Supporting Better Health in Kenya through Improved Health Workforce Regulation: Kenya Health Regulatory Human Resource Information System (rHRIS)

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Kenya Health Workforce Project

• The Kenya Health Workforce Project began with pilot funding from CDC’s office of Global Health. CDC/PEPFAR began funding in 2006. Project began a new grant cycle in 2012-2017.

• Implemented by Emory University in collaboration with Ministries of Health, professional councils and boards in Kenya.

• Major goal is to establish electronic health workforce information systems that provide accurate and real-time data for policy, health program planning, and management of Kenya’s human resources for health (HRH).

• Kenya is serving as a model in East Central and Southern Africa (ECSA) region for best practices on improvement of HR planning & management to meet the Sustainable Development Goals (SDGs).

• Enhanced South to South collaboration by providing technical assistance to the Health Professionals Council of Zambia and General Nursing Council of Zambia; In partnership with Emory University Project Zambia.
• Kenya healthcare workforce’s supply and demand data existed in paper forms that were difficult to retrieve and use for HR management.

• Regulatory Boards were unable to produce reliable national workforce data in an efficient manner.

• MOH lacked accurate data on the number of professional health workers by age, position, cadre/ qualification, region, rate of attrition etc.

• Kenyan training institutions lacked data on national training & deployment needs with regards to the health professionals they were training.
Situational Analysis
Project Objectives

- Establish electronic health workforce information systems that can provide accurate data for national policy and planning for HRH.
- Increase the capacity of the Kenyan leaders in data driven decision making for HRH management, research, and policy development.
- Provide a system to track training for health professionals to meet deployment needs for quality service delivery.
- Utilize data for program planning especially the roll out of HIV prevention, care and treatment programs.
- Strengthen health professionals regulatory boards/councils for efficient service delivery to clients and public.
rHRIS Overview

- Regulatory Human Resource Information System (rHRIS):
  - A suite of open-source web based tools for the health professional regulatory bodies in Kenya that are customer focused, collaborative, and based on identified business processes.
  - Developed in PHP and running on a MySQL platform.
  - User interface (UI) developed using HTML 5 and JQUERY UI objects.
  - Reports and data export done using excel and PDF tools.
  - Has built-in APIs to connect to custom and third party communication platforms for bulk SMS and emails.
rHRIS Core Functionalities

- Tracks student training.
- Student Internship management.
- Professionals registration examination management.
- Professionals registration.
- Professionals licensure.
- Continuous professional development management and tracking.
- Private practice management.
- Tracks professionals out-migration.
- Professionals specialty skills management.
- Professionals upgrade - in service training.
- Health training institutions and facilities management.
- Inspections and accreditation.
- HRH reporting.
- Health professional online services.
rHRIS Innovative Functionalities

• Bulk Short Messaging Services (SMS) notification.
• Email notification.
• Mobile money integration for mobile payment.
• SMS short code facility verification.
• Quick Response (QR) code certificate authentication.
• Integration with other existing systems.
  • Master Facility List.
  • Continuous Professional Development (CPD) systems e.g. iCPD
  • HRIS systems e.g. iHRIS
  • Financial systems
rHRIS Architecture

**Board/Council**
- Manage applications
- Receives notifications
- Prints reports & statements
- Interacts with gateway

**Departments**

**Website**

**Users**
- Interact with Boards e.g. send applications
- Make payments
- Receives notifications
- Downloads e.g. interim license

**Gateway**
- Receives money on behalf of boards
- Holds money in a virtual account
- Generates statements

**Bank**
- Receives transferred money
- Normal routine applies

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[Emory Healthcare Logos]
rHRIS Security Features

• Use of a combination of personal unique identifiers.
• Unique username and strong password enforcement.
• User roles authentication.
• Audit trail.
• User sessions management.
• Data Encryption.
Development Path for rHRIS

1. Stakeholder engagement
2. Assess users’ business functions and info needs
3. Software development
4. User training on system usage
5. Data entry, cleaning, QA and management plan
6. Data sets and reports programming
7. Assessing readiness for agency ownership
8. Agency system maintenance and management

CAPACITY BUILDING
Use of HRIS Information
HRIS Data Dissemination

- Regulatory boards and councils
  - Standard reports, dashboards, adhoc reports
- Ministry of Health
  - Standard reports
- Public & Clients
  - Website - Online registers
- National, regional & international levels
  - Formal reports
  - Conferences presentations
    - EAC regulatory bodies conference, ECSA ministers conference, ECSA DJCC in Arusha, WHO Global forum (Brazil 2013), ECSACON, National HRH ICC
  - 8 Publications
- Stakeholders e.g. partners, private sector, faith based, training institutions, health facilities
- Researchers
## Ratio of health professionals to population in Kenya; 2015

