The Cold Chain Information System (CCIS) model in Laos

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**Background:** how CCIS was born in Lao PDR

- **Temperature monitoring:** Unreliable, poor scoring in EVM assessments
  - **30 DTR** were provided as solution by WHO and UNICEF
- **No cold chain inventory:** Repairs delayed; Parts not available;
- **Stock balance** of health centers/district not known at one level up of supply chain
- **Multi tasking health workers:** Too many forms to fill; too many roles to play

CCIS was designed as cross cutting solution. Piloted at 20 sites and expanded to all provinces; parallel system/software design

CCIS understood as contributing to Health System Strengthening
CCIS: Cold Chain Information System

CCIS DATA FLOWS

- **Monthly coded SMS reports:**
  - Fridge Status
  - Stock Data
- **Emergency SMS reports:**
  - Fridge Failures
  - Stock outs
  - FT Low Battery

- **Monthly Notices:**
  - District summary SMS
  - Provincial summary PDF via email
  - National summary PDF via email

- **Dashboard interactions:**
  - Custom dashboards
  - Data management and updates

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**HW**

- Monthly report SMS/Emergency Action SMS
- Acknowledgement/Affirmation/Work Order Notice

**CCIS**

- Dashboard Analysis/Data Management
- Email/SMS

**dhis2**

- Restock/Replace Fridge/Repair Fridge/Replace FT

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**MPSC**

**National**

**Province**

**District**
Health System Strengthening, eHealth and DHIS2 with CCIS

Better health outcomes

More equitable coverage and quality of services

Stronger Health System

Harmonized strategies

Improved child health

Improved delivery of services (EPI, Nutrition, WASH)

Improved data availability and quality

Improved managerial capacity to act on data

Development of an E-Health strategy

Adoption of good managerial practices at provincial level

DHIS2

CCIS

Birth registration records

DHIS2 at provincial level

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MPSC
National
Province
District

Monthly report SMS/Data Management
Acknowledgement/Approval/Work Order Notice
Restock/Replace Fridge/Repair Fridge/Replace FT

Email/SMS
Dashboard Analysis
Linkages with EVM IP

• Establishing cold chain inventories: vaccine storage capacities; Information on PQS compliance
• Evidence based temperature monitoring: records of alarms maintained and linked to refrigerators as reference
• Stock levels maintained: prevention of stock outs
• Timely repairs of refrigerators
Cold Chain Information System in Laos (CCIS), a 3-steps system

1. Systematic use of 30DTR
2. SMS communication
3. Dashboard and data visualization/Cloud-based platform

The Laos Model: 30DTR + SMS + System
Systematic use of 30DTR

- Health workers trained to interpret 30 DTR and correctly fill in the temperature chart
- Health workers trained in corrective actions at the health facility in case of alarms
- Supportive supervision including 30 DTR review
- Clear escalation procedure (through SMS)

The Laos Model: 30DTR + SMS + System
SMS communication (data input to system by health workers)

Limited communication burden on health workers
Focus on few indicators

1 monthly SMS, indicating in machine-readable-code:
- Number of alarms
- Stock levels

Low cost and simple

The Laos Model: 30DTR + SMS + System
SMS communication (information for user and decision makers)

• System generated acknowledgement of data received
• Automatic sharing of alarms with technicians at province level
• Automatic update of database, functionality of refrigerators
• Automatic sharing of stock balances and remaining stock requirements with one level up of supply chain
Dashboard and data visualization/Cloud-based platform

System to be linked to the DHIS2 CC module

The Laos Model: 30DTR + SMS + System
Facts from pilot data

Reporting of alarms using SMS: downward trend of alarms

- Most heat alarms were due to prolong power failure or refrigerator under preventive maintenance
- Persistent reporting of freeze alarm
- Supervisors alerted to do shake test
- 100% compliance of sites sending SMS

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<tr>
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<td>Completeness %</td>
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<td>84.15%</td>
<td>100%</td>
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The Laos Model: 30DTR + SMS + System
Main Challenges

- Training of health workers (one to one)
- Development of training material (using ICT)
- Language issues
- Systems compatibility/Integration with DHIS2

Currently customization of the SMS-based system into DHIS2 is proving challenging

Suggestion: advocate with DHIS2 for them to create more open protocols and work on customization and fill the gap.

The Laos Model: 30DTR + SMS + System
Lessons learnt

• 30 DTR a total success
• Piloting in small scale very useful in learning challenges and gives time to prepare for nation wide expansion
• Careful selection of technology: Not an easy option especially when we do not want to create software parallel reporting stream
Objective:
An affordable and reliable Cold Chain System and no child missed out

Thank you

The Laos Model: 30DTR + SMS + System