaluations • Interviews with individuals who completed training • Interviews with supervisors	• Checklist to evaluate transfer project • Interviews with alumni • Interviews with supervisor
Level 4: Impact or results (Is it having an effect?) Change in quantity and quality of services	• Service delivery statistics • Client exit interviews • Client record reviews • Observations at the facility	• Service delivery statistics • Client exit interviews • Client record reviews • Observations at the facility

1.5 Structure of the Manual

This facilitator' guide is divided into six parts:

- Part 1 – Introduction
- Part 2 – Course syllabus
- Part 3 – Course schedule
- Part 4 – Training logistics
- Part 5 – Facilitator's guide
- Annexes – Checklists, case studies and assessment tools for this course

1.6 How to Use the Facilitator's Manual

This facilitator's manual is written specifically to guide the facilitator on how to deliver each unit and session of the course. The manual should be used together with the KQMH Implementation Guide, which serves as a reference manual. Standard training slides have also been developed for training and are available

on a separate CD. The lesson plans in the facilitator's manual provide references for training slides for each session. Use of these training tools will ensure a more effective, efficient and standard delivery of the KQMH training course.

PART 2

COURSE SYLLABUS

COURSE SYLLABUS

2.1 Course Description

This course is designed to equip health workers with knowledge, skills and attitudes to facilitate delivery of efficient and high-quality services according to KQMH standards. The training employs didactic and practical methodology in imparting quality improvement concepts, processes and tools. The course takes 1 to 5 days depending on the level of knowledge of the health workers being trained.

2.2 Course Goals

1. To build capacity of health workers to integrate quality improvement in their work.

2. Participants will be able to implement continuous quality improvement in their work and in the organizational structures of their health facilities.

2.3 General Course Objectives

By the end of this course the participant should be able to:

1. Apply the health systems approach, concepts and principles to improve the quality of healthcare services in Kenya
2. Explain the key principles, concepts and approaches governing healthcare service delivery in Kenya
3. Discuss KQMH, its principles, components, dimensions, implementation phases and its link to ISO standards
4. Describe the principles of 5S (Sort Set Shine Standardize and Sustain), Continuous Quality Improvement (CQI) and their application in achieving Total Quality Management (TQM)
5. Describe the KQMH monitoring and evaluation tools
6. Demonstrate use of KQMH monitoring and evaluation tools in quality improvement interventions
7. Explain the structures for implementing quality improvement
8. Apply adult learning interactive methodology when delivering KQMH training content
9. Assess participants in KQMH training programs

2.4 Course Modules

2.4.1 The Healthcare System in Kenya

2.4.1.1 Module Description

This module introduces participants to the health system in Kenya and how it is organized to deliver health services. This information provides the conceptual framework for a health manager and provider, and enables better understanding of how the health system functions and how to integrate quality improvement and management within healthcare services in Kenya.

2.4.1.2 Specific Objectives

By the end of this module the participant should be able to:

1. Describe the Kenya healthcare system and its building blocks
2. Outline the building blocks of the health system and their outcomes
3. Describe the Kenya Essential Package for Health (KEPH)
4. Describe key health systems actors and their roles
5. Describe the role of national teams in quality improvement policies, strategies and regulations addressing population health needs
6. Outline the role of county teams in coordinating the application of quality improvement policies, strategies and regulations
7. Outline the role of service delivery teams in integrating quality improvement principles and approaches to impact patient and population health outcomes
8. Discuss performance gaps in the Kenya healthcare system

2.4.1.3 Course Units and Time Allocation

Note: The training consists of 8 contact hours per day for 5 days, assuming that a typical training day begins at 8.00 a.m. and ends at 5.00 p.m., with a 1-hour lunch break and two health breaks of 30 minutes each.

Course units	Time allocated
Unit 1.1 Healthcare system in Kenya	1 hour
Unit 1.2 Performance of the healthcare system	1 hour 30 minutes
Total	2 hours 30 minutes

2.4.1.4 Training Methods

The training methodology employed in this module is experiential, participatory, interactive and didactic, and is selected from the following methods–

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisual – DVD
- Group work/discussion
- Brainstorming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions

- Field visits

2.4.1.5 Training Resources/Materials

- Audiovisual equipment – LCD projector and a laptop
- Flip chart
- Marker pens
- Masking tape
- Notebooks and pens

2.4.1.6 Methods of Evaluation

- Pre-course questionnaire to assess participant entry behavior
- Post-course questionnaire to assess knowledge acquisition at the end of the training
- Competency-based skills checklist to assess skills acquisition
- Peer assessment to assess attitudes
- End of course evaluation to assess participant's reaction to the course

2.4.1.7 Recommended Reading

1. Africa Union. (2007, April). *Africa Health Strategy: 2007–2015*. Presented at the Experts meeting on the Africa Health Strategy, Addis Ababa, Ethiopia. Retrieved from http://www.africa-union.org/root/UA/Conferences/2007/avril/SA/9-3%20avr/doc/en/Health_Strategy_Min_Draft.pdf).
2. Government of Kenya. (2010). *Kenya Vision 2030*. Nairobi: Government Printer.
3. Heiby, J.R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development*, (pp. 142–147). Washington DC: USAID.
4. Ministry of Health. (2013). Kenya Health Sector Strategic and Investment Plan (KHSSP) July 2013–June 2017: The second medium-term plan for health. Nairobi: Government of Kenya.
5. Ministry of Health. (2012). Kenya Health Policy 2012–2030. Nairobi: Government of Kenya.
6. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011*. Nairobi: Government of Kenya.
7. Muga R., Kizito, P., Mbayah, M., & Gakuruh, T. (2005). Overview of the health system in Kenya. In: National Coordinating Agency for Population and Development (NCAPD) [Kenya], Ministry of Health (MOH), Central Bureau of Statistics (CBS), ORC Macro. 2005. *Kenya Service Provision Assessment Survey 2004*. Nairobi, Kenya: NCAPD, MOH and CBS.
8. Savigny, D. & Adam, T., (eds.). (2009). *Systems thinking for health systems strengthening*. Geneva: WHO.
9. WHO. (2010). Framework for the implementation of the Ouagadougou Declaration on primary healthcare and health system in Africa: Achieving better health for Africa in the new millennium. Brazzaville, Congo: WHO Regional Office for Africa.
10. WHO. (2011). Abuja Declaration: Ten years on. Geneva: WHO.

2.4.2 An Overview of the Kenya Quality Model for Health

2.4.2.1 Module Description

This module unpacks the Kenya Quality Model for Health (KQMH) by describing its components, principles, dimensions and quality standards. It also provides a comparative analysis of KQMH and other quality management models, systems and frameworks, for example, ISO 9001:2008. An understanding of the relationship and linkages among these models enables an appreciation of the synergy and integration that can be achieved at the workplace for improved healthcare services.

This module also introduces participants to the practical application of KQMH tools to assess compliance and adherence to health standards, and the certification and accreditation processes derived from observing standards.

2.4.2.2 Specific Objectives

By the end of this module the participant should be able to:

1. Describe KQMH, its components, principles, dimensions and quality standards
2. Illustrate the link between KQMH and ISO 9001:2008
3. Outline the various tools for operationalizing KQMH
4. Describe the implementation phases of KQMH

2.5.3 Course Units and Time Allocation

Course units	Time allocated
Unit 2.1 Introduction to KQMH	1 hour 40 minutes
Unit 2.2 KQMH and ISO 9001:2008	1 hour
Unit 2.3 Implementation phases of KQMH	1 hour
Total	3 hours 40 minutes

2.5.4 Training Methods

The training methodology in this module is experiential, participatory/interactive and didactic, and is selected from:

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisuals – DVD
- Group work/discussions
- Brainstorming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions
- Worksheets to practise and master skills
- Field visits

2.5.5 Training Resources/Materials

- Audiovisual equipment – LCD projector, laptop
- Flip chart

- Marker pens
- Masking tape
- Notebooks and pens

2.5.6 Methods of Evaluation

- End of course evaluation to assess participant reaction to the course.
- Pre-course questionnaire to assess participant entry behavior.
- Post-course questionnaire to assess knowledge acquisition at the end of the training.
- Peer assessment to assess attitudes.
- Competency-based skills checklist to assess skills acquisition.

2.5.7 Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM.* Japan: JICA.
2. JICA. (2010). *5S–KAIZEN–TQM Good practices collection*. Japan: JICA.
3. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Author.
4. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–KAIZEN–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf
5. USAID–HCI. (2011). *The science of improvement.* Retrieved from http://www.hciproject.org/improvement_tools/improvement_methods/science

2.4.3 Introduction to Quality and Quality Improvement in Health

2.4.3.1 Module Description

This module equips participants with information on the concept of quality and its dimensions, and the methods and principles of quality within the context delivering health services in Kenya. A good grounding in quality concepts, methods, models and theoretical frameworks enables a better understanding of the quality improvement and management work at different levels in the Ministry of Health.

2.4.3.2 Specific Objectives

By the end of this module the participant should be able to:

1. Define the key concepts of quality
2. Distinguish between traditional and modern quality improvement methods
3. Explain how quality of care impacts on providers, clients and the community
4. Identify linkages to improving quality of care
5. Explain the theoretical frameworks for modern quality improvement

2.4.3.3 Course Units and Time Allocation

Course units	Time allocated
Unit 3.1 Dimensions in quality and quality management	1 hour
Unit 3.2 Approaches in quality management	1 hour
Unit 3.3 Theoretical models/frameworks for modern quality improvement	1 hour 30 minutes
Total	3 hours 30 minutes

2.4.3.4 Training Methods

The training methodology employed in this module is experiential, participatory/ interactive and didactic, and is selected from

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisuals – DVD
- Group work/discussions
- Brainstorming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions
- Worksheets to practise and master skills
- Field visits

2.4.3.5 Training Resources/Materials

- Audiovisual equipment – LCD projector and a laptop
- Flip chart
- Marker pens

- Masking tape
- Notebooks and pens

2.4.3.6 Methods of Evaluation

- End of course evaluation to assess participant reaction to the course.
- Pre-course questionnaire to assess participant entry behavior.
- Post-course questionnaire to assess knowledge acquisition at the end of the training.
- Peer assessment to assess attitudes.
- Competency-based skills checklist to assess skills acquisition.

2.4.3.7 Recommended Reading

1. Heiby, J.R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development,* (pp. 142–147). Washington DC: USAID.
2. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011.* Nairobi: Government of Kenya.
3. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM.* Japan: JICA.

2.4.4 Quality Improvement Tools and their Application in KQMH

2.4.4.1 Module Description

This module prepares participants for the use of different tools to collect, analyze, interpret and use data to improve their work environment and health services.

2.4.4.2 Specific Objectives

By the end of this module the participant should be able to:

1. Define the principles of work environment improvement
2. Describe the tools for work environment improvement
3. Apply the work improvement tools to improve and better manage the workplace
4. Describe the tools used for continuous quality improvement Use CQI tools to improve health services
5. Describe the roadmap from work environment improvement to CQI to TQM

2.4.4.3 Course Units and Time Allocation

Course units	Time allocated
Unit 4.1 Principles of work environment improvement	40 minutes
Unit 4.2 Tools for work environment improvement	50 minutes
Unit 4.3 Introduction to CQI, tools and their application	6 hours 30 minutes
Total	8 hours

2.4.4.4 Training Methods

The training methodology employed in this module is experiential, participatory/ interactive and didactic, and is selected from–

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisuals – DVD
- Group work/discussions
- Brainstorming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions
- Worksheets to practise and master skills
- Field visits

2.4.4.5 Training Resources/Materials

- Audiovisual equipment – LCD projector, laptop
- Flip chart
- Marker pens
- Masking tape
- Notebooks and pens

2.4.4.6 Methods of Evaluation

- End of course evaluation to assess participant reaction to the course.
- Pre-course questionnaire to assess participant entry behavior.
- Post-course questionnaire to assess knowledge acquisition at the end of the training.
- Peer assessment to assess attitudes.
- Competency-based skills checklist to assess skills acquisition.

2.4.4.7 Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM.* Japan: JICA.
2. JICA. (2010). *Good Practices collection on 5S–CQI–TQM for health services.* Japan: JICA.
3. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf.
4. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011.* Nairobi: Government of Kenya.
5. USAID-HCI. (2009). *The Science of Improvement*. Pub Available from http://www.hciproject.org/improvement_tools/improvement_methods/science.

2.4.5 Measurement in Continuous Quality Improvement

2.4.5.1 Module Description

This module introduces participants to the concept of performance measurement. Concepts related to performance are defined, and the practical application of methods and tools for tracking performance within the KQMH framework are discussed and practised. Consequently, participants will be able to measure quality improvement initiatives and account for and report on them effectively.

