# 2010

# Kuala Lumpur Consultation report

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# Preface

TechNet 21, or the Technical Network for Logistics in Health as it was called initially, was initiated in 1989. It was born out a simple need— the need for a space to discuss issues in immunization programme implementation at a time when personnel were scattered around the world with few tools at their disposal to 'connect'. TechNet was established at a meeting held in Cyprus in 1990, with the World Health Organisation (WHO) as its secretariat. It was decided that regular meetings would be held every two years to discuss issues and share new ideas. It is now more than two decades and TechNet21 consultations continue to be held regularly. Today the network has a mailing list forum, a twenty-first century website and sends out weekly digests summarizing the discussion on the forum.

Over the last two decades, much has changed in the world of immunization and yet much has remained the same. New vaccines have been introduced into immunization programmes; new delivery routes have been invented; we are now talking of the cool chain rather than the cold chain; supply chains are being strengthened as synergies between immunization services delivery and delivery of other health services are being tapped; there is public-private funding; new mobile-based registries and information systems are being built. But weighing the scales down is our lack of success in eradicating polio; unsatisfactory coverage rates in the poorest countries, with little hope of reaching the MDGs; and the anti-vaccine movement in the developed countries.

The 2010 TechNet21 Consultation, which was held in Kuala Lumpur from 30 November to 2 December 2010, reflected the current concerns and strengths. As one of the participants put it, this meeting provided "an opportunity for us to join forces and define the VISION and ACTION PLAN for immunization in the coming decade." Among the challenges of the next decade is integration, where EPI could play a focal role.

## Plenary session 1:
# Introduction and context
*Chair: MD. Shafiqul Hossain, WHO*

### 1.1 Welcome to delegates and introduction

Dr Rudi Eggers welcomed the delegates to the conference.

### 1.2 Keynote address: The future of vaccine management and logistics: Are we prepared?

Michel *Zaffran, WHO*

Immunization has been a key factor in the improvements in child health observed over the past decades. However 1.5 million children die annually from vaccine preventable diseases. Today, immunization programmes are facing a period of unprecedented change, in a new changing context—both in reaching new target populations and finding synergies with other health programmes. Being at the crossroads gives us a chance to re-examine how we do things and re-define what we consider 'business as usual'. We must think out of the box, and identify new and innovative solutions to ensure we are able to meet the needs both of today and the future. This meeting is an opportunity for us to join forces and define the VISION and ACTION PLAN for immunization in the coming decade.

### 1.3 Updates from 2008 TechNet, expectations from 2010 TechNet; Policy updates from IPAC and SAGE

*Rudi Eggers, WHO*

The presentation summarises the main conclusions from the TechNet21 2008 meeting on new vaccine introduction, human resource capacity in VVM, planning, management, training and public information materials, software tools for VVM, Anticipated policy changes (e.g. OCC, MDVP), Partnership for cold chain, operations and logistics, Experiences with outsourcing, PQS, Innovations in technology, VVM in temperature extremes, EVSM / VMA / EMA, Injection safety & waste disposal, and TechNet continuum. The expectations from TechNet21 2010 have also been outlined.

### 1.4 Regional update from the host region

*Md. Shafiqul Hossain, WHO/WPRO*

According to the WHO resolution (2003), by 2012, the WPRO member states should:

- Achieve measles elimination; and
- Control chronic hepatitis B infection rates to <2% in 5-year-old children as an interim milestone towards a final goal of <1%.

Twenty-five countries/areas of the Region may have achieved measles elimination, while five countries are making progress and likely to achieve the goal by 2012, while seven countries face great challenges. Recently, China conducted the measles campaign, immunizing over 100 million children.

There have been continuous successes also in Hepatitis B control, with South Korea and Macao already certified and nine priority countries identified that are lagging behind. As for polio, the region has been free since 2000, though recent outbreaks in the Russian federation put the Region at risk.

The Region was successful in introducing new and underutilized vaccines like the pentavalent. There have been substantial achievements in the area of cold chain/logistics/vaccine management, including training, assessment, launch of VSSM, temperature monitoring and studies on solar refrigeration. WHO-UNICEF also prepared an activity plan for 2011 for further strengthening the immunization supply chain system.

Many activities were also implemented in the Region during 2009–2010 for quality and safety and sustainable supply of vaccine.

## Plenary session 2:
## Equipment, vaccine characteristics & delivery systems

*Chair: Michel Zaffran, WHO*

### 1.5 What will future vaccines look like?

*Jules Millogo, IFPMA*

There are, currently, 26 vaccine-preventable diseases for which different categories of vaccines have been developed over the years, contributing to major advancements in efforts to eradicate, eliminate or reduce the burden of disease. More vaccines are likely to be available by 2020 for infectious and non-infectious

diseases. In addition, the quest continues for safer, more convenient and less painful alternative delivery routes.

