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| AFYA BORA CONSORTIUM GLOBAL HEALTH LEADERSHIP FELLOWSHIP PROGRAM |
| IMPLEMENTATION SCIENCE AND HEALTH SYSTEMS RESEARCH MODULE |
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**AFYA BORA CONSORTIUM**

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**Guide for Fellows and Instructors**

**Module Instructors**

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COURSE OVERVIEW

The past several decades have witnessed remarkable advances in medical science with the discovery of new drugs, vaccines, and diagnostic tools that have the capacity to lead to substantial improvements in global health. However, the translation of research findings into practice has often been slow and uneven, with regional variations. As a result, many of the solutions to health problems are not applied in a timely fashion, creating a widening gap between what is known to work and what is done in practice (referred to by the World Health Organization as the “know-do gap”). Implementation science has the potential to reduce this gap by applying systematic research and evaluation approaches to identify and address the barriers to effective replication and scale-up of evidence-based interventions in local settings. This training module provides an introduction to the emerging field of implementation science by outlining various methods that can be applied to improve implementation (including applied engineering, management tools, health systems and policy research), and through experiential case studies from global health leaders.

# COURSE LEARNING OBJECTIVES

This module explores the current literature on implementation science; introduces strategies for using innovative scientific methods and tools of diverse disciplines to understand and overcome impediments to implementation and facilitate scale-up; and uses case studies to identify and contextualize implementation successes and failures. At the end of this module, the student should be able to:

1. Identify the major factors that limit the translation of efficacy trials to effective health programs, and describe the role of complementary research methods in the development of evidence-based health programs and policies.
2. Explain appropriate research and evaluation methods to overcome implementation impediments and facilitate timely scale-up of proven interventions with high levels of fidelity and effectiveness.
3. Contextualize and explain real-world examples in which sound interventions failed or succeeded.
4. Describe the framework for designing successful implementation strategies and applying them to a real world problem.

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| **TEACHING METHODS**The material is presented in a format that includes two complementary types of sessions. The first defines the conceptual framework and relevant methodologies for implementation science. In order to facilitate assimilation of the didactic content, methodological sessions will include an interactive exercise for participants to apply the course methodologies to their group projects. The second type of session will be case studies from experts that apply the module’s conceptual framework to public health problems of global health importance, focusing on practical successes and failures in implementation 10-20 years post innovation. Each session will run one and a half hours. Methodological sessions will include approximately 30 minutes of didactic lecture, 25 minutes for the interactive exercise, 25 minutes for discussion moderated by course faculty, and 10 minutes for course faculty to summarize the content and synthesize how the covered methodology fits into the module framework. Case study sessions on day one to four will include approximately 50 minutes of presentation by guest lecturers, followed by 30 minutes of discussion moderated by course faculty, and 10 minutes for course faculty to highlight how the methods covered in the course apply to the presented case. Case study sessions on the final day of the course will include 30 minutes of group presentation and questions and answers for the group (see below), followed by 30 minutes of presentation, 20 minutes of questions and answers, and 10 minutes for course faculty to highlight how the methods covered in the course apply to the presented case. In addition to these in-class lectures, on the third day of the module, course participants will break into 4 groups and will make field visits to observe program implementation and interview program managers related to the group presentations detailed below.**GROUP PRESENTATION**Fellows will divide into 4 small groups of 5-6 and work in teams to apply the training module’s methodological framework to implementation of a national program or enhancement of a national program in Kenya related to one of the last four case studies. Each group will have 15 minutes to present on their topic, with an additional 15 minute question and answer session with the other fellows, co-directors and case study faculty from that session. During their presentation, each group will play the role of the Kenyan Minister of Health and senior staff addressing members of Parliament to propose and request resources to implement the respective national health program or program enhancement. The group presentations should be designed according to the following standardized format:1. **Problem to address** (2-3 slides). Provide an analysis of the problem to be taken on, including a situation analysis and overview of the current implementation strategy, successes and gaps in the assigned country.
2. **Justification of why the program or package would make a difference** (1-2 slides). Describe a framework that demonstrates how program implementation is expected to address the gaps described in the previous slides.
3. **Implementation strategy** (5-8 slides). Describe a 5-year strategy detailing the operational approach, major outputs, annual milestones, and measurement framework, incorporating the methods covered in the course and indicating how each will be used to understand and improve implementation and scale-up.

**GROUP PRESENTATION (continued from previous page)**1. **Expected return on investment** (1 slide). Describe expected results by year in terms of program coverage and related reductions in burden of disease or selected problem.
2. **Budget** (1 slide). Provide an estimate of annual program costs by major cost categories.

**INDIVIDUAL REFLECTION AND ASSESSMENT**At the end of each day, participants will spend 15 minutes reflecting in writing on the methods and case study presented during the day, focusing on how methods covered in the module applied to the case studies, and general reflection on how the methods can be applied to improve program delivery.**MODULE LOCATION**ACTS Training Center, University of Nairobi Department of Pediatrics. |

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# IMPLEMENTATION SCIENCE AND HEALTH SYSTEMS RESEARCH MODULE SCHEDULE