2.4.5.2 Specific Objectives

By the end of this module the participant should be able to:

1. Define process performance
2. List types of process performance measures
3. Explain the different types of performance measures
4. Develop improvement indicators
5. Collect valid data and analyze, interpret and use the data to document changes and lessons learned from improving the workplace and services
6. Demonstrate the use of KQMH checklist

2.4.5.3 Course Units and Time Allocation

Course units	Time allocated
Unit 5.1 Performance measurement in quality improvement	4 hours 30 minutes
Unit 5.2 Applying the KQMH monitoring sheet to evaluate the progress of quality improvement activities	1 hour 30 minutes
Total	6 hours

2.4.5.4 Training Methods

The training methodology employed in this module is experiential, participatory/ interactive and didactic, and is selected from–

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisuals – DVD
- Group work /discussions
- Brain storming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions
- Worksheets to practise and master skills
- Field visits

2.4.5.5 Training Resources

- Audiovisual equipment – LCD projector, laptop
- Flip chart
- Marker pens

- Masking tape
- Notebooks and pens

2.4.5.6 Methods of Evaluation

- End of course evaluation to assess participant reaction to the course.
- Pre-course questionnaire to assess participant entry behavior.
- Post-course questionnaire to assess knowledge acquisition at the end of the training.
- Peer assessment to assess attitudes.
- Competency-based skills checklist to assess skills acquisition.

2.4.5.7 Recommended Reading

1. Benneyan, J. C., Lloyd, R. C., Plsek, P. E. (2003). Statistical process control as a tool for research and healthcare improvement. *Quality and Safety in Healthcare* 12(6):458–464. doi:10.1136/qhc.12.6.458
2. JICA. (2010). *Good Practices collection on 5S–CQI–TQM for health services.* Japan: AAKCP.
3. Johan, T., Lunberg, J., Ask, J., et al. (2007). Application of Statistical Process Control in healthcare improvement: a systematic review. *Quality and Safety in Healthcare* 16(5):387–399. doi:10.1136/qshc.2006.022194
4. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf
5. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011.* Nairobi: Government of Kenya.

2.4.6 Structures for Implementing Quality Improvement

2.4.6.1 Module Description

The focus of this module is how to implement quality improvement—the processes, tasks, structures and actors involved. Additionally, it provides participants with step-by-step guidance on how to set up a quality improvement agenda.

2.4.6.2 Specific Objectives

By the end of this module the participant should be able to:

1. Describe the structures for implementing quality improvement
2. Describe the specific tasks of a quality improvement team
3. Discuss the roles of a work improvement team
4. Describe how to establish and support an improvement team
5. Outline the steps to take in setting up a quality improvement agenda

2.4.6.3 Course Units and Time Allocation

Course units	Time allocated
Unit 6.1 Functions and roles of quality improvement teams, work improvement teams and supporting a work improvement team	1 hour
Total	1 hour

2.4.6.4 Training Methods

The training methodology employed in this module is experiential, participatory/interactive and didactic, and is selected from–

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisuals – DVD
- Group work/discussions
- Brain storming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions
- Worksheets to practise and master skills
- Field visits

2.4.6.5 Training Resources/Materials

- Audiovisual equipment – LCD projector, laptop
- Flip chart
- Marker pens
- Masking tape
- Notebooks and pens

2.4.6.6 Methods of Evaluation

- End of course evaluation to assess participant reaction to the course.

- Pre-course questionnaire to assess participant entry behavior.
- Post-course questionnaire to assess knowledge acquisition at the end of the training.
- Peer assessment to assess attitudes.
- Competency-based skills checklist to assess skills acquisition.

2.4.6.7 Recommended Reading

1. Benneyan, J. C., Lloyd, R. C., Plsek, P. E. (2003). Statistical process control as a tool for research and healthcare improvement. *Quality and Safety in Healthcare* 12(6):458–464. doi:10.1136/qhc.12.6.458
2. JICA. (2010). *Good Practices collection on 5S–CQI–TQM for Health Services*. Japan: AAKCP.
3. Johan, T., Lunberg, J., Ask, J., et al. (2007). Application of Statistical Process Control in healthcare improvement: a systematic review. *Quality and Safety in Healthcare* 16(5):387–399. doi:10.1136/qshc.2006.022194
4. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania*. Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf
5. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011*. Nairobi: Government of Kenya.
6. USAID–HCI. (2011). *The Science of Improvement*. Retrieved from http://www.hciproject.org/improvement_tools/improvement_methods/science.

2.4.7 Facilitation Skills

2.4.7.1 Module description

This module targets managers and trainers and seeks to equip them with basic knowledge, skills and attitudes to impart quality management and improvement competencies to health workers. Coaching and mentorship are also discussed to ensure providers are supported in the workplace to master the concepts and effectively implement KQMH.

2.4.7.2 Specific Objectives

By the end of this module the participant should be able to:

1. Define training and education
2. Apply adult learning principles in training and facilitation
3. Describe how to undertake a training needs assessment
4. Discuss how to plan and develop a training schedule and a lesson plan
5. Identify the various training media and their application in training
6. Describe the principles of adult learning
7. Describe KirkPatrick's four levels of evaluation
8. Describe the GROW (Goal, Reality, Options, Will) concept and apply it in mentoring and coaching trainees

2.4.7.3 Course Units and Time Allocation

Course units	Time allocated
Unit 7.1 Introduction to training	1 hour
Unit 7.2 Preparing to train	1 hour
Unit 7.3 Training delivery	1 hour 30 minutes
Unit 7.4 Evaluating training	30 minutes
Unit 7.5 Mentoring and coaching	1 hour 30 minutes
Total	5 hours 30 minutes

2.4.7.4 Training Methods

The training methodology employed in this module is experiential, participatory/interactive and didactic, and is selected from:

- Illustrated lectures (PowerPoint presentations)
- Role-plays
- Audiovisuals – DVD
- Group work/discussions
- Brain storming
- Case studies/case scenarios
- Question-and-answer sessions
- Plenary discussions
- Worksheets to practise and master skills
- Field visits

2.4.7.5 Training Resources/Materials

- Audiovisual equipment – LCD projector, laptop
- Flip chart
- Marker pens
- Masking tape
- Notebooks and pens

2.4.7.6 Methods of Evaluation

- End of course evaluation to assess participant reaction to the course.
- Pre-course questionnaire to assess participant entry behavior.
- Post-course questionnaire to assess knowledge acquisition at the end of the training.
- Peer assessment to assess attitudes.
- Competency-based skills checklist to assess skills acquisition.

2.4.7.7 Recommended Reading

1. Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences.* New York: Basic Books.
2. Krathwohl, D. R. (2002). A revision of bloom's taxonomy: An overview. *Theory into Practice* 41(4):212–218.
3. Ackland, R. (1991). A review of the peer coaching literature. *Journal of Staff Development* 12(1):22–27.
4. Anderson, R. H. (1993). Contingency supervision: Basic concepts. In: R. H. Anderson & K. J. Snyder, (eds.), *Clinical supervision: Coaching for higher performance,* (pp. 157–167). Lancaster, PA: Technomic Publishing Co.

2.5 Target Groups/Criteria for Participant Selection

This course adopts a team approach in selecting participants to ensure the group can work together in developing and implementing quality improvement activities in their units: division, department, facility, county, sub-county, etc. This provides a link between training and the workplace and ensures that training has an effect or impact on delivery of services. The selection is not based on qualifications but on the functions undertaken at work.

The county health management team is responsible for selecting eligible participants. A description of the selection criteria is sent to the team for this purpose before the training. The target group cuts across five groups. The participants identified are categorized according to their core role in health services delivery as well as the desired outcome of the training. These broad categories and the desired outcomes include:

Target group	Desired outcome
Policymakers including politicians, in national and county and sub-county agencies and bodies	• Leadership in quality improvement provided • Resources mobilized • Oversight in governance to ensure quality health service delivery provided
Top/senior managers including staff at the national ministry headquarters, county headquarters and chief executive officers of national referral hospitals	• Leadership in quality improvement provided • Resources mobilized • Oversight in governance to ensure quality health service delivery provided • Health workers and managers supervised
All staff working at all levels of care including members of quality improvement teams (QIT) and work improvement teams (WIT)	• Health workers and managers supervised • Quality improvement managed • Quality management integrated in health service delivery
Trainers of trainers/quality improvement coaches Pre-service training of healthcare workers	• In-service training on quality management undertaken • Mentorship program institutionalized • Graduates in quality management

2.6 Criteria for Selecting Trainers

Trainers, facilitators and moderators for in-service training for health managers and providers will be drawn from state and non-state actors including the Ministry of Health, faith-based organizations, development partners, and academic and consulting institutions.

The trainer must:
- have undertaken KQMH training
- have implemented a KQMH initiative for 9–12 months in at least 3 projects
- be a trained trainer of trainers (TOT)
- be a member of QIT, WIT, or Quality Improvement technical working group (TWG)

Trainer facilitator ratio must be 1:12, meaning that the maximum number of participants per class for 2 facilitators is 24.
Trainers, facilitators and moderators of the training for policymakers, top-level leadership and the two-day training of TOT will be outsourced from an accredited training institution or training consultants.

Ultimately, KQMH training will be integrated into pre-service training in health training institutions such as the Kenya Medical Training College, private health training institutions and institutions of higher learning.

2.7 Course Duration

The duration of training is determined by the target group and the content in the modules. The time allocated to each module is shown below:

Categories of participants	Duration of training
Policymakers	4-hour training of module 1 in ½ day
Top-level leadership	6 hours in a 1-day workshop
Pre-service training	40 hours over a 3-month period; 5 sessions per week
Trainer of trainers (TOT)	36 hours of 5-day training and 10 hours of 2-day training on facilitation skills
Other categories	36 hours in a 5-day workshop

2.8 Performance Assessment/Methods of Student Evaluation

Formal performance assessment is recommended during the use of this course. This is especially suitable to determine whether learning has taken place. Pre-test and post-test assessments will be conducted during the 5-day training for service managers and providers, some of whom will be members of QITs and WITs. The trainer will assess the training through question-and-answer sessions to continuously assess gaps as well as level of understanding of specific key issues in each unit.

The performance of TOTs will be assessed through teach back to ensure that they acquire competencies required to effectively train others.

The KQMH training will address the gap between theory and practice through a 'Transfer Project'. Participants will be expected to transfer the knowledge and skills gained during the course in their workplaces through implementing a quality improvement project. Training facilitators will be available to coach and guide participants during implementation of the transfer projects.

2.9 Certification

All participants will receive a serialized certificate of attendance for all training sessions held under this course, indicating the type of training, number of days, venue, date and the organizers.

2.10 Course Review and Change

Feedback collected from participants and facilitators will form the basis of future course review. Revisions will also be guided by ongoing developments within the field of quality improvement.

To ensure evidence-based review and amendments, summarized and brief training workshop reports will be delivered to DSRS within two weeks of completing each training. Lessons learned from these reports will be shared during experience sharing workshops. Recommendations made will be presented to quality management technical working groups to inform course review.

2.11 Experience-Sharing Workshops

Sub-national management teams will host experience-sharing workshops that will bring together health facilities and stakeholders to review progress made in quality improvement initiatives. The specific objectives of the experience-sharing workshops will be:

- For participants to present their transfer projects, highlighting results and impact achieved
- To share and learn from each other's experiences
- To recognize various best practices and achievements.

PART 3

COURSE SCHEDULE

COURSE SCHEDULE

3.1 Proposed Training Schedule for Policymakers (National, County and Political Leaders)

Course Title: Orientation to Quality Management Systems in Health

Target Group: Senior management at national level, politicians (Parliamentary Committee on Health) county levels and health facilities at level 6; program managers, parastatal heads

Expected Learning Outcomes

By the end of the course the participant should be able to:

- Discuss and give an overview of health system components, characteristics, performance
- Define key concepts (traditional and modern methods) of quality improvement
- Discuss quality and quality management and their link to population health needs
- Give an overview of KQMH
- Describe KQMH components and linkages to 5S, CQI and ISO 9000 systems
- Demonstrate understanding of the application of quality improvement at national, county/sub county and service delivery teams levels

Resources

Training will be conducted by national trainers drawn from a variety of organizations including the Ministry of Health, faith-based organizations, development partners and academic institutions and quality improvement experts. The national trainers will have undertaken a 3-day training of trainers (TOT) course.

Content

The course will include the following topics:

- Overview of health systems: Components, characteristics and performance
- Introduction to quality and quality improvement: Definition of key concepts, traditional and modern quality improvement methods
- Overview of KQMH: components and linkages to KQMH–CQI, 5S CQI–TQ and ISO 9001:2008
- Application of quality improvement: role of national, regional and service delivery teams, action plan for rolling out KQMH
- What process improvement has achieved globally in healthcare including pilot case studies (Tanzania, Ghana and Japan)

Course Design

A non-residential workshop will be organized and both theoretical and practical sessions will be used to deliver the training.

Course Methodology

Participatory approaches will be encouraged throughout the training. Teaching methods will include lectures, group exercises, plenary sessions and case studies.

