WASH in HCF
Global Learning Event
Kathmandu, Nepal
28-30 March 2017

Scaling up an Evidence-Based Package for Water, Sanitation and Hygiene (WASH) in Zambia to Mitigate healthcare-associated infections (HAI)

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MoH ZAMBIA – with UNICEF support
Scope of work

Context and background
Zambia=Lower Middle Income Country, in Southern Africa
Population = 15.5mio (2015); 17.4 people/km²
Annual growth rate=2.8%

Key indicators:
• Maternal Mortality Ratio = 398 /100,000 live
• <5yrs Mortality Rate = 75 / 1,000 live births
• Top ten causes for <5yrs mortality/morbidity incl. Diarrhea & Respiratory infections
• >90% of infrastr. for water supply, for sanitation and 97% of HC waste disposal need REPAIR or REPLACEMENT (1)

Zambia has 1,690 public HCF: approx. 80% health posts/rural health centres
198 urban health centers
78 hospitals
Scope of work: Aims and objectives

Provide WASH-IPC (Infection Prevention Control) package

1. To 55HCF in Copperbelt / Lusaka Provinces 11 Districts
   between 2015-2018
   EU funded with UNICEF support

2. Plan to scale up to all 1,620HCF using same WASH-IPC package
   expected from 2018 on…
   Government funded
   European Investment Bank loan under negotiation [project document developed]; other donors to be defined
THEORY OF CHANGE – BASIS OF THE INTERVENTION

**Interventions**

- WASH-IPC package implementation
  - SOP, training, CPU, Chlorine dosers, water supply, sanitation

**Outputs**

- Chlorine produced on-site
- Surfaces routinely cleaned and disinfected
- Clean water is available
- Handwashing facilities & adequate handwashing practice

**Outcomes**

- Reduced water-based risk of contamination
- Reduced risks of contamination from "hand-touch sites"

**Impact**

- Increased quality and safety of maternal, neonatal and child health in Zambia
- Reduced maternal & neonatal morbidity and mortality
**APPROACH: PROCESS of implementation**

**Phase 1:** defining & validation IPC-WASH package
- Pilot
- Coupled to research
  - 1 yr

**Phase 2:** Scale up to 55
1. Training, SOP
2. Assessment
3. Equipment & supplies
4. Works
  - 1 yr

**Phase 2:** Scale up to 55
- Support phase (monitoring & Operation & mainten.)
  - 1 yr

**Learning & documentation**
- Preparation & further NATIONAL scale up

**FUNDING:** EU
- Government of Zambia (50% EIB loan), other donors TBD

**IMPLEMENTING PARTNERS**
**Phase 1:**
- Local research NGO with UNICEF support;
- Government steering

**Phase 2**
- Implementation led by MoH with UNICEF support
- Strong private sector involvement

**By MoH with TA (to be defined)**
APPROACH: Phase 1 = DEFINING THE IPC-WASH PACKAGE

Phase 1: Pilot in 4 Health Facilities (9 months) in Lusaka & Ndola

Ethical approval for research
FEB 2015

IPC WASH assessm. + Baseline

Package impl. (Training, SOP, works, equipment & supplies)

Monitoring including tools

End line

Validation & WASH package by MoH
NOV 2015

USEFUL FOR:

(i) Evidence-based development of WASH-IPC in Health package
(ii) Advocacy for implementation and further scale up

Zambia IPC Guidelines
Policy Standards
TWG

Updated IPC/WASH in HCF Package

Internat. and 3rd country WASH in Health guidelines

Pilot findings / Research

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<table>
<thead>
<tr>
<th>BARRIERS TO DISEASE TRANSMISSION</th>
<th>INTERVENTIONS (Soft+Hard)</th>
<th>Infection Prevention EFFECTIVENESS</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disinfection &amp; cleaning</td>
<td>Liquid chlorine production units + training</td>
<td>++ + + + +</td>
<td>+</td>
</tr>
<tr>
<td>Safe drinking Water</td>
<td>Water supply, Storage, Treatment (chlorine dosing)</td>
<td>+ + +</td>
<td>+ + +</td>
</tr>
<tr>
<td>Hand washing</td>
<td>Supply hand washing stations and sanitizers, practice</td>
<td>+ + + + +</td>
<td>+</td>
</tr>
<tr>
<td>Sanitation - toilets</td>
<td>Build / rehabilitate toilets, maintenance</td>
<td>+ + + +</td>
<td>+ +</td>
</tr>
<tr>
<td>Sanitation medical wastes</td>
<td>Equipment for solid waste collection, storage and disposal (pits, incinerators)</td>
<td>+ +</td>
<td>+ + + +</td>
</tr>
<tr>
<td>Standard Operating Procedures</td>
<td>IPC committee; develop simple standards + capacity building</td>
<td>+ + + + +</td>
<td>+</td>
</tr>
</tbody>
</table>