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| Time | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
| 08:30 – 10:00 | Introduction to Implementation Science **John Kinuthia, Kenneth Sherr, Judith Wasserheit****Christine Mugasha**  | Economic Analysis and Cost Effectiveness Analysis **Matiko Reru**  | Site Visits | Stakeholder Analysis and Policy Research**Isabel Maina** | **Improving Access and Quality of ANC and Delivery Services** and Group Presentation 1**John Kinuthia** |
| 10:00 – 10:30 | Break | Break | Break | Break |
| 10:30 – 12:00 | **Case Study:** PMTCT Scale-Up in Kenya**Ruth Nduati** | Qualitative Health Systems Research **Kenneth Ngure** | Dissemination Research and Social Marketing **Sylvia Opanga (dissemination) Anthony Okoth (social marketing)** | **Male Circumcision for HIV Prevention in Kenya**  and Group Presentation 2**Peter Cherutich** |
| 12:00 – 13:00 | Lunch | Lunch | Lunch | Lunch | Lunch |
| 13:00 – 14:30 | Surveillance to Measure Impact and Inform Strategies **Davis Kimanga** | Operations Research as a Contributing Discipline**Hussein Jama**  | Quality Improvement as a Management Tool**John Wanyungu**  | Q&A on Group Presentations | **HPV Vaccine Introduction for Cervical Cancer Prevention** and Group Presentation 3**Nelly Mugo** |
| 14:30 – 15:00 | Break | Break | Break | Break | Break |
| 15:00 – 16:30 | Overview of Impact Evaluation and Study Designs to Measure Effectiveness**George Owiso**  | **Case Study:** Mental Health**Muthoni Mathai** | **Case Study:** Ebola response: lessons learned for Kenya**Joel Montgomery** | At the end of each Case Study, Instructors will plan to lead a wrap-up discussion to identify skills and competencies that were profiled | **Programming to Manage Malnutrition** and Group Presentation 4**Rachel Musoke** |
| 16:30 – 17:30  |  Group Work, Reading and Reflection Time | Group Work, Reading and Reflection Time | Group Work, Reading and Reflection Time | Course Synthesis**John Kinuthia, Kenneth Sherr, Judith Wasserheit** |

# IMPLEMENTATION SCIENCE AND HEALTH SYSTEMS RESEARCH MODULE KNOWLEDGE AND SKILLS BY COMPETENCY AREA

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| **Competency** | **Knowledge** | **Skills** |
| Effectiveness Evaluation | Knowledge of different designs to evaluate program effectiveness, and their relative strengths and weaknesses | Design an appropriate and robust evaluation approach to identify effective preventive and curative health programs and service delivery approaches |
| Surveillance  | Knowledge of the core elements of surveillance systems, different types of surveillance systems, and their use | Use data from systems to measure impact and inform strategies |
| Economic Analysis | Knowledge of different economic analysis designs, and their relative strengths and weaknesses | Identify which economic analysis approaches are most appropriate to answer specific policy and implementation related questions  |
| Operations Research | Knowledge of systems analysis techniques and their application to improve health programs and delivery systems | Apply systems analysis and improvement techniques to strengthen health programs and delivery approaches |
| Quality Improvement | Knowledge of quality improvement techniques and their strength and limitations for improving preventive and curative health programs and systems | Design and apply quality improvement techniques to identify and test innovations in health programs and systems |
| Qualitative Research | Knowledge of qualitative research methods and their relevance in improving the delivery of health services | Apply qualitative data gathering methods and analysis techniques to improve understanding and functioning of health programs |
| Stakeholder and Policy Analysis | Knowledge of stakeholder and policy analysis approaches and their impact on policy development | Identify and map stakeholders to support development of evidence-based health programs and related policies |
| Social Marketing and Dissemination Research | Knowledge of social marking and dissemination research techniques and their relevance for improving knowledge uptake within health systems and communities, as well as improving health service utilization | Design an information dissemination and marketing approach for a health program |
| Case studies | Knowledge of the complexities and common implementation issues faced by leaders of large health programs, as well as systematic methods and approaches that have been successful in overcoming these challenges | Identify and articulate methods most relevant to address challenges encountered in the module case studies |
| Group Presentations | Knowledge of the current state of program scale-up in Kenya for priority health programs, challenges faced by program managers, and strategies for using implementation science tools to improve program implementation | Design a national scale-up plan relevant for Kenya that systematically applies the methods covered in the course to improve the program’s coverage, quality, pace and efficiency  |

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# IMPLEMENTATION SCIENCE AND HEALTH SYSTEMS RESEARCH MODULE DETAILED SESSION OBJECTIVES, READINGS

## Session 1: Introduction to Implementation Science

**John Kinuthia, Kenneth Sherr, Judith Wasserheit, Christine Mugasha**

**Learning Objectives:**

1. Describe why implementation science is important to global health
2. Summarize a framework for using implementation science to facilitate the translation of knowledge to successful program implementation

**Readings:**

*Recommended:*

Glasgow R, Vinson C, Chambers D, Khoury M, Kaplan R, Hunter C. National Institutes of Health Approaches to Dissemination and Implementation Science: Current and Future Directions. *AJPH*. 2012;102:7.

Madon T, Hofman K, Kupfer L, Glass R. Implementation Science. *Science*. 2007;**318**:(1728-1729).

Remme J, Adam T, Becerra-Posada F, et al. Defining Research to Improve Health Systems. *PlosMed* 2010;7(11):1-7.

Eccles M, Mittman B. Welcome to implementation science. *Implementation Science*. 2006;1(1):1-3.

Sanders D, Haines A. Implementation research is needed to achieve international health goals. *PLOS Med*. June 2006; **3**(6): 719-722.

Padian N, McCoy S, Balkus J, Wasserheit J. Weighing the gold in the gold standard: challenges in HIV prevention research. *AIDS* 2010;24(9):621-635*.*

## Session 2: Case Study: PMTCT Scale-Up in Kenya

**Ruth Nduati**

**Learning Objectives:**

1. To describe the process and results obtained through the planning, implementation and scale-up of pMTCT services in Kenya
2. To identify steps taken to design and establish surveillance, impact evaluation and economic analysis approaches by the pMTCT program in Kenya, major challenges and successful strategies to overcome these challenges

**Readings:**

*Required:*

Ferguson L, Grant A, Watson-Jones D, Kahawita T, Ong’ech J, Ross D. Linking women who test HIV-positive in pregnancy-related services to long-term HIV care and treatment services: a systematic review. *Trop Med Int Health*. 2012.