Course Duration: 1 Day

Time	Topic
08:30 – 09:00	Opening and introductions
09:00 – 09:30	Introduction to Quality and Quality Improvement: Definition of key concepts; Traditional and modern QI methods
09:30 – 10:00	What process improvement has achieved globally in healthcare including pilot case studies (Tanzania, Ghana, Japan)
10:00 – 10:15	Tea Break
10:15 – 10:45	Quality improvement in the context of population health outcomes, MDGs and Vision 2030
10:45 – 11:30	Overview of KQMH: Components; Linkage to 5S–CQI and ISO 9000; Implementation phases
11:30 – 12:45	Application of QI: Role of national, county, subcounty and service delivery teams.

3.2 Proposed Training Schedule for county health managers, level 4–6, District Health Management Teams, Health Management Teams & District Coordinators of Implementing Partners, Quality Improvement Teams and Work Improvement Teams drawn from KEPH levels 2 and 3

Kenya Quality Model for Health Training Course for the Health Sector in Kenya – 5-day Training					
Time	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**
8.30 – 10. 30 a.m.	Preliminaries Welcome & introduction Course expectations Course goals & objectives Course schedule Group norms Pre-course assessment **Module 1: Overview of the healthcare system in Kenya** **Unit 1.1:** Healthcare system in Kenya (1 hr)	**Recap Day 1 (10 min)** **Unit 2.3:** Implementation phases of KQMH (40 min) **Module 3: Introduction to Quality and Quality Improvement in Health** **Unit 3.1:** Dimensions in Quality and Quality Management (1 hr)	**Recap Day 2 (10 min)** **Unit 4.3:** Introduction to tools for CQI and their application (continued) (1 hr 50 min)	**Recap Day 3 (10 min)** **Unit 5.1:** Performance measurement in continuous quality improvement (1 hr 50 minutes)	**Recap Day 4 (10 min)** **Unit 6.1:** Functions and roles of QITs and WITs; Supporting a WIT (30 min) **Module 7: Facilitation skills** **Unit 7.1:** Introduction to training (1 hr) **Unit 7.2:** Preparation for training (20 min)
10.30 – 11. 00 a.m.	**TEA BREAK**				
11.00 – 1.00 p.m.	**Unit 1.2:** Performance of the health system (1 hr 30 min) **Module 2: An Overview of the Kenya Quality Model for Health (KQMH)** **Unit 2.1:** Introduction to KQMH (30 min)	**Unit 3.2:** Approaches to quality management (1 hr) **Unit 3.3:** Theoretical models / frameworks for modern quality improvement (1 hr)	**Unit 4.3:** Introduction to tools for CQI and their application (2 hr)	**Unit 5.1:** Performance measurement in continuous quality improvement (2 hr)	**Unit 7.2:** Preparation for training (40 min) **Unit 7.3:** Training delivery (1 hr 30 min) **Unit 7.4:** Evaluating training (30 min) **Unit 7.5:** Mentoring and coaching (20 min)

Kenya Quality Model for Health Training Course for The Health Sector in Kenya– 5 day Training					
Time	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**
1.00 p.m. – 2. 00 p.m.	**LUNCH BREAK**				
2.00 – 4.30 p.m.	Introduction to KQMH (1 hr 10 min) Unit 2.2: KQMH and ISO 9001:2008 (1 hr) Unit 2.3: Implementation phases of KQMH (20 min)	**Unit 3.3:** Theoretical model / frameworks for modern quality improvement (30 min) **Module 4: Quality Improvement Tools and their Application in KQMH** **Unit 4.1:** Principles for work environment improvement (40 min) **Unit 4.2:** Tools for work environment improvement (50 min) **Unit 4.3:** Introduction to tools for CQI and their application (30 min)	**Unit 4.3:** Introduction to tools for CQI and their application..continued (2 hr 10 min) **Module 5: Measurement in Continuous Quality Improvement** **Unit 5.1:** Performance measurement in continuous quality improvement (20 min)	**Unit 5.1:** Performance measurement in continuous quality improvement (30 min) **Unit 5.2:** Applying the KQMH monitoring sheet to evaluate progress of quality improvement activities (1 hr 30 min) **Module 6: Structures for Implementing Quality Improvement** **Unit 6.1:** Functions and roles of QITs, and WITs, and supporting a WIT (30 min)	**Unit 7.5:** Mentoring and coaching (1 hr 10 min)

PART 4

TRAINING LOGISTICS

TRAINING LOGISTICS

4.1 Venue

The training venue should be well lit, ventilated and comfortable. It should have ample space for both the theoretical and practical aspects of the course.

4.2 Budgets and finances

All courses cost money and a careful budget must be established before running any course. If possible, facilitators should not be too involved with the day-to-day financial matters of the course such as payment of fees, travel costs and per diems. It is important to explain the financial arrangements to participants at the beginning of the course to avoid the training being disrupted by such matters.

4.3 Before the course starts

Ensure that letters of invitation are sent well in advance to all participants. These letters should include the length and structure of the course, details of the venue and the time participants are expected to arrive. The letter should also include details of costs and any reimbursements.

4.4 When participants arrive

Welcome the participants when they arrive. It helps to have a letter waiting for them at the reception, which gives details of the specific venue of the course, the start time and anything they will need to bring with them. It should also have the names and details of the facilitators.

4.5 How to structure the day

Please read this section carefully before you start planning your course.
The timetable for the course runs from 8.00 a.m. to 5.00 p.m. each day.

- **Agenda for the day:** Each day, a brief outline of the topics to be covered should be given before the day's activities commence.
- **Expectations and Group Norms:** Before the training begins, the facilitator will explore participant expectations of the training and negotiate with them to ensure these expectations and training objectives are achieved.
- **Energizers:** You need to include energizers at least twice a day or more. If the weather is hot, the afternoon sessions need to encourage participation even more than the mornings. Trainers need to set group work, games and practical exercises rather than lectures for the afternoons.

4.6 Checklist for supplies needed

Supplies needed for each participant:

- Name tag and holder
- Felt pen
- Paper
- Ball point pen

Supplies needed for each group:

- Paper clips
- 2 rolls of transparent tape
- Stapler and staples
- Rubber bands
- Extra pencils and erasers
- 1 roll masking tape
- Flip chart pad
- Marker pens
- A clean, medium-sized ball

Instructional materials needed in each group

- Facilitator's guide
- Videotapes/DVD
- Video/DVD player
- LCD and/or overhead projector
- Laptop
- Printed hand-outs of presentations
- Matrix and tree diagrams
- Driver's diagram
- Clinical audit tool (WHO)

PART 5

FACILITATOR'S GUIDE

MODULE 1

The Healthcare System in Kenya

Module Description

This module introduces participants to health systems in Kenya and how they are organized to facilitate delivery of quality health services. This information provides a conceptual framework for a health manager and provider and enables better understanding of how the health system functions, and an appreciation of how to integrate quality improvement and management within healthcare services in Kenya.

Module Objectives

By the end of this module participant should be able to:

1. Describe the Kenya healthcare system and its building blocks
2. Outline the building blocks of a health system and their outcomes
3. Describe the Kenya Essential Package for Health (KEPH)
4. Describe key health system actors and their roles
5. Describe the role of national teams in quality improvement policies, strategies and regulations addressing population health needs
6. Outline the role of county teams in coordinating the application of quality improvement policies, strategies and regulations
7. Outline the role of service delivery teams in integrating quality improvement services to impact patient and population health outcomes
8. Discuss performance gaps in the Kenya healthcare system

The module covers two units—

Unit 1.1 Healthcare system in Kenya
Unit 1.2 Concepts and principles in healthcare delivery

Unit 1.1: Healthcare System in Kenya

Purpose

To discuss the history of healthcare delivery and the system currently used to deliver health services.

Specific Objectives

- Describe the Kenya healthcare system and its components
- Outline the components of the healthcare system and their outcomes
- Describe KEPH
- Describe the key healthcare system actors and their roles
- Describe the role of national teams in quality improvement policies, strategies and regulations addressing population health needs
- Outline the role of county teams in coordinating the application of quality improvement policies, strategies and regulations

Lesson Plan Guide

Time: 2 hours

Time	Content	Training objectives	Training methodology and learning activities	Resources/ materials
25 min	Kenya healthcare system	Describe the Kenya healthcare system and its components	Interactive lecture Group exercises	**PPT slide Module 1: Unit 1** LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs
30 min	Roles of national quality improvement teams Roles of county quality improvement teams Roles of facility quality improvement teams Quality improvement policies, strategies and regulations	Discuss the national strategy and action plan for quality improvement	Group discussion Interactive lecture	LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs
20 min	Building blocks in health and their outcomes	Outline the building blocks in health and their outcomes	Interactive lecture Group exercises	LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs

Time	Content	Training objectives	Training methodology and learning activities	Resources/ materials
25 min	Kenya Essential Package for Health (KEPH)	Describe KEPH	Interactive lecture Group exercises	LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs
20 min	Key health system actors and their roles	Describe the key health system actors and their roles	Interactive lecture Group exercises	LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs

Facilitator's Notes

1. The following steps are proposed to cover this unit.
Ask participants to answer a set of questions in groups or in a brainstorming session. What is generated from the discussion can be noted on a flip chart or laptop for sharing in plenary.
   - Describe the Kenya healthcare system
   - Discuss the Kenya Health Policy 2012–2030, key policy directions
   - What are the building blocks of a healthcare system and what are the outcomes of each?
   - Describe the Kenya Essential Package for Health
   - Who are the key actors in the Kenya health system and what are their roles?

Recommended Reading

1. Africa Union. (2007, April). *Africa Health Strategy: 2007–2015*. Presented at the Experts meeting on the Africa Health Strategy, Addis Ababa, Ethiopia. Retrieved from http://www.africa-union.org/root/UA/Conferences/2007/avril/SA/9-3%20avr/doc/en/Health_Strategy_Min_Draft.pdf).
2. Kenya, Government of. (2010). *Kenya Vision 2030*. Nairobi: Government Press.
3. Heiby, J. R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development*, (pp. 142–147). Washington DC: USAID.
4. Ministry of Health. (2013). *Kenya Health Sector Strategic and Investment Plan (KHSSP) July 2013–June 2017: The second medium-term plan for health*. Nairobi: Government of Kenya.
5. Ministry of Medical Services and Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011*. Nairobi: Government of Kenya.

6. Muga R., Kizito, P., Mbayah, M., & Gakuruh, T. (2005). Overview of the health system in Kenya. In: National Coordinating Agency for Population and Development (NCAPD) [Kenya], Ministry of Health (MOH), Central Bureau of Statistics (CBS), ORC Macro. *Kenya Service Provision Assessment Survey 2004*. Nairobi, Kenya: NCAPD, MOH, CBS and ORC Macro.
7. Savigny, D. & Adam, T., (eds.). (2009). *Systems thinking for health systems strengthening*. Geneva: WHO.
8. WHO. (2010). *Framework for the implementation of the Ouagadougou Declaration on primary healthcare and health system in Africa: Achieving better health for Africa in the new millennium*. Brazzaville, Congo: WHO Regional Office for Africa.
9. WHO. (2011). *Abuja Declaration: Ten years on*. Geneva: WHO.

Unit 1.2: Performance of the Healthcare System

Purpose

To demonstrate understanding of the level of responsiveness of the Kenyan health system in terms of Access, Coverage, Quality, Safety, Equity, Effectiveness, Efficiency, Life cycle approaches, Rights-based approaches, Client-centred services and Sustainability.

Specific Objectives

1. Discuss the performance of the Kenya healthcare system.
2. Identify the performance gaps in the Kenya healthcare system.

Lesson Plan Guide

Time: 1 hour 30 minutes

Time	Content	Training objectives	Training methodology and learning activities	Resources
45 min	Performance of the healthcare system in respect to the six building blocks Indicators in health	Discuss the performance of the Kenya health system	Interactive lecture, discussion Group exercises	**PPT slides: Module 1 Unit 2** LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs
45 min	Gaps in performance of the healthcare system against targets	Identify performance gaps in the Kenya healthcare system	Interactive lecture Group exercises	LCD, laptop, flip chart, pens, marker pens, notebooks, handouts/CDs

Facilitator's Notes

1. The facilitator should review the key markers of the performance of the health system in Kenya including access to care, quality of care, coverage of services, and equity in outcomes.
2. The facilitator should engage participants in group work to discuss the performance of the Kenya healthcare system on the different dimensions (access, coverage, quality care, safety, equity, efficiency, effectiveness) and the health-related Millennium Development Goals.
3. Wrap up session with a summary of the unit.

