Electronic medical records and clinical Decision Support Systems in HIV care in resource-limited settings

Oluoch, T.O.

Publication date
2015

Document Version
Final published version

Citation for published version (APA):
This thesis focuses on the use of electronic medical record (EMR) and clinical decision support systems (CDSS) to improve quality of care for HIV/AIDS patients through better adherence to WHO and national clinical guidelines. HIV/AIDS is a major public health problem; in 2013 nearly 35 million people were infected globally, with 71% living in sub-Saharan Africa (SSA). Approximately 1.5 million people died of AIDS-related illnesses in 2013. Kenya is ranked fourth globally in HIV/AIDS burden. We start by describing the biological and socio-behavioral factors associated with HIV infection among adults aged 15-49 years in Kenya. The main studies included in this thesis, based on rigorous scientific design and conducted in Kenya, provide strong evidence that EMR-based CDSS can improve adherence to HIV/AIDS treatment guidelines in resource-limited countries in SSA, and hence quality of care. We show that EMRs and CDSS can significantly improve timely initiation of life-saving antiretroviral therapy and early detection and action on treatment failure among HIV patients. We also describe the process of standardizing the recording of AIDS-Defining Illnesses (ADIs) and derivation of a reference set for ADIs based on an international terminology system (SNOMED CT). The reference set was implemented as an interface terminology of an EMR at a busy teaching and referral hospital in western Kenya.

Overall, the thesis provides compelling evidence that EMR-based CDSS improve quality of HIV care in resource-limited settings.
Electronic Medical Records and Clinical Decision Support Systems in HIV Care in Resource-Limited Settings

Tom Onyango Oluoch
Electronic Medical Records and Clinical Decision Support Systems in HIV Care in Resource-Limited Settings

ACADEMISCH PROEFSCHRIFT
ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. D.C. van den Boom
ten overstaan van een door het College voor Promoties ingestelde commissie, in het openbaar te verdedigen in de Agnietenkapel
op dinsdag, 12 mei 2015 te 12:00 uur

door

Tom Onyango Oluoch
geboren te Kisumu, Kenya
Promotiecommissie

Promotor: Prof. dr. A. Abu-Hanna Universiteit van Amsterdam

Copromotores: Dr. N.F. de Keizer Universiteit van Amsterdam
Dr. ir. R. Cornet Universiteit van Amsterdam

Overige leden: Prof. dr. M.W.M. Jaspers Universiteit van Amsterdam
Prof. dr. J. van der Lei Erasmus Universiteit Rotterdam
Prof. dr. T.F. Rinke de Wit Universiteit van Amsterdam
Prof. dr. A.M. Dondorp University of Oxford
Prof. dr. ir. A. Hasman Universiteit van Amsterdam

Faculteit der Geneeskunde
Table of Contents

Chapter 1. General Introduction 9

Chapter 2. Correlates of HIV infection among sexually active adults in Kenya: A national population-based survey 17

Chapter 3. Better adherence to pre-Antiretroviral Therapy guideline after implementing an Electronic Medical Record system in Rural Kenyan HIV clinics: A multi-center pre-post study 37

Chapter 4. Electronic Medical Record systems are associated with appropriate placement of HIV patients on ART in rural health facilities in Kenya: A retrospective pre-post study 51

Chapter 5. The effect of electronic medical record-based clinical decision support on HIV care in resource-constrained settings: A systematic review 67

Chapter 6. Effect of a clinical decision support system (CDSS) on early action on immunological treatment failure among HIV patients in resource-constrained settings: A cluster randomized controlled trial in Kenya 87
Chapter 7. A structured approach to recording AIDS-defining illnesses in Kenya: A SNOMED CT based solution

Chapter 8. General Discussion

Summary

Samenvatting

An overview of the literature consulted

Dankwoord

Curriculum Vitae