**Notes:**
- **Infection Prevention EFFECTIVENESS** ratings: + + + + + (most effective), + + + (moderately effective), + (less effective).
- **COST** ratings: + (low cost), ++ (medium cost), +++ (high cost).
Outcomes: Phase 1 pilot – water quality

Water Quality Results - % of Samples per site at baseline and after intervention in WHO categories

<table>
<thead>
<tr>
<th></th>
<th>HCF 1 - before</th>
<th>HCF 2 - before</th>
<th>HCF 3 - before</th>
<th>HCF 4 - before</th>
<th>HCF 1 - after</th>
<th>HCF 2 - after</th>
<th>HCF 3 - after</th>
<th>HCF 4 - after</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>&lt;1 Coliforms/100mL</td>
<td>100%</td>
<td>90%</td>
<td>80%</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>Low Risk</td>
<td>1-10 Coliforms/100mL</td>
<td>10%</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>Risky</td>
<td>11-100 Coliforms/100mL</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>High Risk</td>
<td>&gt;100 Coliforms/100mL</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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BEFORE pilot

• Sampled water points in 4 pilot HCF;
• All 4 HCF with borehole + water utility water;
• Leakages found 4 HCF – repaired to extent possible

Learning:

- **RESIDUAL CHLORINE REQUIRED = most feasible 100% safe solution**
- **through ON-SITE CHLORINATION: using Chlorine dosing pumps**

AFTER Chlorination/flushing
Outcomes: Phase 1 pilot findings – Hygiene status

Hygiene Status: proportion of key surfaces-hand touch sites that "passed" [<5cfu/cm2]

**Baseline Findings for 4 indicator bact.**
(Staphylococcus, Acinetobacter, Klebsiella, Pseudomonas)

>50% of samples showed drug resistance to 10 commonly used antibiotics

**Total Aerobic Colony Count (ACC)**
- 2.5 to 5 Colony forming Units (cfu)/cm² is classified as hygiene failure\(^1,2,3\)
- A pass is defined as having <2.5 cfu/cm²

Baseline Summary:

<table>
<thead>
<tr>
<th>Location</th>
<th>Baseline</th>
<th>Endline</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanyama</td>
<td>15.8</td>
<td>27.3</td>
<td>73%</td>
</tr>
<tr>
<td>Chipata</td>
<td>45.7</td>
<td>52.2</td>
<td>14%</td>
</tr>
<tr>
<td>Chipokota</td>
<td>26.3</td>
<td>60.7</td>
<td>131%</td>
</tr>
<tr>
<td>Chipuluksusu</td>
<td>21.7</td>
<td>55.5</td>
<td>156%</td>
</tr>
</tbody>
</table>

**Graphical Representation**

- Key surfaces-hand touch sites that passed [<5cfu/cm²]
- Comparison between Baseline and Endline
- Improvement from Baseline to Endline

**Legend**
- Key surfaces-hand touch sites that passed [<5cfu/cm²]
- Improvement from Baseline to Endline

**Note**
- Discussion on the significance of the findings
- Implications for public health and policy

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ZAMBIA
Outcomes: Pilot research on Hand Washing / handrub practice

• In same 4 HCF: observations
OUT of all 800 observed hand hygiene opportunities, ONLY 8 (1%) hand hygiene practiced!