Recommended Reading

1. Africa Union. (2007, April). *Africa Health Strategy: 2007–2015.* Presented at the Experts meeting on the Africa Health Strategy, Addis Ababa, Ethiopia. Retrieved from http://www.africa-union.org/root/UA/Conferences/2007/avril/SA/9-3%20avr/doc/en/Health_Strategy_Min_Draft.pdf).
2. Kenya, Government of. (2010). *Kenya Vision 2030.* Nairobi: Government Printer.
3. Heiby, J.R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, ((eds.), *USAID Frontiers in Development,* (pp. 142–147). Washington DC: USAID.
4. Ministry of Health. (2013). *Kenya Health Sector Strategic and Investment Plan (KHSSP) July 2013–June 2017: The second medium-term plan for health.* Nairobi: Government of Kenya.
5. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health 2011.* Nairobi: Government of Kenya.
6. Muga R., Kizito, P., Mbayah, M., & Gakuruh, T. (2005). Overview of the health system in Kenya. In: National Coordinating Agency for Population and Development (NCAPD) [Kenya], Ministry of Health (MOH), Central Bureau of Statistics (CBS), ORC Macro. *Kenya Service Provision Assessment Survey 2004.* Nairobi, Kenya: NCAPD, MOH and ORC Macro.
7. Savigny, D. & Adam, T., (eds.). (2009). *Systems thinking for health systems strengthening.* Geneva: WHO.
8. WHO. (2010). *Framework for the implementation of the Ouagadougou Declaration on primary healthcare and health system in Africa: Achieving better health for Africa in the new millennium.* Brazzaville, Congo: WHO Regional Office for Africa.
9. WHO. (2011). *Abuja Declaration: Ten years on.* Geneva: WHO.
10. Ministry of Health. (1994) *Kenya's health policy framework 1994–2010.* Nairobi: Government Printer.

11. Kenya National Bureau of Statistics (KNBS) and ICF Macro. (2010). *Kenya demographic and health survey 2008–09*. Nairobi: KNBS and Calverton, Maryland: ICF Macro.

12. National Council for Population and Development. Available at www.ncpd-ke.org

13. Ministry of Medical Services, Ministry of Public Health and Sanitation, and the Kenya National Bureau of Statistics. (2010). Kenya Service Provision Assessment Survey. Nairobi: Government Printer.

14. Ministry of Public Health and Sanitation. (2010). *Child survival indicator survey, 2010: Central, Coast, Eastern, Nairobi, North Eastern and Rift Valley Provinces using the Lot Quality Assurance Sampling (LQAS) methodology*. Nairobi: National Coordinating Agency for Population and Development.

15. Ministry of Health. (2009). *Kenya AIDS Indicator Survey 2007*. Nairobi: National AIDS and STI Control Programme.

16. Ministry of Health. September 2013. *Kenya AIDS Indicator Survey 2012*. Nairobi: National AIDS and STI Control Programme.

17. Division of Malaria Control [Ministry of Public Health and Sanitation], Kenya National Bureau of Statistics, and ICF Macro. (2011). *2010 Kenya malaria indicator survey*. Nairobi, Kenya: Division of Malaria Control.

18. Kenya National Bureau of Statistics. (2000). Kenya Multiple Indicator Cluster Survey (MICs). Nairobi: Kenya National Bureau of Statistics.

MODULE 2

An Overview of the Kenya Quality Model for Health (KQMH)

Module Description

This module unpacks KQMH by describing its components, principles, dimensions and quality standards. It also provides a comparative analysis of KQMH and other quality management models, systems and frameworks, such as ISO 9001:2008. An understanding of the relationships and linkages among these models enables an appreciation of the synergy and integration that can be achieved at the workplace for improved healthcare services.

This module also introduces participants to the practical application of KQMH tools to assess compliance and adherence to health standards and the attendant certification and accreditation processes derived from observing the standards.

Module Objectives

By the end of this module participant should be able to:

- Describe KQMH, its components, principles, dimensions and quality standards
- Illustrate the link between KQMH and ISO 9001:2008
- Outline the various tools for operationalizing KQMH
- Describe the implementation phases of KQMH

The module covers three units:

Unit 2.1 Introduction to KQMH
Unit 2.2 KQMH and ISO 9001:2008
Unit 2.3 Implementation phases of KQMH

Unit 2.1: Introduction to the Kenya Quality Model for Health

Purpose

The purpose of this unit is to facilitate participant understanding of KQMH, its components, principles, dimensions and quality standards.

Specific Objectives

1. Discuss the historical background of KQMH
2. Discuss the components of KQMH
3. Discuss principles, dimensions and quality standards of KQMH

Lesson Plan Guide

Time: 1 hour 40 minutes

Time	Content	Training objectives	Training methodology and learning activities	Resource materials
20 min	Historical background of KQMH	Discuss the developmental milestones of KQMH	Interactive lecture	**PPT slides: Module 2 Unit 1** LCD, laptops Flip chart, pens, marker pens, notebooks, presentation printouts/CDs
20 min	Components of KQMH	Discuss the KQMH components	Interactive lecture	LCD, laptops, flip chart, pens, marker pens, notebooks, presentation print-outs/CDs
1 hr	Principles, dimensions and quality standards.	Discuss KQMH prin-ciples, dimensions and quality stand-ards	Discussion Q&A	LCD, laptops, flip chart, pens, marker pens, notebooks, presentation print-outs/CDs

Facilitator's Notes

1. Recap of previous module (module 2).
2. Ask participants a set of questions: What does a model mean? Brainstorm on meaning of the word model - A model is a representation of reality.
3. Ask them whether they have heard of KQMH? What is KQMH? Collate feedback and summarize using PPT.
4. Introduce KQMH and components using the PowerPoint presentation.
5. Group work on KQMH principles. Divide participants into groups of 4 to 8 members, distribute handouts on review of quality management principles.

TASK

- Read the 7 proposed principles. Based on your experience and knowledge, identify the most important principles for improving quality in your healthcare setting. Make notes for clarification or questions as you read through the principles and score the principles according to importance in your work situation using the right hand column on the 'Principles Review' handout.
- You should discuss and agree in your team on not more than 6 principles. You can also agree to rephrase the selected principles, if another term or phrase seems to be more appropriate. You can also join two principles together, if you decide this is more appropriate.
- Discuss in your group whether you would like to add any principles from your own experience, which have not been mentioned in the list.
- Teams agree on a set of healthcare quality management principles for their healthcare setting. Develop a short presentation of no more than 5 minutes on your principles and the rationale for selecting them in your healthcare setting.
- Groups present the principles and the rationale for these to the rest of the class and participate in a plenary discussion.
- One team member will present the results. All team members should participate in the question period following.

NOTE: The formation of groups, reading of the Review of QM Principles and Step 1- Individual Analysis and Scoring - should take no more than 5 minutes. Your group work on deciding the 6 principles should take 30 minutes and each group's presentation should take no more than 5 minutes. There will be an opportunity for questions and clarifications following each group's presentation and a plenary discussion at the end of the presentations.

6. Wrap up session with the PowerPoint presentation on KQMH principles.

Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). 2011. *Change management for hospitals through stepwise approach: 5 S–KAIZEN–TQM.* Japan: JICA
2. Heiby, J. R. 2012. Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development,* pp. 142–147. Washington DC: USAID.
3. Kenya, Ministry of Medical Services & Ministry of Public Health and Sanitation. 2011. *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Government of Kenya.

Unit 2.2: KQMH and ISO 9001:2008

Purpose

The purpose of this unit is to introduce participants to the link between the KQMH principles and ISO 9001:2008.

Specific Objectives

- Discuss the link between KQMH and ISO 9001:2008
- Introduce participants to ISO 9001:2008 QMS certification process

Lesson Plan Guide

Time: 1 hour

Time	Content	Training objectives	Training methodology and learning activities	Resources/ materials
30 min	The link between KQMH and ISO 9001:2008.	Discuss the link between KQMH and ISO 9001:2008	Discussion Q & A	**PPT slides: Module 2 Unit 2** LCD, laptops flip chart, pens marker pens, notebooks, presentation printouts/CD
30 min	ISO 9001:2008 QMS certification process	Discuss the ISO 9001:2008 QMS certification process	Discussion Q & A	LCD, laptops flip chart, pens marker pens, notebooks, presentation printouts/CDs

Facilitator's Notes

Ask a set of questions that examine participant awareness of ISO 9001:2008.

Ask them to review the session on principles and see whether there are any that are linked to ISO principles.

Divide participants into groups to discuss the differences between licensing, certification and accreditation.

Fill in gaps through an illustrated lecture.

Recommended Reading

1. JICA. (2010). *5S–CQI–TQM Good Practices collection.* Japan: JICA.
2. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf
3. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Government Printer.

Unit 2.3: Implementation Phases of KQMH

Purpose

The purpose of this unit is to discuss the phases of KQMH implementation and the activities undertaken at each phase including designing steps and activities for implementation at each phase.

Specific Objective

To describe the KQMH implementation phases and steps:

- Preparatory
- Introductory
- Implementation
- Expansion
- Maintenance / sustenance

Lesson Plan Guide
Time: 1 hour

Time	Content	Training objectives	Training methodology and learning activities	Resource materials
1 hour	Describe the KQMH implementation phases and steps namely: • Preparatory • Introductory • Implementation • Expansion • Maintenance / sustenance	To describe the KQMH implementation phases and steps	Lecture Discussion Q & A	**PPT slides: Module 2 Unit 3** LCD, laptops flip chart, marker pens, notebooks, pens printouts/CDs

Facilitator's Notes

- Divide participants into groups with a maximum of 10 participants in each group. Give each group 5 pre-prepared labels with the 5 KQMH implementation phases. Labels should be done in large print legible enough to the larger group. Use different colors for the different labels, colors should coincide with the colors used for each phase in the PPT.
- Ask 5 members in each of the groups to pick one label each. Inform the groups that they will be competing with each other to line up members with labels in the order in which KQMH is implemented.
- Groups will call out 'finished' once they are done. Give a minute or two to the other groups to complete the exercise if they will not have done so by the time the first group calls out 'finished'.
- The winning group will then present the line up to plenary and explain why they felt that theirs was the correct order. Groups with a different view should be allowed to present. Allow for a few minutes of debate.
- Present the phases of KQMH on PowerPoint presentation to fill in gaps.

Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM.* Japan: JICA
2. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf
3. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Government of Kenya.

MODULE 3

Introduction to Quality and Quality Improvement in Health

Module Description

This module equips participant with information on the concepts of quality with its attendant dimensions, methods and principles within the context of the Kenya health service delivery. A good grounding in quality concepts, methods, models and theoretical frameworks enables a better conceptual understanding of the quality improvement and management work being done at different levels in the ministry.

Module Objectives

By the end of this module the participant should be able to:

1. Define the key concepts of quality and quality management
2. Describe the different dimensions of quality management
3. Demonstrate understanding of common approaches in quality management
4. Apply quality management approaches in their work
5. Identify models and frameworks of quality management within KQMH
6. Identify linkages to improving quality of care
7. Explain the theoretical framework for modern quality improvement

The module covers 3 units:
Unit 3.1 Dimensions in quality and quality management
Unit 3.2 Approaches in quality management
Unit 3.3 Theoretical models/frameworks for modern quality improvement

Unit 3.1: Dimensions in Quality and Quality Management

Purpose

This unit defines key concepts in quality and quality management—quality, quality improvement / process improvement, quality management, quality assurance, quality control, quality audit, evidence-based process improvement

Specific Objectives

- Define key concepts of quality
- Describe the different dimensions in quality improvement

Lesson Plan Guide

Time: 1 hour

Time	Content	Training Objectives	Training methodology and learning activities	Resource Materials
1 hour	Definition of the various concepts including: quality, quality improvement / process improvement, quality management, quality assurance, quality control, quality audit, evidence-based process improvement	Define key concepts of quality Describe the different dimensions in quality improvement	Brainstorming, small group discussion, scribble cards, Illustrated lecture	**PPT slides: Module 3 Unit 1** Slides Flip chart Scribble cards

Facilitator's Notes

1. Distribute scribble cards to participants and allow them to write their perceptions on key concepts of quality. This exercise should take about 5 minutes. OR in groups ask participants to discuss criteria they will use to select a maternity for self or close relative in labour.
2. Receive feedback from participants, have the cards placed on a flip chart board.
3. Review concepts against the definitions and different dimensions of quality.
4. The facilitator will deliver a 20-minute presentation with key principles of quality incorporating opinions from the earlier brainstorming session.
5. Wrap up session with a summary of key principles.

Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5 S–KAIZEN–TQM.* Japan: JICA.
2. Heiby, J. R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development*, (pp. 142–147). Washington DC: USAID.
3. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Government of Kenya.

Unit 3.2: Approaches in Quality Management

Purpose

This units explains the different quality management approaches used in various areas: Collaboratives, Six Sigma/Lean Six Sigma, Standard-Based Management and Recognition (SBMR), Benchmarking, Performance Improvement Approach (PIA)-Human Technology, Client Oriented, Provider Efficient (COPE), Quality Assurance, Deming's PDCA/PDSA Cycle, 5S–CQI (KAIZEN), Donabedian's Structure–Process–Outcome, Total Quality Management (TQM).

Participants are introduced to the common characteristics of these approaches, and their uses, benefits and limitations. A comparison is made between traditional quality methods like supervision, external checks, reward and reprimand and modern quality strategies. Participants appreciate these different approaches to quality and their benefits to quality improvement.

