

## Patrick Lydon (WHO)



# Session Outline

Challenges Identified	Solution Space	Awareness Raising	Strategies
Challenges continued - Deeper dive into the data from the EVMs	Presentation on innovative technology and system solutions to address the challenges	IPAC “Call-to-Action” to raise awareness on challenges and solutions and calling for countries and partners to act	Presentation of the broad orientations of the GAVI Strategy, and the role of the WHO-UNICEF Hub
Paul Colrain (Consultant)	Patrick Lydon (WHO)	Chris Morgan (IPAC Chair)	Benjamin Schreiber (UNICEF)

# Key Innovative Solutions

## Beyond fixing the basics

### Based on existing knowledge base:

- Pilot-tested solutions in country
- Proven and documented approaches
- Peer-reviewed articles
- Key evidence briefs
- Prioritized solutions that :
  - ✓ Increase vaccine **availability**
  - ✓ Safeguard vaccine **potency**
  - ✓ Improve supply chain **efficiency**

### Developing a Vision for Immunization Supply Systems in 2020 Landscape analysis summaries

June 2011



OPTIMIZE

Immunization systems and technologies for tomorrow



EVIDENCE BRIEF  
SERIES

Direct-drive solar vaccine refrigerators—  
a new choice for vaccine storage

EVIDENCE BRIEF  
SERIES

Innovative passive cooling options  
for vaccines

EVIDENCE BRIEF  
SERIES

A case for better immunization  
information systems

EVIDENCE BRIEF  
SERIES

Green supply chains:  
a glimpse into the future?

EVIDENCE BRIEF  
SERIES

Integrating the supply chains of vaccines  
and other health commodities

EVIDENCE BRIEF  
SERIES

Outsourcing vaccine supply chain and  
logistics to the private sector



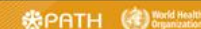
PROJECT OPTIMIZE

Achieving the Global Vision  
for Future Immunization  
Supply and Logistics  
Systems: Action Plans

September 2012

OPTIMIZE

Immunization systems and technologies for tomorrow



# 1. - Controlled Temperature Chain (CTC)

- Several vaccines are very **heat stable** but licensed for use in a 2-8° C cold chain
- **Men-A** vaccine was the first product to be relicensed for use in a CTC – up to 40°C for up to 4 days in campaign setting
- Opens to door for other vaccines to be used in a CTC: Hep-B, YF, Cholera and HPV

## Benefits

- Vaccine availability – *coverage no longer bound by the reach of the cold chain*
- Vaccine potency loss – *freeze damage mitigated at the last-mile*
- Supply chain efficiency – *significant reduction in staff time and costs for logistics*



*First person ever vaccinated with MenAfriVac in a CTC (Mikael, age 11 in Banikoara, Benin)*



*Vaccines stored and transported in a carrier without ice-packs*



## 2. – Solar and Passive Cold Chain Technologies

- Important technological breakthrough in cold chain equipment has occurred
- Solar battery-free cold chain equipment now on the market and available from the WHO PQS list
- Long lasting passive cooling containers for health centers exist

### Benefits

- Vaccine availability – *reach of the cold chain is significantly extended at the last mile*
- Vaccine potency loss– *energy reliability of these technologies is higher (better protecting vaccines)*
- Supply chain efficiency – *higher investment costs offset by lower operational expenditures*



*New solar refrigerators no longer need to store energy in a battery but in an ice-bank*