Ferguson L, Grant A, Ong’ech J, Vusha S, Watson-Jones D, Ross D. Prevention of mother-to-child transmission of HIV: assessing the accuracy of routinely collected data on maternal antiretroviral prophylaxis coverage in Kenya. *Sex Transm Infect*. 2012;88:120-124.

## Session 3: Surveillance to Measure Impact and Inform Strategies

**Davis Kimanga**

**Learning Objectives:**

1. Understand the value of core systems of information collection to monitor disease and health programs in developing countries
2. Understand barriers to implementing these systems and applications of these concepts in developed countries as well

**Readings:**

*Required:*

Second Edition of the Framework and Standards for Country Information Systems, including the two summary leaflets and "The HMN Framework and Standards for Country Health Information Systems" (58 pages) available at the Health Metrics Networks website: <http://www.who.int/healthmetrics/documents/framework/en/index.html>

CDC Guidelines Working Group. Updated Guidelines for Evaluating Public Health Surveillance Systems. MMWR No RR-13. July 27, 2001.

*Supplementary:*

Within Chapter 3, the section called "Estimating Incidence, Prevalence, and YLD: Methods and Data," page 73 to 84, and within Chapter 5, "Sensitivity of Burden of Disease and Injury Results to Variations in Key Parameter Values," page 402 to 405.  Also, Chapter 3, section "Global and Regional Mortality in 2001," 68-72, from Global Burden of Disease and Risk Factors, 2006.  Available online at: [www.dcp2.org/pubs/GBD](http://www.dcp2.org/pubs/GBD).

Chapter 53 "Public Health Surveillance: A Tool for Targeting and Monitoring Interventions," (20 pages), and Chapter 54 "Information to Improve Decision Making for Health," (15 pages) from *Disease Control Priorities in Developing Countries*, 2nd Edition, Oxford University Press and The World Bank, 2006.  Available online at: [www.dcp2.org/pubs/DCP](http://www.dcp2.org/pubs/DCP).

Kenya Ministry of Health. IDSR Clinicians Handbook.

## Session 4: Overview of Impact Evaluation and Study Designs to Measure Effectiveness

**George Owiso**

**Learning Objectives:**

1. Familiarize with methods to evaluate programs at scale
2. Understand and explain the difference between randomized designs that are RCTs conducted for specific interventions and treatments, versus randomized designs for large scale programs
3. Identify the types of health metrics and sources of data for health metrics
4. Recognize the importance of impact evaluations in the design of sound health policies

**Readings:**

*Required:*

Murray C, Frenk J. Health metrics and evaluation: strengthening the science. *Lancet*. 2008;371:1191-99.

Oxman A, Bjorndal A, Becerra-Posada F, Gibson M, Gonzalez Block M, Haines A, et. al. A framework for mandatory impact evaluation to ensure well informed public policy decisions. *Lancet*. 2010;375:427-31.

Savedoff W, Levine R, Birdsall N. When will we ever learn? Improving lives through impact evaluation. Report of the evaluation gap working group; Center for Global Development: June, 2006.

*Supplementary:*

Duflo E, Glennerster R, Kremer M. Using randomization in development economics research: a toolkit. Discussion Paper No. 6059; Centre for Economic Policy Research: January, 2007. <http://www.cepr.org/>

Horton R, Murray C, Frenk J. A new initiative and invitation for health monitoring, tracking and evaluation. Lancet. 2008;371:1139-40.

Murray C, Frenk J, Evans T. The global campaign for the health MDGs: challenges, opportunities, and the imperative of shared learning. *Lancet*. 2007;370:1018-20.

## Session 5: Economic Analysis and Cost Effectiveness Analysis

**Matiko Reru**

**Learning Objectives:**

1. Provide an overview of economic analysis methods
2. Provide an overview of the application of cost effectiveness analysis

**Readings:**

*Required:*

Murray C, Evans D, Acharya A, Baltussen R. Development of WHO guidelines on generalized cost-effectiveness analysis. *Health Econ*. 2000; 9:235-251.

Cleary S, Castillo-Riquelme M. Economic Evaluation. In Multidisciplinary approaches complementary to epidemiology.

*Supplementary:*

Jamison, Dean. Investing in Health. In D.T. Jamison, J. Breman, A. Measham, G. Alleyne, et. al. (eds.), Disease Control Priorities in Developing Countries, 2nd edition. Oxford and New York: Oxford University Press. Pp. 3-34.

Laxminarayan R, Mills A, Breman J, Measham A, Alleyne G, Claeson M, Jha P, Musgrove P, Chow J, Shahid-Salles S, Jamison D. Advancement of global health: key messages from the disease control priorities project. *Lancet*. 2006;367:1193-1208.

## Session 6: Qualitative Health Systems Research

**Kenneth Ngure**

**Learning Objectives:**

1. Identify qualitative data gathering methods and sampling approaches, and describe their implications for analysis and interpretation of data in implementation research
2. Identify how qualitative research design and methods can be developed to maximize rigor, validity, and reliability of findings in implementation research
3. Describe the benefits and limitations of mixing qualitative and quantitative methods in implementation research designs

**Readings:**

*Required:*

Sandelowski, Margarete. Combining Qualitative and Quantitative Sampling, Data Collection, and Analysis Techniques in Mixed-Method Studies. *Research in Nursing and Health*. 2000;23: 246-255.

Johnstone PL. Mixed methods, mixed methodology health services research in practice. *Qual Health Research*. 2004;12(2):259-271.

*Supplementary:*

Barbour R. Checklists for improving rigor in quality research: a case of the tail wagging the dog? *BMJ*. 2001;322:1115-1117.

# [Session](#_Session_7:_Operations) [7: Operations Research as a Contributing Discipline](#_Session_7:_Operations)

**Hussein Jama**

**Learning Objectives:**

1. Understand Basic Lean Implementation and Its Application to Healthcare Settings
	1. Waste and Time
	2. Value Stream Mapping
	3. Process Improvement/Kaizen
2. Understand Use of Simulation Modeling
	1. Model Development
	2. Model Verification and Validation
	3. What-if Analysis

**Readings:**

*Required:*

Introduction from “Lean Thinking: Banish waste and create wealth in your corporation.” Womak J, Jones D. Pages 16-28.