Specific Objectives

1. Identify common characteristics of quality management
2. Describe common approaches of quality management
3. Discuss the uses, benefits and limitations of quality management approaches
4. Discuss the similarities and differences in quality management approaches

Lesson Plan Guide
Time: 1 hour

Time	Content	Training Objectives	Training methodology and learning activities	Resource Materials
1 hour	Collaboratives, Six sigma/ Lean Six Sigma SBMR (Standard-based Management and Recognition), Benchmarking Performance Improvement Approach (PIA)-Human Technology Client-Oriented, Provider Efficient (COPE), Quality Assurance Deming's PDCA/PDSA Cycle 5S–CQI (KAIZEN) Donabedian's Structure–Process–Outcome Total Quality Management approach	• Describe common approaches of quality management • Identify common characteristics of quality management • Discuss the uses, benefits and limitations of quality management approaches • Discuss the similarities and differences in quality management approaches	Brainstorming, small group discussion Illustrated lecture	**PPT slides: Module 3 Unit 2** Flip Chart

Facilitator's Notes

1. Facilitator divides participants into groups. Each group discusses the following questions on each approach mentioned above
   - Characteristics of the approach
   - Uses
   - Benefits and
   - Limitations

OR

   - Facilitator divides participants into groups and asks them to list any quality-improvement approach they are aware of, with a brief description of its implementation.

2. Each group reports back in plenary.
3. Facilitator gives an illustrated lecture to fill in gaps.

Recommended Reading

1. [CHAK] Christian Health Association Network. (2013, April). Quality management in health. *CHAK Times* 42. Retrieved from http://www.chak.or.ke/fin/index.php/chak-downloads/finish/3-chak-times/46-chak-times-42-quality-management-in-health.
2. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM.* Japan: JICA.
3. Heiby, J. R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development,* (pp. 142–147). Washington DC: USAID.
4. Health Foundation. (2013). *Quality improvement made simple: What everyone should know about healthcare quality improvement.* 2nd ed. London. Health Foundation. Retrieved from http://www.health.org.uk/public/cms/75/76/313/594/Quality%20improvement%20made%20simple%202013.pdf?realName=rskqP0.pdf
5. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Government of Kenya.
6. The W. Edwards Deming Institute. Available at http://www.deming.org/

Unit 3.3: Theoretical Framework for Modern Quality Improvement

Purpose

This unit explains Deming's theory of profound knowledge. A comparison is made between traditional quality methods such as supervision, external checks, reward, reprimand and modern quality strategies. Modern quality strategies are evidence based and systematic and focus on: a) identifying a change in healthcare that seems promising, b) carrying out a formal test of the change, and c) taking action based on the results. Traditional approaches were non-systematic and not necessarily evidence based, hence had limited effectiveness. Participants are helped to appreciate these different approaches to quality and their benefits to quality improvement.

Specific Objectives

1. Discuss Deming's theory of profound knowledge and other related theories.
2. Discuss the theory of knowledge, systems, variation and psychology and how they relate to quality.
3. Discuss how KQMH has integrated the above quality improvement theories and approaches.

Lesson Plan Guide
Time: 1 hour 30 minutes

Time	Content	Training objectives	Training methodology and learning activities	Resource materials
1 hour 30 min	Deming's theory of profound knowledge and other related theories (Juran, Ishikawa, Donabedian) Theory of knowledge, systems, variation and how these relate to quality How KQMH has integrated the aforementioned quality improvement theories and approaches	Discuss Deming's theory of profound knowledge and other related theories Discuss theory of knowledge, systems, variation and psychology and how these relate to quality Discuss how KQMH has integrated these quality improvement theories and approaches	Interactive lecture Group discussion	**PPT slides: Module 3 Unit 3**

Facilitator's Notes

1. Class exercise: Request participants to give examples of traditional and modern quality improvement methods. These are summarized on a flip chart.
2. Introduce participants to Deming's theory of profound knowledge.
3. To deepen the understanding of systems, introduce the 'Complex dynamic' exercise.
4. Introduce the other three components of Deming's theory — theory of knowledge, variation and psychology.
5. Group exercise to link KQMH to known theories and approaches of quality improvement.

Recommended Reading

1. [CHAK] Christian Health Association of Kenya. (2013, April). Quality management in health. *CHAK Times* 42. Retrieved from http://www.chak.or.ke/fin/index.php/chak-downloads/finish/3-chak-times/46-chak-times-42-quality-management-in-health.
2. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM*. Japan: JICA.
3. Health Foundation. (2013). *Quality improvement made simple: What everyone should know about healthcare quality improvement*. 2nd ed. London: Health Foundation. Retrieved from http://www.health.org.uk/public/cms/75/76/313/594/Quality%20improvement%20made%20simple%202013.pdf?realName=rskqP0.pdf.
4. Heiby, J.R. (2012). Evidence-based health systems strengthening. In: R. Shah & S. Redelet, (eds.), *USAID Frontiers in Development*, (pp. 142–147). Washington DC: USAID.
5. Kenya, Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health*. Nairobi: Government of Kenya.

MODULE 4

Quality Improvement Tools and their Application in KQMH

Module Description

This module seeks to explain the principles of quality improvement. It describes the associated tools and their application in the continuum of work environment improvement and CQI leading to total quality management (TQM).

The module also offers participants an opportunity to identify and prioritize real workplace problems, analyze their root causes, and finally develop and evaluate the effectiveness of countermeasures and interventions for the problems.

The module further enables participants to visualize the linkages between the various components of work environment improvement and CQI, and their contribution towards attaining TQM.

Module Objectives

By the end of this module the participant should be able to:

1. Define the principles of work environment improvement
2. Describe the 5S implementation phases
3. Apply the 11 work improvement tools
4. Prioritize and analyze the root causes of problems
5. Develop and evaluate countermeasures and interventions
6. Visualize and discuss the link between 5S and CQI, and the contribution of each towards TQM.

The module covers 4 units:

- Unit 4.1 Principles of work environment improvement
- Unit 4.2 Work environment improvement (5S) tools
- Unit 4.3 Introduction to CQI tools and their application

Unit 4.1: Principles of Work Environment Improvement

Purpose

This unit introduces the 5S concept and describes its principles and how they are applied to improve the health facility working environment.

Specific Objectives

1. Define the principles for work environment improvement.
2. Describe the 5S implementation phases.

Lesson Plan Guide
Time: 40 minutes

Time	Content	Training objectives	Learning activities	Resource/ materials
20 min	The 5S principles: Sort, Set, Shine, Standardize and Sustain	Define the principles of work environment improvement	Interactive lecture	**PPT slides: Module 4 Unit 1** Laptop , LCD, flip chart
20 min	Overview of the 5S implementation phases and steps, according to the KQMH Implementation Guideline	Describe the 5S implementation phases	Interactive lecture	PPT, laptop , LCD, flip chart

Facilitator's Notes

1. Recap previous module (module 3)
2. Ask participants a set of questions: What is a principle? Brainstorm on meaning of the word principle.
3. Ask them whether they have heard of 5S? What is 5S? Collate feedback and summarize using PPT presentation.
4. Introduce the 5S principles (Sort ,Set, Shine, Standardize and Sustain) using the PPT.

Recommended Reading

1. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health*. Nairobi: Government of Kenya.
2. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM*. Japan: JICA.

Unit 4.2: Tools for Work Environment Improvement (5S Tools)

Purpose

This unit introduces the 5S tools and describes their application at different stages of the 5S cycle.

Specific Objectives

1. Apply the 11 work environment improvement tools to help resolve quality-related issues.

Lesson Plan Guide

Time: 50 minutes

Time	Content	Training objectives	Learning activities	Resource materials
50 min	Red tags, alignment, numbering, labelling, X-Y axis, zoning, safety signs, colour coding, sign boards and mapping, symbols and 5S Corner	How to apply the 11 work improvement tools	Interactive lecture and discussion Showcase best practices from different sites, regions or countries applying the 5S approach	**PPT slides: Module 4 Unit 2** Laptop , LCD, flip chart

Facilitators Notes

1. Ask participants a set of questions: What is a tool? Brainstorm on the meaning of the word tool.
2. Ask them whether they have heard of any of the work environment improvement tools.
3. Introduce the 5S tools (Red tags, alignment, numbering, labelling, X-Y axis, zoning, safety signs, colour coding, sign boards and mapping, symbols and 5S corner) using the PPT presentation
4. Explain the stage at which the tools are applied either individually or in combination.
5. Show best practices on the application of these tools.

Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM.* Japan: JICA
2. JICA. (2010). *5S–CQI–TQM Good Practices collection*. Japan: JICA.
3. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Healt*h. Nairobi: Government of Kenya.
4. Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf

Unit 4.3: Introduction to Continuous Quality Improvement Tools and their Application

Purpose

This unit introduces the CQI tools and how they are applied. The unit also engages participants in practical exercises to improve their understanding of how each tool can be applied.

Specific Objectives

1. Discuss the quality improvement cycle.
2. Develop and analyze the process map as an important tool for understanding the context of care.
3. Analyze the root causes of problems in a healthcare setting.
4. Categorize and prioritize problems affecting delivery of care and services.
5. Develop and evaluate the feasibility of proposed change ideas, countermeasures and interventions to address identified root causes of problems.

Lesson Plan Guide
Time: 6 hours 30 minutes

Time	Content	Training objectives	Learning activities	Resource materials
30 min	Quality Improvement Cycle (QIC)	Describe the 7 steps of the QIC	Interactive lecture & discussion	**PPT slides: Module 4 Unit 3 Part 1** Laptop, LCD, flip chart
1 hour	Pareto principle and chart	Apply the Parreto principle and chart to categorize and prioritize interventions	Interactive lecture & discussion group work exercises, simulations and work sheets	**PPT slides: Module 4 Unit 3 Part 2** Laptop, LCD, flip chart
1 hour	Definition of a process Process mapping defined Benefits of process mapping List of related terms and tools Process mapping nomenclature and symbols Steps in process mapping Steps in process map analysis	Develop and analyze a process map	Interactive lecture & discussion, group work exercises, simulations and work sheets	**PPT slides: Module 4 Unit 3 Part 3** Laptop , LCD, flip chart
1 hour	The principle of RCA Types of RCA The steps in doing a RCA Tools used for root–cause analysis The '5 Whys' method of RCA	Analyze the root cause of a problem using the 5 Whys approach	Interactive lecture & discussion, group work exercises, simulations and work sheets	**PPT slides: Module 4 Unit 3 Part 4** Laptop , LCD, Flip chart

Time	Content	Training objectives	Learning activities	Resource materials
1 hour 30 min	Components of the fish bone diagram Constructing the fish bone diagram Analyzing the fish bone diagram	Understand the cause–effect relationship in root cause analysis Apply the fish bone diagram to explore all the possible causes of a problem	Interactive lecture & discussion, group work exercises, simulations and work sheets	**PPT slides: Module 4 Unit 3 Part 5** Laptop , LCD, flip chart
1 hour 30 min	Constructing a tree diagram Constructing a X-Y matrix diagram Evaluating change idea	Evaluate change ideas and decide the feasible ones for implementation	Interactive lecture & discussion, group work exercises, simulations, work sheets and plenary	**PPT slides: Module 4 Unit 3 Part 6** Laptop , LCD, flip chart

Facilitator's Notes

1. Ask participants a set of questions: what is CQI? Brainstorm on meaning and importance of CQI in any work place. What steps would you take when implementing CQI?
2. Introduce the seven steps in the quality improvement cycle.
3. Ask them whether they have heard of any of the CQI tools.
4. Introduce the CQI tools (5 Whys, process mapping/flowchart, fish bone diagram, Pareto chart and tree, and X-Y matrix diagram (driver's diagram)
5. Other useful elements to highlight: clinical audit and feedback.
6. Introduce group exercises and divide the participants into groups of 4–8 members.

TASKS

- Give the groups various case scenarios that necessitate drawing and analyzing a process map followed by plenary discussions.
- Repeat the same for each CQI tool introduced and discussed.

NOTE: The group tasks should be undertaken separately for each CQI tool. Ideally, this should be done at the end of the introductory lecture of each tool.

Recommended Reading

1. Hasegawa, T. & Karandagoda, W., (eds.). (2011). *Change management for hospitals through stepwise approach: 5S–KAIZEN–TQM*. Japan: JICA
2. JICA. (2010). *5S–CQI–TQM Good Practices collection.* Japan: JICA.
3. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). Implementation guidelines for the Kenya Quality Model for Health. Nairobi: Author.
4. Tanzania, Ministry of Health and Social Welfare. (2009). *Implementation guideline for 5S–CQI–TQM approaches in Tanzania.* Tanzania: Ministry of Health and Social Welfare. Retrieved from http://www.jica.go.jp/activities/issues/health/5S–KAIZEN–TQM/pdf/guideline.pdf
5. USAID–HCI. (2011). *The science of improvement*. Retrieved from http://www.hciproject.org/improvement_tools/improvement_methods/science

MODULE 5

Measurement in Continuous Quality Improvement

Module Description

This module introduces participants to the concept of performance measurement in quality improvement, and how it is approached and tracked within KQMH. Concepts related to performance are defined, and the practical application of methods and tools for tracking performance within the KQMH framework discussed and undertaken practically. Participants are consequently able to measure quality improvement initiatives, and account for and report on them effectively.