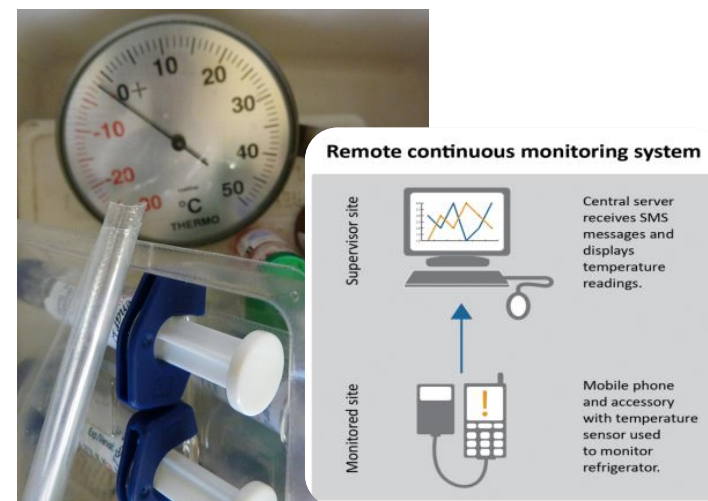
*Innovative passive containers can keep vaccine cold for 30 – 60 days with ice*

### 3. – New Temperature Monitoring Technologies

- Continuous temperature monitoring can help improve vaccine handling quality, detect malfunctioning equipment, and mitigate damaging temperature fluctuations
- Phase change material (PCM) technologies exist that maintain temperature during transport without freezing vaccines

#### Benefits

- Vaccine availability – *No specific impact*
- ◐ Vaccine potency loss– *mitigate risks of undetected temperature damage to vaccines*
- ◐ Supply chain efficiency –*improved equipment management and reducing close vial wastage*



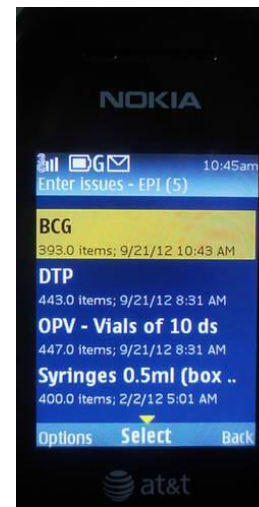
*Most countries still use dial thermometers and countless freeze incidents go un-noticed*



*Continuous temperature monitoring devices and PCM packs exist but not widely used*

## 4. – Mobile Technologies for Data

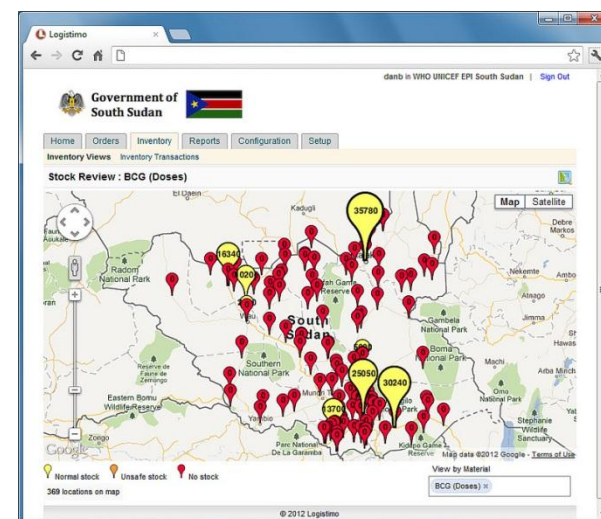
- Widespread mobile technologies allow the establishment of networked systems for ordering vaccines, managing stocks and equipment, monitor consumption and vaccine utilization
- New approaches and technologies can provide immunization managers with the data they need at the time they need it



*Vaccines can be ordered by phone and stocks can be tracked in real-time*

### Benefits

- Vaccine availability – *improved with real-time information on stock flows in the system*
- Vaccine potency loss– *More rational buffer stock management leading to reduced risk of expiry*
- Supply chain efficiency – *increased by improving the accuracy of forecasts based on consumption*