Womak J, Byrne A, Flume O, Kaplan G, Toussaint J. Going lean in health care. Institute for Healthcare Improvement Innovation series 2005. Available online at: [www.ihi.org](http://www.ihi.org).

*Supplementary:***:**

Koelling C, Eitel D, Mahapatra S, Messner K, Grove L. Value stream mapping the emergency department. Available online at:

<http://www.iienet.org/uploadedFiles/SHS/Resource_Library/Details/180.pdf>.

Jurishica C. Simulation Medication: Studies show patient flow improvement.

## Session 8: Case Study: Mental Health Services in Kenya

**Muthoni Mathai**

**Learning Objectives:**

1. TBD

**Readings:**

*Required:*

## Session 9: Quality Improvement as a Management Tool

**John Wanyungu**

**Learning Objectives:**

1. Define how quality improvement can be used to identify and test innovations in the health care setting
2. Demonstrate how quality improvement has facilitated broad scale-up of health programs

**Readings:**

*Required:*

Quality Improvement through planned experimentation 3/E. By Ronald Moen, Thomas Nolan, and Lloyd Provost (2012)

The Improvement Guide: A practical Approach to Enhancing Organizational Performance. By Gerald Langley, Kevin Nolan, Clifford Norman, Lloyd Provost and Thomas Nolan (1996)

Dixon-Woods M, Amalberti R, Goodman S, Bergman B, Glasziou P. Problems and promises of innovation: why healthcare needs to rethink its love/hate relationship with the new. *BMJ Qual Saf*. 2011;**20**(Suppl 1):i47-51.

May C. Towards a general theory of implementation. *Implementation Science*. 2013;**8**:18.

Institute for Healthcare Improvement. The breakthrough series: IHI’s collaborative model for achieving breakthrough improvement. Innovation series 2003. <http://www.ihi.org>.

*Supplementary:*

Quality Improvement Made Simple: What everyone should know about healthcare quality improvement. By Health Foundation. 2nd edition (2013)

Understanding variation: The key to managing chaos. By Donald J. Wheeler (2000). 2nd edition

Transforming healthcare leadership: A systems guide to improve patient care, decrease costs and improve population health. By Michael Macccoby, Clifford L. Norman, C. Jane Norman and Richard Margolies (2013)

Michie S, van Stralen M, West R. The behavior change wheel: a new method for characterizing and designing behavior change interventions. *Implementation Science*. 2011;**6**;42.

English M, Nzinga J, Mbindyo P, Ayieko P, Irimu G, Mbaabu Lairumbi. Explaining the effects of a multifaceted intervention to improve inpatient care in rural Kenyan hospitals – interpretation based on retrospective examination of data from participant observation, quantitative and qualitative studies. *Implementation Science*. 2011;**6**:124.

Kritchevsky S, Braun B, Bush A, Bozikis M, Kusek L, Burke J, et. al. The effect of a quality improvement collaborative to improve antimicrobial prophylaxis in surgical patients. *Ann Intern Med*. 2008;149:472-480.

Wroth T, Boals J. Application of quality improvement methods in a community practice: the Sandhills Pediatrics Asthma Initiative. *NC Med J*. May/June 2005;66(3):218-220.

## Session 10: Case Study: Ebola Preparedness

**Joel Montgomery**

**Learning Objectives:**

1. TBD

**Readings:**

*Required:*

## Session 11: Stakeholder Analysis and Policy Analysis

**Isabela Maina**

**Learning Objectives:**

1. Describe the stages of policy development and how empirical information can be used at each stage
2. Identify and map key stakeholders in a policy issue

**Readings:**

*Required:*

Gilson L, Erasmus E, Borghi J, Macha J, Kamuzora P, Mtei G. Using Stakeholder Analysis to Support Moves Towards Universal Coverage: Lessons from the SHIELD Project. *Health Policy and Planning*; 2012;27:i64-i76.

Varvasovszky Z, Brugha R. How to do (or not to do). . . a stakeholder analysis. *Health Policy and Planning.* 2000;15(3):338-345.

Guidelines for Conducting a Stakeholder Analysis. Health Reform Tool Series. Partnership for Health Reform. [www.phrproject.com](http://www.phrproject.com).

*Supplementary:*

Lomas J. Connecting research and policy. Taken from the Policy Commentary Series of the Centre for Health Economics & Policy Analysis at McMaster University. Spring, 2000.

Atkins D, Siegel J, Slutsky J. Making policy when the evidence is in dispute. *Health Affairs*; 2005;24(1):102-113.

Akua Agyepong I, Adjei S. Public social policy development and implementation: a case study of the Ghana National Health Insurance scheme. *Health Policy and Planning*. 2008;23:150-160.

Shiffman J, Smith S. Generation of political priority for global health initiatives: A framework and case study of maternal mortaliy. *Lancet*. 2007 Oct 13;370(9595):1370-1379.

## Session 12: Social Marketing and Dissemination Research

**Sylvia Opanga and Anthony Okoth**

**Learning Objectives:**

1. Understand the process of developing an effective marketing strategy
2. To discuss the need for dissemination research and describe the roles that researchers play in dissemination

**Readings:**

*Required:*

Grier S, Bryant CA. Social marketing in public health. *Annu Rev Public Health.* 2005;26:319-339.

Harris JR, Cheadle A, Hannon PA, Forehand M, Lichiello P, Mahoney E, Snyder S, Yarrow J. A Framework for Disseminating Evidence-Based Health Promotion Practices. *Prev Chronic Dis* 2012;9:110081.

*Supplementary:*

Dolan RJ. Note on marketing strategy. Harvard Business School. Document 9-598-061. 2000.

Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Q.* 2004;82(4):581-629.