• Reasons: focus group discussions+interviews
Lack of facilities, water, soap
Lack of motivation
Lack of monitoring
Outcomes: Policy/standards

- **National Infection Prevention Control Guidelines** reviewed beginning 2017; dissemination pending
  
  now include WASH-IPC package [WASH-IPC standards, SOPs, training curriculum]

- **National O&M framework** under development
  
  – Certification of equipment operators
  
  – Clear accountability definition (Central-Prov-Distr-HCF)
  
  – Operation-maintenance-servicing rules defined
  
  – Reporting/logging protocols defined
Outcomes: Monitoring

• **Key WASH-IPC indicators** inclusion in HMIS;
  
  *SELECTION OF INDICATORS also related to top 10 causes <5yrs mortality/morbidity* [Diarrhea & Respiratory infections]

Monthly reporting:

  - water availability + quality
  - hand hygiene (facilities with water/cleaning agent)
  - cleaning/decontamination of surfaces
  - solid/medical waste management

6-monthly reporting:

  - O&M & functionality of equipment (indicators/protocols still under development); nb of IPC meetings
Outcomes: Capacity strengthening

WASH-IPC – software & practices

- Training (ToT) of pool of 24 national/provincial trainers WASH-IPC; 5 Training Videos
- Training of District Environmental Health Technologists (EHT) in charge of monitoring/supervision in 11 districts
- IPC committees constituted in 55 HCF – daily monitoring – and HCF staff training: > 50% of staff trained (still ongoing), ground & medical staff

WASH equipment – operation, maintenance & servicing

- Training of Medical Equipment Officers – Nat/Prov/District for O&M + supervision of Chlor Prod Units & Dosing Pumps, Incinerators
- Training of EHT, in-charge and operators in each HCF

In 55 HCF: 1 yr package implementation & training + 1 yr support/TA

Private sector capacity building – namely CPU supplier received training from Antenna (now supplier is developing LOW COST CHLORINE production plant using same Antenna Chlorine Production Units)
SCALING UP: SERVICE DELIVERY MODEL SUPPORT AT ALL LEVELS

Central level at MoH + UNICEF: coordination role, facilitating the implementation of package, policy & guidelines

Central

2 full time WASH Supervisors

Lusaka Province [PMO/CEHO]

Copperbelt Province [PMO/CEHO]

Provincial Medical Office/CEHO supported by 4 Full time Provincial WASH Supervisors

Two dedicated fulltime staff from each Province will coordinate and monitor WASH package implementation both financially and programmatically [organization of training, quality assurance, day to day mentoring and capacity building]

Provinces

Districts

District Medical Office/EHO provide IPC WASH supervision

Pool of 22 IPC trainers/coaches
From District/province level; trained as IPC and Handwashing coaches to implement training + certification at HF level and provide mentoring and support to HF staff

HCF

52 HEALTH FACILITIES

IPC committee / EHT: responsible for implementation of WASH guidelines / SOPs at HCF level by staff
LESSONS LEARNED & TAKE-AWAYS to ADDRESS MAIN CHALLENGES

Evidence based implementation – through PILOT+Research

IS IMPORTANT in order to

- **Convince stakeholders** at all levels: HCF, District, Provincial, Nat
  
  *If people believe in package = much easier*

- Advocacy for additional FUNDS/partners (example EIB)

- Develop standardised package – national WASH-IPC standards, guidelines, SOPS et

Institutional strengthening

- Align implementation with **MoH structure**

- Minimum standards in **National Infection Prevention guidelines**

- Create Pool of National trainers [ToT] (soft+hardware)
LESSONS LEARNED

Monitoring and Supervision
- Feed into HMIS (use existing structure)
- -> LINK WITH top 10 causes of mortality / morbidity

Equipment management
- Focus on maintenance and servicing
- Operator certification: only trained operators can operate equipment
- Allocate budget for supplies: fuel, electricity, salt…

Quarterly joint meetings – for exchange and learning
- To ensure harmonized approach through Districts/Provinces and HCF
Next steps & Recommendations

- Inclusion of WASH-IPC in Nat/Province/District plans
- Include IPC in training curriculum of Environmental Health Technologists (EHT)

National scale-up
- MoH
- Strengthen advocacy for leveraging additional funds (UNICEF support)

Additional research
- Impact of WASH-IPC on larger scale
- On sustainable operation and maintenance of WASH equipment – WITH ANTENNA for Chlorine Prod Units
- On cost effective hand hygiene surveillance using ATP – call for funding!
References / contact

- Dr Leah Namonje – District Health Director Chilanga, Zambia
  drnamonjel@yahoo.com

- Lavuun Verstraete – UNICEF WASH Zambia
  lverstraete@unicef.org

https://www.youtube.com/playlist?list=PLuXPKka9vOckGm4Rsnr5iWqpkvV1awfy&feature=em-share_playlist_user