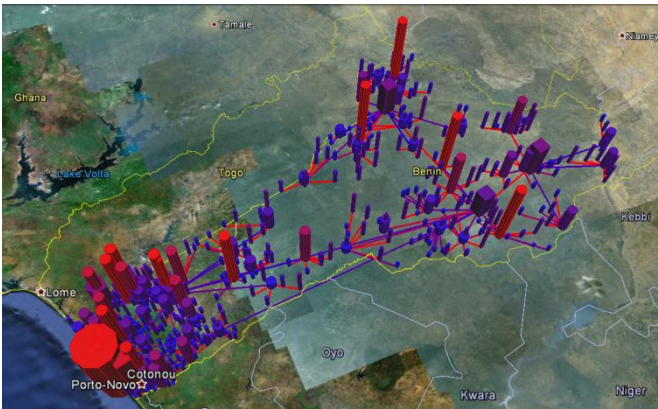
*Telemetry allow for rapid data analysis for quicker response to operational challenges*

# 5. - System Design and Optimization

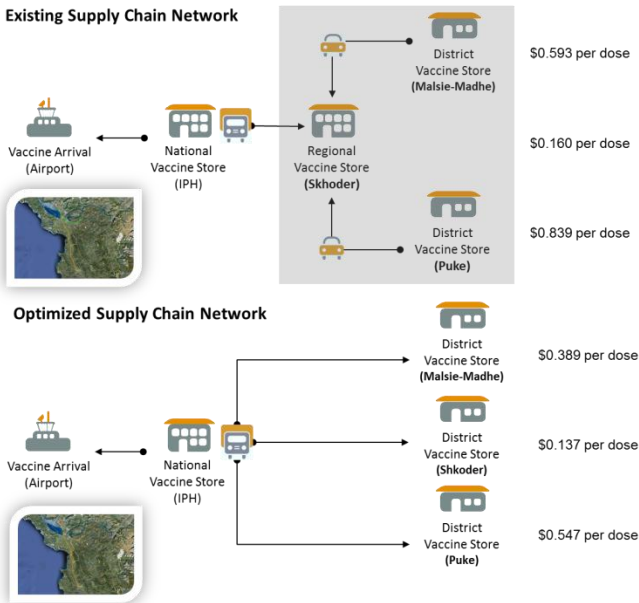
- Re-designing supply chain networks have the potential to speed up delivery time, reduce stock-outs, and reduce costs
- Several supply chain optimization models have been successfully demonstrated in countries
  - Reducing the number of intermediate storage levels with more direct distribution
  - Organized distribution loops according to efficient routes

## Benefits

- Vaccine availability –*improved by streamlining the supply chain network and reducing delivery time*
- Vaccine potency loss – *lowered reducing the number of handling touch-points in the system*
- Supply chain efficiency – *by reduced the cost to deliver a dose of vaccine*



Supply chain modelling and network optimization tools exist



Countries are exploring network redesign options



## 6. - Supply Chain Integration

- Integration shown to reduce redundancies, complexities and costs to the health system as compared to operating parallel supply chains
- Successful experiences of product integration documented
- Growing opportunities and trend towards supply chain integration with temp-sensitive products

### Benefits

- Vaccine availability – *unclear impact from supply chain integration*
- ◐ Vaccine potency loss – *reduced from multiple programmes focusing on cold chain strengthening*
- ◐ Supply chain efficiency – *increased economies of scale and efficient use of existing infrastructure*



*In some countries other products are already stored in the vaccine cold chain*



EVERY WOMAN  
EVERY CHILD



*UN Commission on Life Saving Commodities are wanting to have oxytocin in the cold chain*

## 7. - Supply Chain Outsourcing

- The private sector can complement governments' efforts in improving health logistics in specific aspects such as procurement, storage and in-country distribution
- Outsourcing supply chain function to the private sector can enhance operating performance and leverage managerial efficiencies while allowing governments to focus on core expertise

### Benefits

- Vaccine availability – *particularly if distribution is outsourced with clear service level agreement*
- Vaccine potency loss – *greater incentives to comply with vaccine management standards*
- Supply chain efficiency – *greater incentives for managerial efficiency and economies of scale*