<table>
<thead>
<tr>
<th>Cadre</th>
<th>Annual Training Output</th>
<th>Total # registered</th>
<th>Total # Retained</th>
<th>Ratio per 10,000 pop</th>
<th>Density 1:n pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Officers</td>
<td>611</td>
<td>9,499</td>
<td>5,660</td>
<td>1.5</td>
<td>1: 6,822</td>
</tr>
<tr>
<td>Dentists</td>
<td>52</td>
<td>1,067</td>
<td>603</td>
<td>0.2</td>
<td>1: 64,030</td>
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<tr>
<td>Pharmacists</td>
<td>330</td>
<td>2,420</td>
<td>1,616</td>
<td>0.4</td>
<td>1: 58,060</td>
</tr>
<tr>
<td>Pharm Technologists</td>
<td>994</td>
<td>7,132</td>
<td>4,671</td>
<td>1.3</td>
<td>1: 9,762</td>
</tr>
<tr>
<td>Clinical Officers</td>
<td>1,642</td>
<td>15,347</td>
<td>10,562</td>
<td>2.7</td>
<td>1: 3,711</td>
</tr>
<tr>
<td>Lab Technologists</td>
<td>1,236</td>
<td>6,626</td>
<td>5,203</td>
<td>1.3</td>
<td>1: 7,421</td>
</tr>
<tr>
<td>Lab Technicians</td>
<td>326</td>
<td>4,445</td>
<td>3,213</td>
<td>0.8</td>
<td>1: 12,013</td>
</tr>
<tr>
<td>Nurses and Midwives</td>
<td>6,326</td>
<td>63,113</td>
<td>31,896</td>
<td>8.3</td>
<td>1: 1,210</td>
</tr>
<tr>
<td><strong>Total (All cadres retained)</strong></td>
<td></td>
<td>61,757</td>
<td>16</td>
<td></td>
<td>625</td>
</tr>
<tr>
<td><strong>Total Active Doctors, Clinical Officers, Nurses/Midwives</strong></td>
<td></td>
<td>48,118</td>
<td>12.5</td>
<td></td>
<td>802</td>
</tr>
</tbody>
</table>

© Recommended WHO ratio 25
Specialized Skills capacity to meet emerging disease burden

Main areas of specialization (MDs); N=2,090

<table>
<thead>
<tr>
<th>Specialized Areas</th>
<th>No. of Specialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetrics &amp; Gynaecology</td>
<td>387</td>
</tr>
<tr>
<td>General Surgery</td>
<td>338</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>296</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>295</td>
</tr>
<tr>
<td>Anaesthesia</td>
<td>139</td>
</tr>
<tr>
<td>Radiology</td>
<td>123</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>99</td>
</tr>
<tr>
<td>Orthopaedics/Trauma...</td>
<td>82</td>
</tr>
<tr>
<td>Pathology</td>
<td>78</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>71</td>
</tr>
<tr>
<td>Otorhinolaryngology (ENT)</td>
<td>69</td>
</tr>
<tr>
<td>Public Health</td>
<td>43</td>
</tr>
<tr>
<td>Dermatology</td>
<td>24</td>
</tr>
<tr>
<td>Family medicine</td>
<td>17</td>
</tr>
<tr>
<td>Oncology/Radiotherapy</td>
<td>9</td>
</tr>
<tr>
<td>Neurology</td>
<td>6</td>
</tr>
<tr>
<td>Neurology/Neurosurgery</td>
<td>4</td>
</tr>
<tr>
<td>Radiology</td>
<td>3</td>
</tr>
<tr>
<td>Plastic Surgery</td>
<td>2</td>
</tr>
<tr>
<td>Occupational Medicine</td>
<td>1</td>
</tr>
<tr>
<td>Diabetology</td>
<td>1</td>
</tr>
<tr>
<td>Nephrology</td>
<td>1</td>
</tr>
<tr>
<td>Palliative Medicine</td>
<td>1</td>
</tr>
</tbody>
</table>

Specialized areas for Clinical Officers (N=734)

<table>
<thead>
<tr>
<th>Specialized Areas</th>
<th>No. of Specialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAESTHESIA</td>
<td>186</td>
</tr>
<tr>
<td>ENT</td>
<td>92</td>
</tr>
<tr>
<td>EPIDEMIOLOGY</td>
<td>9</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>2</td>
</tr>
<tr>
<td>LUNG &amp; SKIN DISEASES</td>
<td>5</td>
</tr>
<tr>
<td>MEDICAL EDUCATION</td>
<td>47</td>
</tr>
<tr>
<td>OPHTHALMOLOGY</td>
<td>40</td>
</tr>
<tr>
<td>OPHTHALMOLOGY &amp; CATARACT SURGERY</td>
<td>45</td>
</tr>
<tr>
<td>PAEDIATRICS</td>
<td>203</td>
</tr>
<tr>
<td>REPRODUCTIVE HEALTH</td>
<td></td>
</tr>
<tr>
<td>DERMATOLOGY &amp; VENEROLOGY</td>
<td></td>
</tr>
<tr>
<td>DERMATOLOGY</td>
<td></td>
</tr>
<tr>
<td>VENEROLOGY</td>
<td></td>
</tr>
</tbody>
</table>
Sustainability & Maintenance

- Performed gap analysis to identify priority areas for improvement.
- Developed sustainability and maintenance plan to prepare the agencies for transition.
- Mentorship for new agencies.
- Capacity building.
  - Data for decision making.
  - Data management.
  - IT & Server Management.
  - Software maintenance – programming.
- Established Joint Technical Advisory Committee & Joint Regulatory Collaborative to share synergies.
  - Shared cloud-host cost.