## Session 13: Case Study: Improving Access and Quality of ANC and Delivery Services

**John Kinuthia**

**Learning Objectives:**

1. To understand the rationale of scaling up antenatal care and facility delivery as a strategy to improve maternal and infant outcomes
2. To describe the complexities involved in designing, implementing, and evaluating maternal health interventions in Kenya

**Readings:**

*Required:*

Lozano, R., et al., Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality: an updated systematic analysis. The Lancet, 2011. 378(9797): p. 1139-1165.

Koblinsky, M., et al., Going to scale with professional skilled care. The Lancet, 2006. 368(9544): p. 1377-1386.

Campbell, O.M.R. and W.J. Graham, Strategies for reducing maternal mortality: getting on with what works. The Lancet, 2006. 368(9543): p. 1284-1299.

Simkhada, B., et al., Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. Journal of Advanced Nursing, 2008. 61(3): p. 244-260.

Zanconato, G., et al., Antenatal care in developing countries: The need for a tailored model. Seminars in Fetal and Neonatal Medicine, 2006. 11(1): p. 15-20.

## Session 14: Case Study: Male Circumcision for HIV Prevention in Kenya

**Peter Cherutich**

**Learning Objectives:**

1. To understand the evidence base for the association between male circumcision and reduced risk for acquisition of HIV infection
2. To describe the complexities involved in designing, implementing and evaluating a national program to scale up male circumcision services in Kenya

**Readings:**

*Required:*

Cherutich P, Ochieng A, Kimanga D, Mwandi Z, Mwalili S, Chesang K, Knight N, Grund J, Bock N. Progress in voluntary medical male circumcision service provision – Kenya, 2008-2011. *MMWR* 2012;61(47).

Mills E, Cooper C, Anema A, Guyatt G. [Male circumcision for the prevention of heterosexually acquired HIV infection: a meta-analysis of randomized trials involving 11,050 men.](http://www.ncbi.nlm.nih.gov/pubmed/18705758?ordinalpos=3&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum) *HIV Med* 2008; 9:332-5.

*Supplementary:*

Bailey RC, Moses S, Parker CB, *et al*. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet* 2007; 369:643-56.

Nagelkerke NJD, Moses S, de Vlas S, Bailey RC. Modelling the public health impact of male circumcision for HIV prevention in high prevalence areas in Africa. *BMC Infect Dis* 2007; **7:**16.

WHO/UNAIDS technical consultation on male circumcision and HIV prevention: research implications for policy and programming, Montreux, 6 – 8 March 2007. New data on male circumcision and HIV prevention: policy and programme implications. <http://www.malecircumcision.org/advocacy/documents/WHO_UNAIDS_New_Data_MC_recommendations_03_06_07_layout.pdf/> Accessed December 27, 2009.

World Health Organization and UNAIDS. Progress in male circumcision scale-up: country implementation update, December 2009.

<http://www.malecircumcision.org/documents/MC_country_update_web.pdf/>

Accessed December 27, 2009.

## Session 15: Case Study: HPV Vaccine Introduction for Cervical Cancer Prevention in Kenya

**Nelly Mugo**

**Learning Objectives:**

1. To understand and articulate the evidence base for HPV vaccine as a tool to prevent cervical cancer and related issues for its introduction as a national program
2. To describe the complexities involved in designing, implementing and evaluating the introduction of HPV vaccine for cervical cancer prevention in Kenya

**Readings:**

*Required:*

LaMontagne, S, et al. Human papillomavirus vaccine delivery strategies that achieved high coverage in low- and middle-income countries*. Bull WHO* 2011; 89:821.

CDC. Progress Toward Implementation of Human Papillomavirus Vaccination — the Americas, 2006–2010. *MMWR* 2011; 60: 1382.

*Supplementary:*

Garland S, et al. Adolescent and young adult HPV vaccination in Australia: achievements and challenges. *Prev Med*. 2011; 53 (Suppl 1): S29 -S35.

Lu B, et al. Efficacy and Safety of Prophylactic Vaccines against Cervical HPV Infection and Diseases among Women: A Systematic Review & Meta-Analysis. *BMC Infect Dis* 2011; 11:13.

## Session 16: Programming to Manage Malnutrition

**Rachel Musoke**

**Learning Objectives:**

1. To understand the global target for reduction of childhood stunting
2. To describe opportunities and challenges of implementing a national programme to reduce stunting

**Readings:**

*Required:*

WHO: WHA global nutrition targets 2025:Stunting policy brief. globaltargets\_stunting

WHO. Childhood stunting: challenges and opportunities. Report of a colloquium. Geneva:

World Health Organization; 2014 (http://apps.who.int/iris/bitstream/10665/107026/1/

WHO\_NMH\_NHD\_GRS\_14.1\_eng.pdf?ua=1,

*Supplementary:*

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## Session 17: Course Synthesis

**John Kinuthia, Kenneth Sherr, Judith Wasserheit, Christine Mugasha**

**Learning Objectives:**

1. Justify the need for an implementation science framework and summarize its main attributes
2. Apply appropriate public health methods and strategies to develop and implement successful, large-scale public health programs

# APPENDIX 1: Pre-course Questions

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| **PLEASE ANSWER THIS QUESTION AT THE BEGINNING OF THE IMPLEMENTATION SCIENCE MODULE** |

The Afya Bora Fellowship is dedicated to helping trainees develop understanding around implementation science and health systems research further informing their capacity to facilitate successful program implementations/interventions. What is your understanding of those factors which contribute to implementation success? Failure? Please provide your confidential answer in the box below; take as much space as you need.

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| **PLEASE ANSWER THIS QUESTION AT THE END OF THE IMPLEMENTATION SCIENCE MODULE** |

Has the Fellowship helped to clarify and illustrate the skills needed for effective intervention development, implementation and scale-up? How? Has the Fellowship helped to focus or enhance your understanding of what is required for successful program interventions? How? Please provide your confidential answer in the box below; take as much space as you need.