*State of the art private sector vaccine storage facility*



*In-country distribution is a good candidate for outsourcing to the private sector*

# 8. - Professionalizing Immunization Logistics


- New models for professionalizing immunization supply chain managers exist and ready to implement
- Growing networks for health logistics professionals and increasing opportunities to build skills and competencies

## Benefits

- Vaccine availability – *skilled and dedicated health logisticians will ensure that vaccine needs are met*
- Vaccine potency loss – *skilled logisticians will implement vaccine handling best-practices*
- Supply chain efficiency – *a professionalised workforce will improve overall supply chain management*




Expanding networks on human resources for logistics



Home » Twenty-two students receive the first bachelor degree in health logistics in Francophone Africa

Twenty-two students receive the first bachelor degree in health logistics in Francophone Africa

09 February 2014



The first promotion of the bachelor degree in health logistics has officially come to an end. The graduation ceremony was held at the Regional Institute of Public Health (Institut Régional de Santé Publique, IRSP) in Ouidah, Benin in the presence of representatives of the University of Abomey-Calavi, other program partners including the Agence de Médecine Préventive (AMP) and GlaxoSmithKline (GSK), and the 24 participants from Benin, Burkina Faso, Burundi, Madagascar, Niger, the Democratic Republic of Congo, Niger, Chad, and Togo.

Following the defense of their internship reports from February 4 to 5, 2014, and the deliberation of the jury on February 6, 22 successful participants received their diploma. They are the first cohort of African supply chain managers to be trained as such in Francophone Africa.

New undergraduate program on vaccine logistics

# Examples of Impact - Specific Situations

## Solution

## Examples of Impact

1

- Implementing a CTC strategy for Men-A vaccine at the last mile during a campaign

50%

- Reduction in the cost of running a cold chain and logistics system (**Chad**)

2

- Replacing gas/petrol cold chain equipment with battery free solar refrigerators

55%

- Reduction in the annual cost of running the equipment (incl. amortization) (**Estimate**)

3

- Replacing dial thermometers with continuous temperature monitoring devices

34%

- Reduction in freeze alarms at health center level within 6 months (**pilot zones in Tunisia**)

4

- Strengthening performance and stock management with networked data systems

33%

- Increase in Pentavalent vaccinations per month (**pilot zones in Mozambique**)

5

- Task shifting to create a dedicated delivery and maintenance function at the last mile

60%

- Increase in cold chain equipment uptime (**pilot zones in Mozambique**)

6

- Supply chain network re-design for more direct distribution and optimized transport

60%

- Reduction in logistics cost per dose of vaccine delivered (**Kenya, Chad and Niger estimates**)

7

- Integrated transport of vaccines and other temperature sensitive products

32%

- Increase in time vaccines are kept at correct temperatures during transport (**Tunisia**)

8

- Outsourcing the vaccine distribution to a private sector logistics company (3PL)