Module Objectives

By the end of this module the participant should be able to:

1. Define process performance
2. List different types of performance measures
3. Explain the different types of performance measures
4. Analyze and interpret data for decision making
5. Apply the KQMH monitoring sheet to evaluate the progress of quality improvement activities

The module covers 2 units:

- Unit 5.1 Performance measurements in quality improvement
- Unit 5.2 Applying the KQMH monitoring sheet to evaluate progress of quality improvement activities

Unit 5.1: Performance Measurements in Quality Improvement

Purpose

This unit introduces the concept of process performance measurement as a core aspect of implementing quality improvement. It also explains the types of performance measures frequently applied in quality improvement. The unit further allows participants to practically apply their knowledge and skills to analyze and interpret data, and to determine whether countermeasures, change ideas or interventions are resulting in improvement.

Specific Objectives

1. Define process performance.
2. List types of process performance measures.
3. Explain the different types of performance measures.
4. Analyze and interpret data for decision making.

Lesson Plan Guide

Time: 4 hours 30 minutes

Time	Content	Training objectives	Learning activities	Resource materials
30 min	Process performance	Define process performance	Interactive lecture	**PPT slides: Module 5 Unit 1** Laptop, LCD, flip chart
1 hour	Types of performance measures	List types of process performance measures Explain the different types of performance measures	Interactive lecture	Laptop, LCD, flip chart
3 hours	Data analysis and interpretation	Analyze and interpret data for decision making	Interactive lecture Group exercises, use case study or actual data in drawing and interpreting run charts and control charts	Laptop, LCD, flip chart

Facilitator's Notes

1. Ask participants a set of questions: What is performance measurement? Why do we need to measure performance? What are the types of performance measures? How can performance be measured?
2. Explain performance measurement, its importance and the types of performance measures.
3. Introduce how to analyze performance (run charts, control charts and their interpretations and contrast).

TASKS

- Give the groups various case scenarios that necessitate analyzing and interpreting data to understand performance measurement.
- Facilitator to print the case study graphs and give them to participants for analysis.

Recommended Reading

1. Benneyan, J. C., Lloyd, R. C., Plsek, P. E. (2003). Statistical process control as a tool for research and healthcare improvement. *Quality and Safety in Healthcare* 12(6):458–464. doi:10.1136/qhc.12.6.458
2. Johan, T., Lunberg, J., Ask, J., et al. (2007). Application of Statistical process control in healthcare improvement: a systematic review. *Quality and Safety in Healthcare* 16(5):387–399. doi:10.1136/qshc.2006.022194
3. Perla, R. J., Provost, L. P., & Murray, S. K. (2011). The run chart: a simple analytical tool for learning from variation in healthcare processes. *BMJ Qual. Saf.* 20(1):46–51. doi: 10.1136/bmjqs.2009.037895

Unit 5.2: Applying the KQMH Monitoring Sheet to Evaluate the Progress of Quality Improvement Activities

Purpose

This unit describes how to use the KQMH monitoring and evaluation sheet to evaluate the progress of quality improvement activities. It also demonstrates how to complete the KQMH checklist.

Specific Objectives

1. Describe quality standards applicable in KQMH.
2. Interpret the requirements of the standards and the scoring for each standard.
3. Demonstrate the use of KQMH monitoring and evaluation checklist.
4. Complete the KQMH checklist in the District Health Information System 2.

Lesson Plan Guide

Time: 1 hour 30 minutes

Time	Content	Training objectives	Learning activities	Resources/ materials
1 hr 30 min	KQMH standards and monitoring and evaluation tool Use of checklists KQMH program data entry in the DHIS2	Discuss KQMH quality standards Interpret KQMH quality standards Demonstrate the use of KQMH checklist and how to complete the checklist in the national health information system (DHIS2)	Interactive lectures Group exercises	**PPT slides: Module 5 Unit 2** Laptop, internet access, LCD, flip chart KQMH implementation guideline

Facilitator's Notes

1. Ask participants a set of questions: What is a standard? What is a checklist?
2. Recap the standards within the 12 dimensions of KQMH.
3. Introduce the checklist and how to score each standard.

TASKS

- The teams should practically log on to the DHIS2 and complete the KQMH checklist.

NOTE: For this task the groups will need a computer device with internet to be able to log on to the DHIS2 and practise how to fill the KQMH checklist online.

Recommended Reading

1. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health*. Nairobi: Government of Kenya.

MODULE 6

Structures for Implementing Quality Improvement

Module Description

The focus of this module is the 'how to' of implementing quality improvement. It discusses the processes, tasks, structures and actors involved in implementing quality improvement.

Module Objectives

By the end of this module the participant should be able to:

1. Describe the structures for implementing quality improvement
2. Describe the specific tasks of a quality improvement team (QIT)
3. Discuss the roles of a work improvement team (WIT)
4. Describe how to establish and support an improvement team

The module has one unit:

- Unit 1: Functions and roles of QITs and WITs, and supporting a work improvement team

Unit 6.1: Functions and Roles of QITs and WITs and Supporting a WIT

Purpose

This unit discusses the roles and functions of a QIT, a WIT, and how to support a WIT.

Specific Objectives

1. Describe the structures for implementing quality improvement.
2. Describe the specific tasks of a quality improvement team.
3. Discuss the roles of a work improvement team.
4. Describe how to establish and support an improvement team.

Lesson Plan Guide

Time: 1 hour

Time	Content	Training objectives	Learning activities	Resource materials
1 hour	Selecting WIT, QITs Terms of Reference for WITs, QITs Supporting WITs and QITs	Describe the structures for implementing quality improvement Describe the specific tasks of a quality improvement team Discuss the roles of a work improvement team Describe how to establish and support an improvement team	Small group discussions Suggested exercises	**PPT slides: Module 6 Unit 1** Laptop, LCD, flip chart

Facilitator's Notes

1. Put up a flip chart or PowerPoint slide with the questions below:
   a) What is a team (participants brainstorm on as many definitions as they can think)?
   b) What are the roles of a team?
   c) What is a QIT? What is a WIT?
   d) What are the roles of QITs and WITs?

2. Divide the participants into small groups to address the above questions.

3. Plenary comments and discuss findings.

4. Summarize with a formal presentation on the functions, tasks and roles of a quality improvement team. At this point the trainer can also introduce the issues of mentorship, which most of district health management team (DHMT), etc., will have to undertake to establish and support quality and work improvement teams.

Recommended Reading

1. Ministry of Medical Services & Ministry of Public Health and Sanitation. (2011). *Implementation guidelines for the Kenya Quality Model for Health.* Nairobi: Government of Kenya.

MODULE 7

Facilitation Skills

Module Description

This module introduces participants to facilitation skills that ensure effective acquisition of competencies by participants who will implement the KQMH. Participants are introduced to training; how to plan for, deliver and evaluate training; and how to use the interactive/participatory methodology informed by adult learning principles. Mentorship is also covered to support participants in this aspect of their work at their facilities.

Module Objectives

By the end of this module the participant should be able to:

1. Define training and distinguish it from education
2. Demonstrate ability to prepare and plan for training
3. Apply interactive/participatory methodology and adult learning principles in the delivery of training
4. Evaluate training programs using KirkPatrick' s evaluation model
5. Discuss mentoring and coaching within the context of KQMH training

The module covers 5 units:

- Unit 7.1 Introduction to training
- Unit 7.2 Planning and preparing to train
- Unit 7.3 Training delivery
- Unit 7.4 Evaluating training
- Unit 7.5 Mentoring and coaching

Unit 7.1: Introduction to Training

Purpose

This unit discusses what training constitutes. It also distinguishes between training and education and introduces participants to adult learning principles.

Specific Objectives

1. Define training, education
2. Differentiate between training and education
3. Describe adult learning principles
4. Apply adult learning principles in training and facilitation

Lesson Plan Guide

Time: 1 hour

Time	Content	Training Objectives	Learning activities	Resource Materials
1 hour	Defining learning Education versus Training Presentation, Training & Facilitation Adult learning styles	Define training, education Differentiate between training and education Describe adult learning principles Apply adult learning principles in training and facilitation	Participants commenting on a slide Brainstorming	**PPT slides: Module 7 Unit 1** Flip chart, marker pens

Facilitator's Notes

1. Participants discuss in 3 groups the terms training and education and cite the difference between the two
2. Participants share their definitions in plenary and facilitator fills in gaps using an illustrated lecture
3. Participants are then requested to share an experience in training where they benefited from learning the most and least. What were the characteristics of the trainer and training in these two events?
4. Facilitator then gives an illustrated lecture on adult learning principles relating it to what participants shared.

Recommended Reading

1. Gardner, H. (1983). *Frames of mind: the theory of multiple intelligences.* New York: Basic Books.
2. Krathwohl, D. R. (2002). A revision of Bloom's Taxonomy: An overview. *Theory into Practice* 41(4):212–218.

Unit 7.2: Preparing to Train

Purpose

This unit introduces participants to some of the prerequisites for an effective training activity like training needs assessment, developing a training schedule, and selecting participants and appropriate training venue.

Specific Objectives

1. Explain what is a lesson
2. Define the components of a lesson Trigger–Learning–Conclusion (TLC) model
3. Identify the different training modes Lecture–Discussion–Own Time (LDO) model
4. Prepare the training agenda
5. Prepare openers and closers
6. Prepare for the lesson

Lesson Plan Guide

Time: 1 hour

Time	Content	Training objectives	Learning activities	Resource materials
1 hour	Fundamentals of a Lesson Lesson Plan Model (Trigger–Learning–Conclusion model) Training modes (Lecture–Discussion–Own Time model) Training agenda Openers and closers Preparing for training sessions	Explain what is a lesson Define the components of a lesson (TLC model) Identify the different training modes (LDO model) Prepare the training agenda Prepare openers and closers Prepare for the lesson	Lecture Group discussions	**PPT slides: Module 7 Unit 2** Flip chart and marker pens, work sheets

Facilitator's Notes

1. Facilitator divides participants into 3 groups. Each groups discusses one question:
   - Group 1 – How to do a plan and conduct a needs assessment, what tools would you use?
   - Group 2 – Develop a schedule for a 1-day training on quality management in an area of your choice.
   - Group 3 – Prepare a lesson plan on quality management in an area of your choice.
2. Participants present in plenary and facilitator fills in the gaps.

Recommended Reading

1. DiRanna, K., Topps, J., Cerwin, K., & Gomez-Zwiep, S. (2009). *Teaching learning collaborative: a process for supporting professional learning communities. Arlington, VA: National Science Teachers Association.*
2. Bruffee, K. (1993). *Collaborative learning.* Baltimore: The John Hopkins University Press. pp. 28–51.
3. Smith, B. L., & MacGregor, J. T. (1992). What is collaborative learning? National Center on Post-secondary Teaching, Learning and Assessment at Pennsylvania State University
4. Harding-Smith, T. (1993). *Learning together: An introduction to collaborative learning*. New York, NY: HarperCollins College Publishers.
5. Bonwell, C. C. & Eison, J. A. (1991) *Active learning: creating excitement in the classroom.* National Teaching and Learning Forum, ERIC Clearinghouse on Higher Education. http://www.oid.ucla.edu/about/units/tatp/old/lounge/pedagogy/downloads/active-learning-eric.pdf
6. Unsworth, P. J. (1978). The Keller Plan: Cost and benefits of self-paced self-study. In: Warren Piper, (ed.), *The efficiency and effectiveness of teaching in higher education*. University of London Teaching Methods Unit.

Unit 7.3: Training Delivery

Purpose

This unit discusses delivery of training using interactive and participatory methodology informed by adult learning principles. Participants are also introduced to delivery of training using different media, and how to manage group dynamics and different personalities in training.

Specific Objectives

1. Explain how to build learner relationships
2. Practise effective body language
3. Identify the importance of questioning

4. Handle difficult learner behaviour
5. Incorporate the use of visual aids in training

Lesson Plan Guide

Time: 1 hour 30 minutes

Time	Content	Training objectives	Learning activities	Resource materials
1 hour	Building relationships Use of body language Importance of questioning How to handle trainees Responses to difficult questions Learner behavior Visual aids	Explain how to build learner relationships Practise effective body language Identify the importance of questioning Handle difficult learner behaviour Incorporate the use of visual aids in training	Brainstorming, illustrated lecture	**PPT slides: Module 7 Unit 3** LCD machine, laptop, flip chart and marker pens
30 min	Learning styles and personalities in training	Discuss different learning styles and personalities in training	Illustrated lecture, Q & A	Slides, LCD machine, laptop, flip chart and marker pens, Pictures of different animals

Facilitator's Notes

1. Facilitator projects the model and shares the different levels. Participants are asked to explain what each level of evaluation targets and the tools used.
2. Facilitator fills in gaps using an illustrated lecture.

Recommended Reading

1. Fallan, L. (2006). Quality reform: Personality type, preferred learning style and majors in a business school. *Quality in Higher Education* 12(2):193–206.
2. Hickcox, L. K. (2006). Learning styles: A review of the inventories. In: R. R. Sims & S. J. Sims (eds.), *Learning styles and learning a key to meeting the accountability demands in education.* (pp. 3–15). New York: Nova Science.