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# APPENDIX 2: Lecturer Bios

Peter Cherutich, MBChB, MPH

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Dr. Cherutich has been Deputy Director (and Head of HIV Prevention) at the National AIDS/STD Control Program (NASCOP), the organization responsible for HIV/AIDS, and STI prevention for the Kenya Ministry of Health. Specifically he has overseen the country’s portfolio on HIV testing, male circumcision, prevention of mother to child transmission, condom promotion and recently, Pre-exposure Prophylaxis (PreP) and Treatment as Prevention (TasP). He has led significant policy initiatives including the introduction and scaling up of early infant diagnosis for HIV, expansion of HIV testing beyond VCT, and scaling up of male circumcision among others. He has been pivotal in NASCOPs role in reaching out and providing services to most-at-risk populations under difficult socio-political challenges. Internationally, Dr. Cherutich co-chairs the WHO Technical Advisory Groups on Devices for Male Circumcision and has actively participated and contributed to discussions around new HIV prevention technologies such as ARVs for prevention (including microbicides).

Hussein Jama B. Eng, M.Eng, PhD

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Dr. Hussein Jama is currently a senior lecturer at the department of mechanical and manufacturing engineering, University of Nairobi. Previously he worked at the University of New South Wales, Australia as a research fellow investigating motor cycle crashes into roadside furniture where we established causes and the biomechanics of injury. Dr. Jama obtained a PhD in structural mechanics from Monash University and an M.Eng and B.Eng degrees from the Royal Melbourne Institute of technology in Melbourne, Australia. Dr Jama's current teaching revolves around the mechanics of solids and engineering design. Dr Jama has research interest is in the interface between engineering and medicine with particular emphasis on road safety. Other interests are on structures subjected to impact loads and on continuous improvement techniques.

Davis Kimanga

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Davies Kimanga, MD, MSC is a trained medical epidemiologist with a first degree in Medicine and Surgery and a masters in applied epidemiology. He is proficient in HIV Surveillance and all aspects of data management i.e. data collection, analysis, interpretation and dissemination leading to public health action. He has worked for the Ministry of Health in Kenya for more than ten years rising through the ranks to manage a major district hospital, entire district health services, strategic information, evaluation and research in the national HIV program and lastly to head the health information systems unit at the Ministry of Health Headquarters. Currently he works as the strategic information and Evaluation director at Elizabeth Glaser Pediatric AIDS Foundation (EGPAF)-Kenya which is the largest HIV care and treatment implementing partner in Kenya. Relevant achievements: Conducted all aspects of HIV surveillance in Kenya; ANC sentinel surveillance, use of PMTCT data for surveillance, Key population surveillance, HIV incidence and HIV estimates through mathematical modeling leading to national and county HIV profiles, coordinated the second Kenya AIDS indicator survey in 2012. Designed and developed data collection and reporting tools for HIV program in Kenya. Chaired the electronic medical records (EMR) technical working group that spearheaded the assessment, identification and roll out of preferred EMR systems for use in Kenya; serving as a key source of routine surveillance data for assessing treatment progression and outcomes. Participated in development of a lab networking system for Early infant diagnosis, viral load and cd4 tests leading to a central database for all the tests done in the country thus providing key data for laboratory monitoring. Interests: Health informatics, operational research, public health, data quality and use, Surveillance in Health.

John Kinuthia, MBChB, MPH

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Dr. Kinuthia is an Obstetrician Gynecologist, and head of the Research and Program Department, Kenyatta National Hospital. In addition, he is a honorary lecturer, Department of Obstetrics and Gynaecology, University of Nairobi and Site Director, University of Nairobi, Fogarty International Clinical Research Scholars and Fellows training site.

Dr. Kinuthia’s research has primarily focused on prevention of Mother-to-child transmission of HIV. He is a co-principal Investigator of study “HIV-1 Acquisition during and after Pregnancy” a prospective study that is evaluating factors associated with HIV acquisition during and after delivery, the study “Home-based Partner Education and Testing Study” that is evaluating whether HIV testing and education of male partners will improve maternal and infant outcomes and the study “Evaluation of Prevention of Mother-to-Child Transmission of HIV-1 and Maternal Child Health in Kenya”.

Dr. Kinuthia also coordinates trainings in Implementation Science, Maternal and Neonatal Child Health and Program Management for the University of Nairobi Partnership for Innovative Medical Education (Prime K) linked award that is focusing on strengthening maternal, newborn, and child Health in the country

Muthoni Mathai, MBChB, MMed, PhD

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Dr. Mathai is the Principal Investigator for the Medical Education Partnership Initiative (MEPI) Mental Health Linked Award and a Senior Lecturer in the Department of Psychiatry, School of Medicine at the University of Nairobi. Dr. Mathai has conducted research, provides clinical services to patients and teaches mental health to undergraduates and postgraduates in psychiatry and clinical psychology. Dr. Mathai is an experienced qualitative researcher and is actively involved in coordinating clinical activities, training and research activities at the Gender Based Violence Recovery Centre within Kenyatta National Hospital and Mathari Mental Hospital.

Isabel Maina, BDS, MPH Dip

Head, Division of Technical Planning Ministry of Medical Services

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Isabel is currently pursuing a PhD in Public Health with special interest in the referral services within the Kenyan health system, and working at the Ministry of Medical services (Kenya) at the National level in the Technical planning Department where duties and responsibilities entail;

• Coordination of planning in the health sector (Policy planning; strategic planning; operational planning)

• Monitoring and evaluation in the health sector e.g. development of health sector reports such as annual sector performance reports

• Coordination of stakeholders in the health sector

Isabel has participated in development of various health sector policy document and guidelines among them the ; Current Kenya Health policy 2012-2030; Kenya Health sector Strategic Plan 2012-2017; Health Systems Management training manuals for health managers; The Health Sector Referral strategy and investment plan 2012-2017 among others.