100%

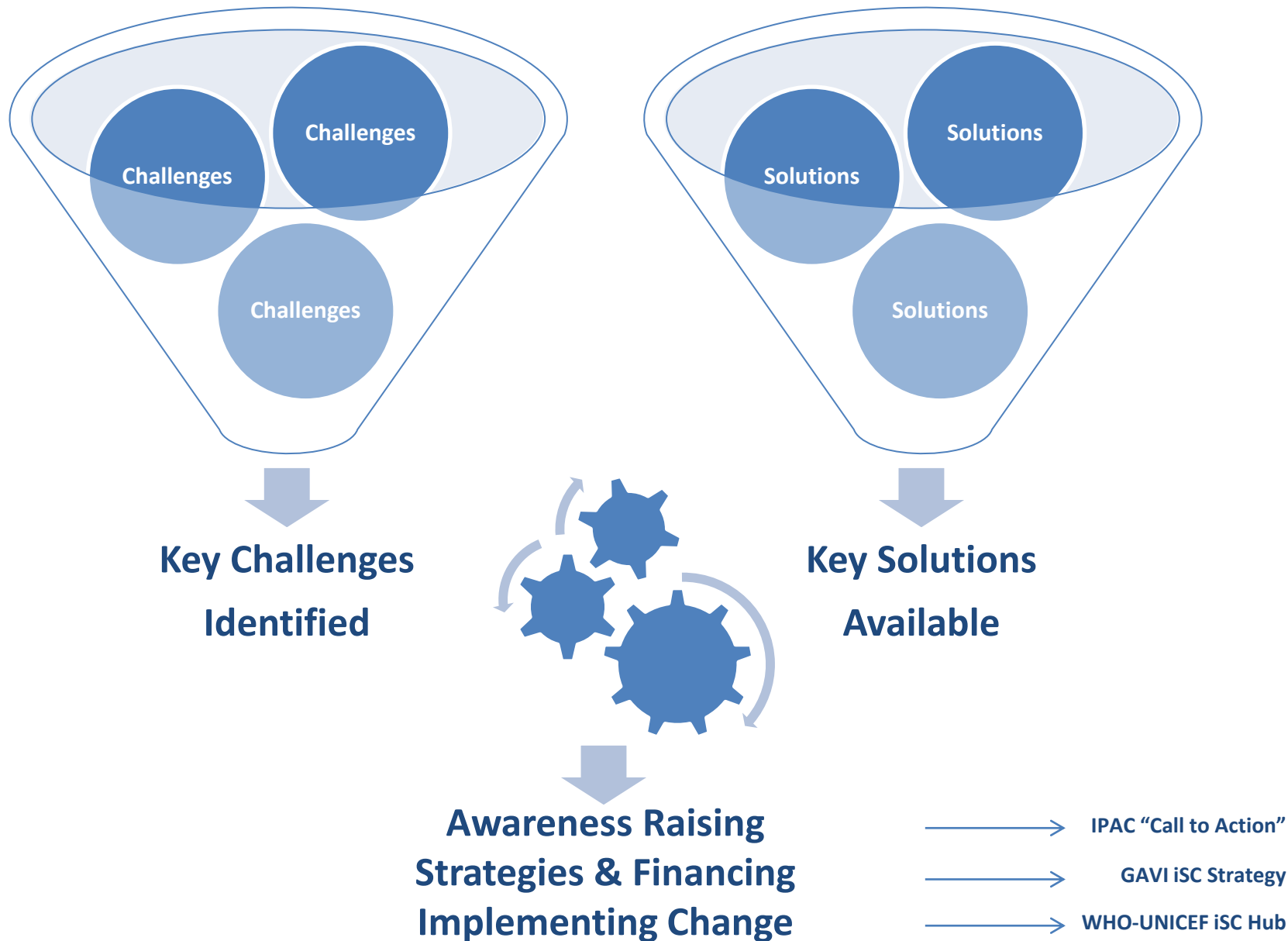
- Reduction in vaccine stock-outs (**Lagos, Nigeria**)



# Suitcase of Solutions

Key Challenge	Solution	
(1) Growing volume of vaccines	Technology	• Vaccine Product and Packaging Advisory Group (VPPAG)
(2) Preventing vaccine freezing		• Leveraging thermo-stability of vaccines • Continuous temperature monitoring
(3) Extending the reach of the cold chain		• Solar cold chain technologies • Long-life passive cooling devices
(4) Data driven immunization supply chains		• Leverage mobile technologies for logistics data • Adopt track and trace technologies
(5) Performance limited by the system design	Systems	• Implement proven systems design and optimization approaches
(6) More cold chain products for health		• Supply chain integration
(7) Limits of government-run systems		• Supply chain outsourcing to the private sector
(8) Lack of dedicated and qualified logisticians		• Professionalization of human resources for logistics

# What Next...



**Thank you**