Unit 7.4: Evaluating Training

Purpose

This unit introduces participants to KirkPatrick's four-level evaluation of training

Specific Objectives

1. Explain the fundamentals of evaluation
2. Define KirkPatrick's Evaluation hierarchy

Lesson Plan Guide

Time: 30 minutes

Time	Content	Training objectives	Learning activities	Resource Materials
30 min	Fundamentals of Evaluation Benefits of Training Evaluation KirkPatrick's Evaluation Hierarchy Training evaluation methods Closing the Adult Learning Cycle The importance of evaluation – transfer of training	Explain the fundamentals of evaluation Define KirkPatrick's Evaluation Hierarchy	Brainstorming, Q&A, illustrated lecture	**PPT slides: Module 7 Unit 4** LCD machine, laptop, flip chart and marker pens

Facilitator's Notes

1. Facilitator distributes pictures of different animals and indicates that different animals have different behavior. Which of these resemble your behavior in a group? How would a facilitator deal with such behavior in training?
2. Facilitator finishes off session with an illustrated lecture.

Recommended Reading

1. KirkPatrick's four-level training evaluation model. Available from http://www.mindtools.com/pages/article/kirkpatrick.htm. Accessed 27 November 2013
2. Yardley S. & Dornan, T. (2012). KirkPatrick's levels and education 'evidence' . *Medical Education* 46:97–106.

Unit 7.5: Mentoring and Coaching

Purpose

This unit introduces participants to mentorship and coaching. The principles, concepts and methods of the Grow Reality Options Will (GROW) model are discussed.

Specific Objectives

1. Describe the GROW concept
2. Explain the different stages of the GROW concept
3. Apply the GROW concept

Lesson Plan Guide

Time: 1 hour 30 minutes

Time	Content	Training objectives	Learning activities	Resource materials
1 hour 30 min	Mentoring and coaching	Describe the GROW concept Explain the different stages of the GROW concept Apply the GROW concept	Demonstrations Lectures Role-plays	**PPT slides: Module 7 Unit 5** LCD machine, laptop, flip chart and marker pens

Facilitator's Notes

1. Facilitator shares the model with participants.
2. Facilitator demonstrates the skills in model.
3. Participants role-play with others and provide feedback to each other on performance.

Recommended Reading

1. Ackland, R. (1991). A review of the peer coaching literature. *Journal of Staff Development* 12(1):22–27.
2. Anderson, R. H. (1993). Contingency supervision: Basic concepts. In: R. H. Anderson & K. J. Snyder, (eds.), *Clinical supervision: Coaching for higher performance.* (pp. 157–167).Lancaster, PA: Technomic Publishing Co.

Appendices

APPENDIX 1: CHECKLIST FOR SUPPLIES NEEDED

Supplies needed for each participant:

- Name tag and holder
- Felt pen
- Paper
- Highlighter
- Ball point pens
- 2 pencils
- Eraser

Supplies needed for each group include:

- Paper clips
- 2 rolls transparent tape
- Stapler and staples
- Rubber bands
- Extra pencils and erasers
- 1 roll masking tape
- Flip chart pad and markers

OR

Instructional materials needed in each training

- Item needed, Number needed
- Ball point Ball point Facilitator guide
- Videotapes/DVD
- Video/DVD player
- LCD and/or overhead projector
- Printed hand-outs of presentations
- Materials for any role-play, e.g. a ball

APPENDIX 2: SAMPLE CASE STUDY - PROCESS MAPPING

Introduction

Huduma Health Centre (HC)provides comprehensive antenatal services including PMTCT and maternity. Huduma Health Centre does not provide care and treatment services for HIV. Patients who require HIV care and treatment are referred to a nearby health centre or the district hospital for further management. The district hospital is 40 km away from Huduma Health Centre, and the nearby Makini Health Centre which offers HIV care and treatment is 4 km from Huduma.

First ANC visit

Mrs J.O. is a primigravida who attends ANC clinic at Huduma HC. A health education session is conducted every morning as clients wait to be attended to. Following pre-test counseling Mrs. J.O. agrees to have a HIV test done. The HIV results are positive. She is 20 weeks pregnant and the nurse gives her Zidovudine and Nevirapine and instructs her on how and when to use them. During that visit, she was not registered in the ANC register and her HIV status is not documented in the mother–child booklet. She is then referred (without a referral letter) to the comprehensive care clinic at the district Hospital. Mrs. J. O. is afraid of disclosing her status to her husband, fearing that he will chase her away.

Mrs J.O. at the District Hospital

Mrs. J.O. organizes herself and five days later leaves for the district hospital for a CD4 count as instructed by the nurse. As she did not have a referral, on arrival at the hospital (at 9 am) she is not sure of where to go. She first goes to the general reception where she is registered and asked to sit on the waiting bench. She waits for 3 hours on the queue before seeing the clinician. After consultation she is directed to the lab for CD4 testing. She arrives at the lab at 12:30 p.m. and the lab technician tells her she is late as he has already reached his maximum number of 30 samples for CD4 testing for that day. She is given an appointment to return the following Thursday.

The following Thursday, Mrs. J.O. finds she has no money for bus fare and with no other means of transport, she does not go to the district hospital.

Mrs. J.O. continues attending ANC at Huduma HC as scheduled.

Maternity at Huduma HC

When labour starts, Mrs J.O. reports in time at Huduma HC where she is received at the maternity by a nurse/midwife. She is examined and instructed to go to the labour ward. At the second stage of labour, which is 3 hours later, Mrs. J.O., through the assistance of a nurse assistant, delivers a beautiful baby boy weighing 3.5 kg.

The following morning, she receives general health education about personal hygiene, breastfeeding and care of the baby before being discharged. She happily goes home with her husband.

Twelve months later

Mrs. J.O. is admitted at the paediatric ward in the district hospital. Her baby boy has had recurrent pneumonia. The doctor orders for several tests including a HIV test and the baby is found to be HIV positive.

APPENDIX 3: SAMPLE CASE STUDY – UNDERSTANDING CONTROL CHARTS

Purpose: The following examples illustrate the basic principles, breadth of application, and versatility of control charts as a data analysis tool.

CASE I: Flash sterilization rate

Issues:

- The infection control (IC) committee at a 180-bed hospital notices an increase in the infection rate for surgical patients. A nurse on the committee suggests that a possible contributor to this increase is the use of flash sterilisation (FS) in the operating theatres.
- Traditionally, FS was used only in emergency situations—for example, when an instrument was dropped during surgery—but recently it seems to have become a more routine procedure. Some committee members express the opinion that a new group of orthopaedic surgeons who recently joined the hospital staff might be a contributing factor—that is, special cause variation. This suggestion creates some defensiveness and unease within the committee.
- Rather than debating opinions, the committee decides to take a closer look at this hypothesis by analysing some data on the FS rate (number of FS per 100 surgeries) to see how it has varied over time. The committee's analyst prepares a *u* chart (based on the Poisson distribution, Figure 1) to determine the hospital's baseline rate and the rate after the arrival of the new surgeons.

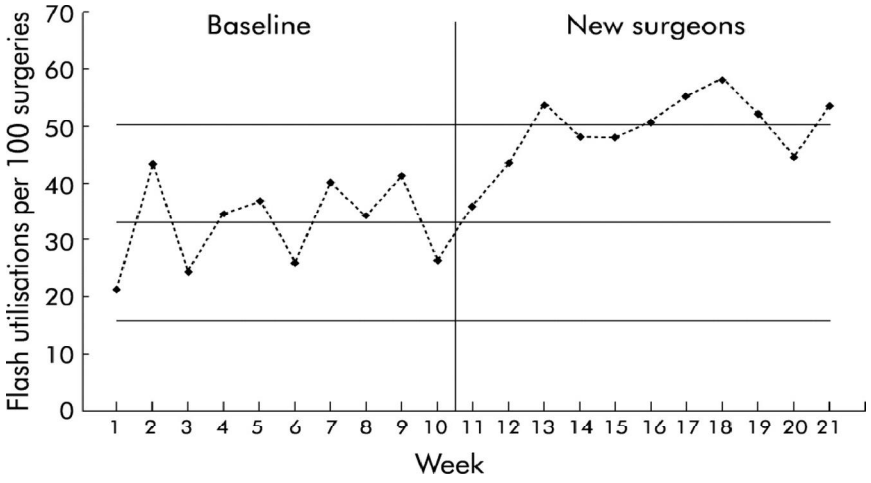

Figure 1. Control chart for flash sterilization rate: baseline compared with period following arrival of new surgical group.
Source: Benneyan, J. C. et al. Qual Saf Health Care 2003;12:458–464

Description:

Q1: What is the mean FS rate at baseline? Is the process in control? Why? During the baseline period the mean FS rate was around 33 per 100 surgeries (the centre line on the baseline control chart) and the process appeared to be in control.

Q2: Is there a change in mean FS rate on arrival of new surgeons? Give examples. Arrival of new surgeons indicated an increase (special cause variation) to a mean FS rate of about

50 per 100 surgeries. For example, the third point data (week 13) is beyond baseline UCL mean, as are weeks 17, 18, 19, and 21.

Q3: What additional tests signal statistical evidence of significant shift in process performance? Additionally, several clusters of two out of three points are more than 2SD beyond the mean, several clusters of four out five points are beyond 1SD, and all of the new points are above the baseline period mean. All these signals are statistical evidence of a significant and sustained shift in process performance. The IC committee can now look further into this matter with confidence that it is not merely an unsupported opinion.

Discussion Question 4: Does this analysis lead to the conclusion that the new surgeons are to blame for the increase? It must be noted that this analysis does not lead to the conclusion that the new surgeons are to blame for the increase. Rather, the data simply indicate that it is highly likely that something about the process of handling surgical instruments has fundamentally changed, which coincides with the arrival of the new surgeons. Further investigation is needed.

CASE II: Laboratory turn- around time (TAT)

Issues:

- Several clinicians in the Accident and Emergency department have been complaining that the turn-around time (TAT) for complete blood counts has been "out of control and constantly getting worse".
- The laboratory manager decides to investigate this assertion with data rather than just opinions.
- The data are stratified by shift and type of request (urgent versus routine) to ensure that the analysis is conducted by reasonably homogeneous processes.

Description

- Since TAT data often follow normal distributions, X-bar and S types of control charts are appropriate here (Figure 2).
- Each day the mean and SD TAT were calculated for three randomly selected orders for complete blood counts.
- The top chart (X-bar) shows the mean TAT for the three orders each day, while the bottom chart (S) shows the SD for the same three orders; during the day shift the mean time to get results for a routine complete

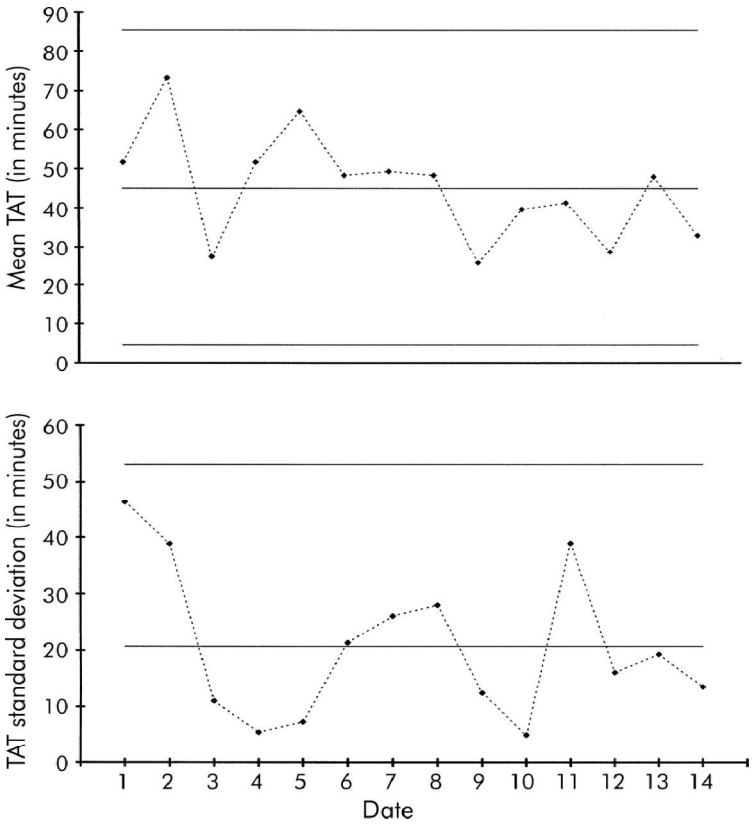

Figure 2: Control chart of turn around time (TAT) for day shift routine orders for complete blood counts in the A&E department

Source: Benneyan J C et al. Qual Saf Health Care 2003;12:458–464

blood count is about 45 min. with a mean SD of about 21 min.

Discussion Question I: Are the clinicians' complaints justified? If the clinicians' complaints were true, out of control points and an overall increasing trend would be observed. Instead, it appears that the process is performing consistently and in a state of statistical control. Although this conclusion may not agree with the clinicians' views, common cause variation does not necessarily mean the results are acceptable, but only that the process is stable and predictable. A control process can therefore be predictably bad.