Joel Montgomery

Director, Global Disease Detection - Centers for Disease Center, Kenya

Christine Mugasha, MBChB, MMed

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Christine Mugasha is a paediatrician working at Infectious Disease Institute in the outreach department. The outreach department houses projects focusing on health systems strengthening and capacity building for local governments and community based organizations. She supports grant writing, planning, implementation, monitoring and evaluation. The main technical areas she supports include paediatric care and treatment, as well as PMTCT.

Nelly Mugo, MBChB, MMED, MPH

Consultant Obstetrician & Gynaecologist

Head, Department of Research and Programs, Kenyatta National Hospital

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Dr. Mugo has 25 years of experience as a reproductive health specialist working from rural district facilities to the National teaching hospital. In the last 14 years, the majority of her work has shifted to research with a focus on reproductive health and HIV prevention clinical research. The majority of Dr. Mugo’s research activities has been in clinical research, specifically working on Pelvic Inflammatory Disease, cervical cancer prevention and HIV prevention. For the last 10 years, her work has concentrated on HIV prevention working with HIV-serodiscordant couples. Working in collaboration with the International Clinical Research Center (ICRC), University of Washington, and other African research teams, she has completed two landmark multisite clinical trials, HSV-HIV transmission study and the Partners PrEP study, in addition to several observational related studies.

Dr. Mugo is an honorary lecturer at the University of Nairobi, where she teaches both undergraduate and post graduate students in the department of obstetrics & gynaecology, the clinical epidemiology unit and provide clinical services at the cervical cancer colposcopy clinic.

She currently leads a research team in Thika, Kenya and works as a senior research scientist at the National research institute (KEMRI), where she heads the sexual reproductive and adolescent child health research program.

Rachel Musoke

Ruth Nduati, MBChB, MMED, MPH

Professor, Department of Paediatrics & Child Health, University of Nairobi

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Prof Ruth Nduati was lead Kenyan co-investigator of the "Breastfeeding and Transmission of HIV Study," after she completed her master's degree program at the University of Washington in October 1994. She entered the MPH program in the Department of Epidemiology in September 1991, and after graduating was appointed as an Advanced In-Country Scholar. Dr. Nduati has become a recognized international authority on perinatal transmission of HIV and has emerged as a leader in her field in Africa. While maintaining her teaching post as an Professor at the University of Nairobi and continuing her clinical and research work, Dr. Nduati is also serving as Secretary of the Network of AIDS Researchers in Eastern and Southern Africa (NARESA) and was a member of the Scientific Secretariat of the Ghent Working Group on Mother to Child Transmission of HIV-1. She was the coordinator of a Perinatal HIV-1 Interventions Workshop at the 1997 AIDS in Africa conference. She is co-author of a book, "Communicating with Adolescents on HIV/AIDS in East and Southern Africa", co-author of several UNICEF manuals, and published the results of her breastfeeding study in the JAMA in 2000. In 2001, Dr. Nduati was also first author on an article published in the Lancet, "Impact of Breastfeeding on Mortality of HIV-1 Infected Women: Results of a Randomized Clinical Trial." In September 2002 she was awarded a CDC/WHO study that looks at the effect of HAART on breastmilk HIV transmission. This study has completed enrollment and follow-up, and data analysis is underway. In 2004, Dr. Nduati was awarded a PEPFAR grant to provide prevention of mother-to-child transmission interventions in rural Kenya. In 2006, she was a plenary speaker at the XVI International AIDS Conference in Toronto, where she spoke about pediatric HIV in sub-Saharan Africa. Currently Dr. Nduati is Chair of the Kenya Medical Research Institute Board of Management.

Kenneth Ngure, MPH, MSc, PhD

Lecturer, Jomo Kenyatta University

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Kenneth Ngure is a Lecturer and the Research Coordinator at the College of Health Sciences of Jomo Kenyatta University of Agriculture and Technology (JKUAT), an Affiliate Assistant Professor, Department of Global Health, University of Washington and a Site Investigator at the Partners in Health Research and Development. Kenneth received his MPH from the University of Nairobi, MSc in Clinical Trials from the University of London, MSc in Organizational Development from the United States International University and a PhD in Public Health from JKUAT. He has published >20 peer reviewed articles and presented >40 research papers at local and international conferences. His scholarly interests include antiretroviral based HIV prevention, HIV self testing, fertility intentions and contraceptive use among women with and at risk of HIV in sub-Saharan Africa. Kenneth has extensive experience in both qualitative and quantitative research methodologies and has worked on several studies in Kenya together with colleagues from the University of Nairobi and University of Washington. In 2010 Kenneth received Forgaty Fellowship to undertake additional qualitative research training at the University of Washington and has taught qualitative methods at the University of Nairobi’s Advanced Research Methods course. Kenneth has also been an African Doctoral Dissertation Fellow, Afya Bora Fellow, BIARI Scholar and a recipient of the University of Washington’s Community Partners Award, 2012. Additionally, Kenneth is a core member of the Behavioural Research Working Group of the Microbicide Training Network (MTN), USA.

Anthony Okoth BSc, MBA

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Anthony Okoth is PSI/Kenya’s Deputy Country Representative and currently serves as the Chief of Party on the USAID-funded APHIA plus Health Communications Program. He has 18 years of experience in public health programming and medical sales for HIV and AIDS, tuberculosis, reproductive health and malaria. Mr. Okoth has experience in health marketing and sales and program management from the commercial and non-profit sectors across the continent. Mr Okoth holds a Master in Business Administration in Marketing from Daystar University in Nairobi, Kenya; and a BSc Biological Sciences from Punjab University in Punjab, India.