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Challenges

- Inadequate capacity of regulatory bodies managers in data use
- Inadequate capacity in data management and system maintenance
- Lack of ICT officers in some regulatory bodies to maintain & sustain the state-of-the-art IT infrastructure and database systems
- Inadequate capacity to support infrastructure and internet costs in the decentralization of regulatory functions
- Lack of ownership and buy-in by some agencies
- High turnover in critical leadership positions e.g. CEO and chair of boards
- Inadequate funds to cater for new demands on dissemination of various documents for each board/council
- Corporate governance issues impacting negatively on project implementation
Lessons Learned

• Important to align and streamline boards/councils organization structure and functions from the onset.
• Capacity building at all levels of system development is essential for system maintenance and sustainability.
• Establishing a collaboration e.g. JRC leads to improved commitment to ownership of the rHRIS and reduction of implementation cost.
• Involvement of the MOH from the onset ensures alignment of the initiative to government policy and enhances buy-in.
• Having a collaboration of development partners e.g. Joint Partners Initiative (JPI) leads to better cooperation and harmonization to avoid overlaps.
• Involvement of regulatory agencies to participate in regional best practices fora has encouraged data use at both national and regional levels.
• Important to develop a detailed plan for transitioning from project to agency ownership and management, adequately fund implementation plan, and evaluate progress.
Future Focus

- Interoperability.
  - a shared information platform for all boards and councils for integration and interoperability.
- Joint online portals and services.
  - Data and reports warehouse for public, MOH and practitioners.
- Adopting cutting edge ICT innovations.
  - Short code USSD SMS functionality for verification of valid and bona fide practitioners and health institutions.
  - Barcoding and smart card functionality on retention cards for added security.
Impact of rHRIS to Kenya Health Regulatory Authorities
rHRIS System Impact

• System has improved efficiency on regulatory functions through
  • strengthening regulatory functions in area of inspection, preliminary investigations and case settlement, training and practice.
  • enhancing revenue collection through improved compliance.
  • reducing processing time (3 months to instant for licenses).
  • moving towards paperless future is now a reality.
  • Increasing compliance on registration and license renewal based on CPD points.
rHRIS System Impact

- Online services and enhanced communication
  - Accessibility to regulatory services has been improved. Practitioners can now access services from wherever they are.

- Agency websites have also been revamped to include downloadable forms and online registers for practitioners and the public to utilize

- Use of an online services portal is further enhancing compliance by improving accessibility to professionals and providing for online transactions.

- Use of mobile & online payments enhanced accountability by facilitating transparency in revenue collection.
rHRIS System Impact

• Decentralization & Influence on policy
  • Informed decentralization process to county levels

• Through the use of training data informed scale up strategies of health workforce e.g. introduction of new training programs

• Enabled production of the National Nursing Report on Nursing Status in Kenya and currently a joint National Report
Security & Compliance

- System enforced checks has enhanced the detection of fraudulent applications during recruitment of health professionals through online registers.

- Tracking registration enables regulatory bodies to identify non-registered practitioners and health institutions for follow-up.

- Has enhanced compliance with the e-GOVT policy through development of IT, data protection/security policies and cloud hosting.
rHRIS System Impact

• Business Process Analysis assisted in:
  • Streamlining of processes and functions,
    • Student indexing, internship tracking and accreditation, registration, retention/renewal, preliminary investigation & CPD
  • identified need for additional secretariat staff and realignment of processes.
  • Strategic planning i.e. develop strategic plans and ISO certifications.

• Has led to improved ICT Infrastructure for the agencies:
  • desktops, battery packs, laptops, internet, official mail setup.
rHRIS System Impact

• Resulted in inter-agency collaboration and enhanced synergy through:
  • Joint Regulatory Collaborative – for sharing best practices, mentorship, solving regulatory challenges and data sharing
  • Joint Technical Advisory Collaborative (JTAC) – who develop innovative initiative to be implemented in the rHRIS and ensure implementation of JRC directives at their respective agencies
  • Data Clerks - who have greatly assisted in legacy data cleaning and data migration leading to improved data quality management
rHRIS System Impact

• HRH Reports:
  • up to date and current reports for Board, MOH and research, improved decision making.
  • Data shared include - training capacity, active practitioner registers, licensed health institutions registers, preliminary investigations case summaries.

• Dissemination fora:
  • EAC regulatory bodies conference, ECSA ministers conference, ECSA DJCC in Arusha, WHO Global forum (Brazil 2013), ECSACON (Nairobi 2016), AMCOA (Malawi 2016) & IAMRA (Melbourne 2016).
Thank You
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