Discussion Question II: What should the team do next? In this case the process is stable and predictable but not acceptable to the clinicians. Since the process exhibits only common cause variation, it is appropriate to consider improvement strategies to lower the mean TAT and reduce the variation (lower the centre line and bring the control limits closer together). This would produce a new and more acceptable level of performance. The next steps for the team are therefore to test an improvement idea, compare the new process with these baseline measurements, and decide whether the process has improved, stayed the same, or worsened.

CASE III: Surgical Site Infections

Issues:

- An interdisciplinary team has been meeting to try to reduce the postoperative surgical site infection (SSI) rate for certain surgical procedures.
- A *g* type of control chart (based on the geometric distribution) for one type of surgery is shown in Figure 3.

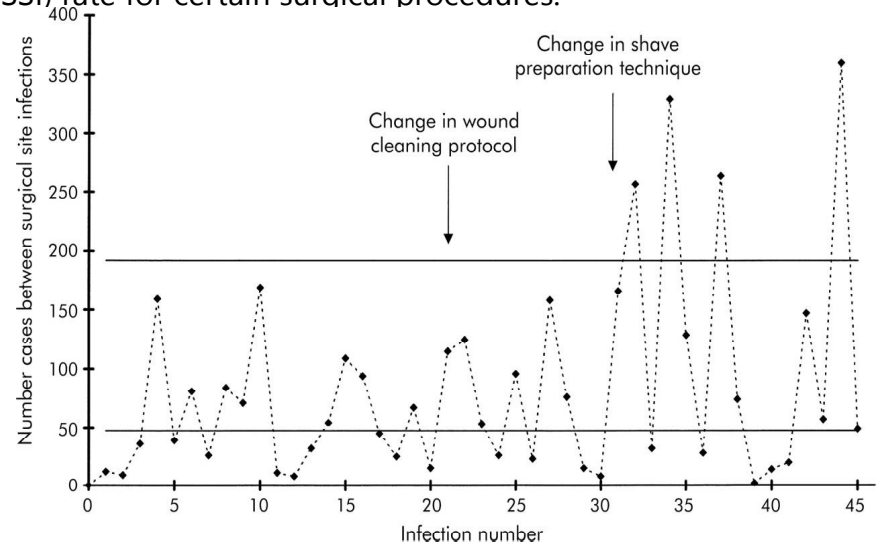

Figure 3. Control chart for surgical site infections.
Source: Benneyan J C et al. Qual Saf Health Care 2003;12:458–464

Description:

- Instead of aggregating SSIs in order to calculate an infection rate over a week or month, the *g* chart is based on a plot of the number of surgeries between occurrences of infection.
- This chart allows the statistical significance of each occurrence of an infection to be evaluated rather than having to wait to the end of a week or a month before the data can be analysed.
- This ability to evaluate data immediately greatly enhances the potential timeliness of the analysis. The *g* chart is also particularly useful for verifying improvements (such as reduced SSIs) and for processes with low rates.
- An initial intervention suggested by the team is to test a change in the postoperative wound cleaning protocol.

Discussion Question I: Does this change have impact on reducing infection rate? As shown in Figure 3, however, this change does not appear to have had any impact on reducing the infection rate. Although this intervention did not result in an improvement, the control chart was useful to help prevent the team from investing further time and resources in training staff and implementing an ineffective change throughout the hospital.

Description Continued:

- After more brainstorming and review of the literature, the team decided to try experimenting with the shave preparation technique for preparing the surgical site before surgery.
- Working initially with a few willing surgeons and nurses, they developed a new shave preparation protocol and used it for several months.

Discussion Question II: Did the change result in an improvement, or not? Why? The control chart in Figure 3 indicates that this change resulted in an improvement with the SSI rate reducing from approximately 2.1% to 0.9%. (For this type of chart the mean SSI rate is the reciprocal of the centre line: 1/47 = 2.1% compared with 1/111 = 0.9%.) Note that on this type of chart data plotted above the UCL indicate an improvement, as an increase in the number of surgeries between SSIs equates to a decrease in the SSI rate.

CASE IV: Appointment Access Satisfaction

Issues:

A GP practice is working hard on improving appointment access and has decided to track several performance measures each month.

Description:

- A small survey has been developed to gauge patients' satisfaction with several aspects of appointment access (delay, telephone satisfaction, in office waiting times, able to see provider of choice, etc.).
- The percentage of patients who respond "very good" or "excellent" to the question of how satisfied they were with the delay to get an appointment with

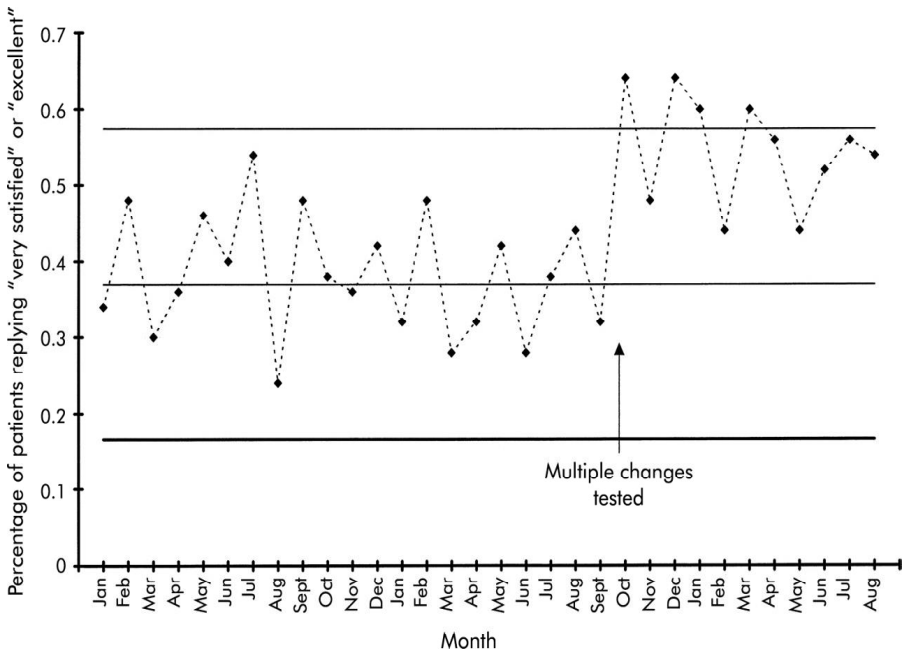

Figure 4: Control chart of appointment access satisfaction (percentage of patients very satisfied or higher with delay to see provider).
Source: Benneyan J C et al. Qual Saf Health Care 2003;12:458–464

their primary care provider is plotted on a *p* control chart (based on the binomial distribution) shown in Figure 4.
- After exploring ideas that had been successful for other practices, the staff implemented several changes at the same time: reducing the number of appointment types, simplifying the telephone scripts, and offering appointments with the practice nurse in lieu of the doctor for certain minor conditions.

Discussion Question I: Was there an improvement in appointment access satisfaction after changes were implemented? Do we know to what extend each change contributed to the improvement? Can this chart be used to monitor sustainability of improvements? As shown in the control chart, there was a notable improvement in appointment access satisfaction soon after these changes were implemented. Since the changes were not tried one at a time, however, we do not know the extent to which each change contributed to the improvement; further testing could be conducted to determine this, similar in approach to traditional screening experiments. This chart can also be used to monitor the sustainability of improvements by detecting any future special cause variation of a decrease in appointment access satisfaction.

CASE V: Infectious Waste Monitoring

Issue:

If several staff were asked to identify the criteria for determining what constitutes infectious waste in a hospital, a wide variety of responses would probably be obtained.

Description:

- Faced with this lack of standardization, most hospitals spend more time and money disposing of infectious waste than is necessary. For example, recent studies in the US found that less than 6% of a hospital's waste can be considered infectious or hazardous.
- It has also been estimated that an average-size hospital spends the equivalent of a new CAT scanner every year disposing of improperly classified infectious waste such as soft drink cans, paper, milk cartons, and disposable gowns. Armed with this knowledge, a team decides to address this issue.
- Since the team had no idea how much infectious waste they produced each day, they first established a baseline.
- As shown on the left side of Figure 5 (an XmR chart based on the normal

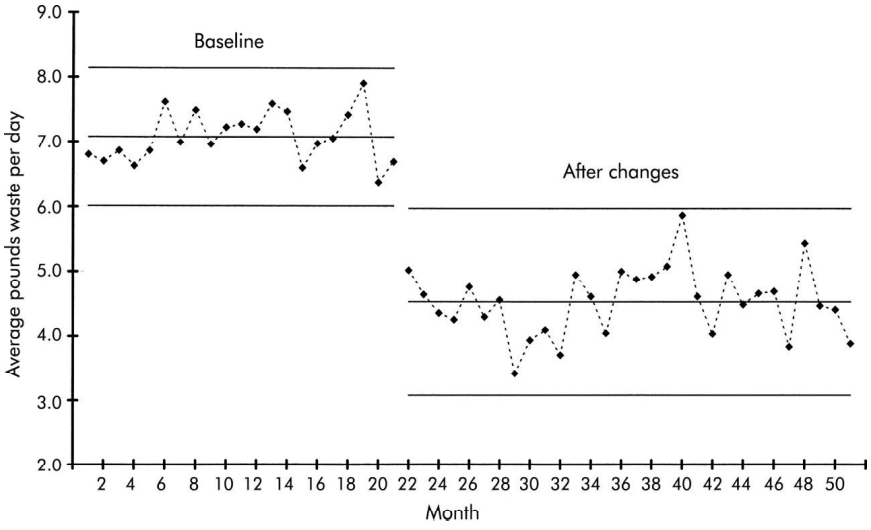

Figure 5: Control chart of infectious waste.
Source: Benneyan J. C. et al. Qual. Saf. Health Care 2003;12:458–464

distribution), the mean daily amount of infectious waste during the baseline period was a little over 7 lb (3.2 kg).

Discussion Question I: Is an improvement strategy appropriate? Why? (Clue- left side Figure 5). The process was stable and exhibited only common cause variation, so an intervention improvement strategy is appropriate. If the process is not changed, the amount of infectious waste in future weeks might be expected to vary between 6 lb (2.8 kg) and 8.2 lb (3.7 kg) per day.

To reduce the mean amount of infectious waste produced daily, the team first established a clear operational definition of infectious waste and then conducted an educational campaign to make everyone more aware of what was and was not infectious waste. They next developed posters, designed tent cards for the cafeteria tables, made announcements at departmental meetings, and assembled displays of inappropriate items found in the infectious waste containers.

Discussion Question II: What are the results of this educational effort? (Clue – right side Figure 5). The results of this educational effort are shown on the right side of Figure 5. The process has shifted to a new and more acceptable level of performance. Since the process has clearly changed, new control limits have been calculated for the data after the improvement. The new mean daily production of infectious waste is a little more than 4 lb (1.8 kg) per day. The control chart provided the team with a useful tool for testing the impact of these efforts. In this case, the shift in the process was very noticeable and in the correct direction

Discussion Question III: Would you conclude that all changes implemented led to desired results? What is the new challenge for this team? It is interesting, however, that, although the mean amount of waste was reduced, these same improvements inadvertently also caused the day-to-day variation to increase (note the wider control). Not all changes lead to the desired results. A challenge for the team now is to reduce the variation back to at least its original level.

References

Benneyan, J. C., Lloyd R. C., Plsek, P. E. (2003). Statistical Process Control as a tool for research and healthcare improvement. *Qual. Saf. Health Care* 12:458–464. doi:10.1136/qhc.12.6.458

Thor J., et al. (2007). Application of Statistical Process Control in healthcare improvement: a systematic review. *Qual. Saf. Health Care* 16:387–399. doi:10.1136/qshc.2006.02219

APPENDIX 4: SAMPLE CASE STUDY - UNDERSTANDING RUN CHARTS

Kwale Quality Improvement team exercise

In 2011 the Kwale DHMT formed a quality improvement team to oversee 21 work improvement teams working on many technical areas. The district tested many change ideas to specifically improve the quality of ANC care. The milestones of the improvement journey is as outlined below:

a) January–February 2011, district QIT formed, indicators for improvement selected

b) March–April 2011, District QIT assisted each facility to establish a work improvement team

c) May 2011 onwards, WITs develop and test various changes to improve quality of ANC (such as sample referrals, rapid test kits introduction, lab interrelated outreaches) supported by continuous coaching

d) WITs continued to monitor their data to see whether they are improving

Data from Kwale

Month	% ANC profile completed
1	29
2	27
3	26
4	25
5	25
6	30
7	35
8	49
9	49
10	56
11	50
12	64
13	61
14	56
15	60
16	57
17	58
18	67
19	72
20	64

Exercise:

Go over aggregate data from Kwale on improving ANC

a) Plot a graph of the percentage ANC with ANC profile done over the given period.

b) Annotate the key events.

c) Did the team improve? How can you tell?

d) How confident are you that the improvement was not a chance/random effect but due to their change efforts?