George Owiso

Matiko Reru

Kenneth Sherr, PhD, MPH

Associate Professor, Department of Global Health, University of Washington

Director of Implementation Science & Mozambique Programs, Health Alliance International

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Kenneth Sherr, PhD, MPH, is an Associate Professor in the Department of Global Health at the University of Washington, and Director of Implementation Science and Mozambique Programs at Health Alliance International. Dr. Sherr has worked the majority of the past 17 years in the public and NGO sectors in Mozambique, Uganda, and Bolivia. Currently, Dr. Sherr is the Principal Investigator for a 7-year grant from the Doris Duke Charitable Foundation’s African Health Initiative, which aims to develop innovative and measureable approaches to strengthening integrated Primary Health Care in Sofala, Mozambique. Previously, he served as Country Director for Health Alliance International’s activities in Mozambique, where he focused on strengthening the Mozambique Ministry of Health’s capacity to deliver ART services through an integrated approach. The program expanded public sector antiretroviral treatment from less than 400 to over 100,000 in a period of 4 years.

Dr. Sherr’s research interests focus on identifying and testing practical solutions to support service integration into the Primary Health Care framework as a means of improving health system efficiency, coverage and quality. Particular areas of emphasis include expanding human resources for health and identifying innovative approaches to foreign assistance. Kenny’s current Mozambique research activities include evaluating the quality of HIV care and treatment provided by physicians and mid-level health providers, describing the level and determinants of internal and external brain drain of physicians from the public sector, and carrying out a national evaluation of the quality of ART service provision in Mozambique.

Dr. Sherr received his doctoral degree in Epidemiology from the University of Washington, and holds a Master’s of Public Health degree in International Health/Health Services from the same institution. He also holds a Bachelor of Arts degree in Anthropology and Sociology from Kenyon College in Gambier, Ohio.

John Wanyungu

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My name is John Wanyungu. I hold a Master’s degree in Community Health from the University of Liverpool, United Kingdom and advanced training in quality improvement from the National Quality Center, New York State Department of Health. I work with the Ministry of Health (K) at the National AIDS Control Program (NASCOP) where I hold the position of Quality Improvement Team Lead. I have led the process of developing the National HIV quality improvement framework, Operational manual and Training materials (2014). Additionally, I am also a UoN HIV Fellowship mentor in the Quality Management Medium term Fellowship program.

I have participated in building capacity of county health teams in quality improvement through training and mentorship programs. I am currently leading the roll-out of the newly developed HIV quality improvement framework documents to all the forty seven counties in the country. I have attended several local and international conferences on quality improvement in New York, Paris, London, Johannesburg, Kampala, Dar es Salam, Windhoek, among others where I have made presentations on quality improvement work in HIV settings in Kenya.

Judith Wasserheit, MD, MPH

Vice Chair, Department of Global Health, University of Washington

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Judith N. Wasserheit MD, MPH is currently Professor of Medicine and Global Health and Chair of the Department of Global Health at the University of Washington in the Schools of Medicine and Public Health & Community Medicine. She is also an Affiliate Investigator the Fred Hutchinson Cancer Research Center. She was formerly the Director of the HIV Vaccine Trials Network, a NIH-funded global clinical trials platform linking 28 sites on 4 continents in evaluating preventive HIV vaccines. She has had extensive experience in sexually transmitted disease (STD) research, policy development and program implementation both in the United States and in developing countries. Her research has included one of the first laparoscopic studies of pelvic inflammatory disease etiology conducted in the US, the first population-based study of the prevalence and etiologic spectrum of STDs among rural women in the Indian Subcontinent, and research on the interrelationships between STDs and contraceptive practices in other parts of the developing world, including Indonesia, and Egypt. She has also worked in Columbia, Thailand and Zambia. Her development of the concept of epidemiological synergy between HIV infection and other STDs has had a major influence on HIV prevention policy and programs around the world.

From 1989 to 1992, Dr. Wasserheit led the development of the newly established STD Research Branch at the National Institute of Allergy and Infectious Diseases (NIAID), where she shaped a robust multidisciplinary national research agenda that launched the STD Cooperative Research Centers (CRCs), which continue to be a major part of the Institute’s STD research portfolio today. She directed the Centers for Disease Control and Prevention’s national STD Prevention Program from 1992 to 2001, where she led the development and implementation of STD prevention policy guidance for state and local health department programs, and related research in epidemiology, clinical services, behavioral science, surveillance and program evaluation. These initiatives included the establishment of this country’s National Chlamydia Prevention Program and the National Syphilis Elimination Plan that dramatically reduced syphilis among African Americans. Dr. Wasserheit has extensive experience working successfully with national and international agencies, governments, and colleagues on STD and HIV research, policy and programmatic issues. She has led or served on numerous World Health Organization and UNAIDS committees and advisory groups.

Dr. Wasserheit received her BA from Princeton University, her MD from Harvard Medical School, and her MPH from the Johns Hopkins University. During her Infectious Disease research fellowship at the University of Washington from 1982-84, she helped establish the Refugee Clinic at Harborview Medical Center, a clinic that continues to operate today as the HMC International Medicine Clinic. She is a member of the editorial board for Sexually Transmitted Diseases, a fellow of the American College of Physicians and the Infectious Disease Society of America and a member of the American Public Health Association and the American Sexually Transmitted Diseases Association. Her honors include the Young Professional Award of the Maternal-Child Health Section of the American Public Health Association, the Presidential Meritorious Rank Award of the Department of Health and Human Services, the Edward E. Kass Award Lecture of the Infectious Diseases Society of America, the American STD Association's Achievement Award, and the American Social Health Association’s Presidential Award. In 2006, Dr. Wasserheit was elected to the Institute of Medicine of the National Academies. In 2007, she was selected as a Paul Rogers Society Global Health Research Ambassador, in 2008 was selected for the founding class of the Washington State Academy of Sciences, and in 2009 was honored as the London School of Hygiene and Tropical Medicine’s Heath Clark Endowed Lecturer. From 2012 to 2014, she was Chair of the Board of Directors of the Consortium of Universities for Global Health.

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