Important challenges remain. Antigen stability, safety and efficacy are the key development hurdles for vaccine and delivery mechanism of the future.

The International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) strives to work with WHO and other partners to improve access to high quality and affordable vaccines to Low, and Low Middle Income Countries through tiered pricing, technical transfer and joint venture.

### 1.6 Thermostability of vaccines and the "Controlled Temperature Chain" (CTC) *Debra Kristensen, PATH*

This presentation summarizes the lessons learned after nearly a decade of focused research on vaccine stabilization. The focus is on paving a realistic way forward that takes advantage of scientific advancements in stabilizing vaccines, while carefully evaluating the trade-offs and side-benefits that might result from stability improvements. The logistical, regulatory, procurement, and policy issues associated with the development and use of temperature-stabilized vaccines will also be discussed with particular emphasis on current work that is underway to explore the feasibility of keeping heat stable vaccines in a “controlled temperature chain” for part of their shelf lives.

### 1.7 How do we get the vaccine presentations that we need?
*Rudi Eggers*, WHO

Pre-qualification of vaccines is mandatory to ensure vaccine safety and efficacy and to ensure that they meet the packaging and presentation specifications. Programmatic suitability has been a precondition right from the start. In the past decisions for programmatic suitability of the vaccine were based on precedents as far as possible and in consultation with programme components in WHO and in countries and is made on a case-by-case basis. The new approach will try to define the vaccine characteristics that are problematic for programme suitability and communicate these clearly to developers and manufacturers. The evaluation process for suitability will be transparent and reproducible. Further, the preferred characteristics will be clearly spelt out to guide future vaccine development. "Human judgement" will be used in cases that require closer scrutiny for reasons of public health. The presentation also includes recent examples of vaccines that have had programmatic challenges during pre-qualification. It also lay down the rules for future screenings for prequalification.

### 1.8 Marketplace teasers (3 min. per manufacturer)
*Cold chain equipment manufacturers & tools*

During this session each manufacturer presented a few slides to describe what products were displayed on their stand.

### 1.9 Making MDVP work (Visual cue and VVM update)

*Jhilmil Bahl, WHO*

The presentation covers the rational for revision of MDVP, reason for development of visual cues, and results of market research completed in Uganda and Cambodia. MDVP needs to be revised as the established rule: if a vaccine is in liquid form keep and if reconstituted discard, no longer holds. Five pairs of visual cues were developed in consultation with TLAC (former IPAC) to enable health workers to decide just by looking at the cue, whether to keep or discard the vaccine after six hours. Studies carried out in Uganda and Cambodia show preference for visual cue A or B. As the next step, IPAC will review the results from the ongoing Peru study and will endorse a visual cue pair to be piloted in a country.

### 1.10 VPPAG update

*Oz Mansoor, UNICEF*

The Vaccine Presentation and Packaging Advisory Group (VPPAG) was established in 2007 by the GAVI Alliance. In 2008, WHO took over the role of convening VPPAG. VPPAG has not only been able to foster industry–public sector dialogue but also to reach consensus on many issues around the packaging and presentation of new vaccines.

In 2009, VPPAG developed the generic Preferred Product Profile (gPPP) for new vaccines.

VPPAG has also proposed a solution to the issue of variable formats (and variable understandings) of expiry dates on vaccine labels and is working on other aspects of labelling. With the proposed 'visual cue' (to indicate if an opened vial can be kept for the next session or not), VPPAG aims to propose other changes that should be made at the same time.

Another issue being discussed is the impact of the package insert on packed volume and the costs and whether it is necessary.

### 1.11 Delivering the Hepatitis B birth dose in Uniject: experiences in PNG

*Bill Lagani, Ministry of Health, Papua New Guinea*

Hep B is highly endemic in PNG. The only statistic available is from blood donors, among whom prevalence is 12%. The 3-dose Hep B vaccine schedule was introduced in 1989. The birth dose was introduced in NIP in early 2000. The birth-dose coverage (within 24 hours) has been low (25–35%). To improve

coverage, Hep B was absorbed into an integrated post-natal package as part of the East Sepik Project (2008–2010). Village Health Volunteers (VHVs) and HWs were trained to deliver an integrated package of services that included Hep B dose in the Uniject. Among the lessons learnt was that the Hep B vaccine in Uniject kept in a controlled temperature chain (at ambient temperature) is an effective strategy for on-time delivery of the Hep B dose for births in remote areas, outside the health facility. Despite the success of the project, there are some inhibitors to scaling it up: cost of device, availability of VHVs, etc. A cost-benefit analysis and an in-country evaluation and approval of the storage of the Hep vaccine of out the standard 2–8° range are necessary prior to scale-up.

### 1.12 Putting Pentavalent vaccines into Uniject

*Yves Leurquin, Crucell*

Crucell's first fully liquid pentavalent vaccine with no added thimerosal preservative (Quinvaxem®) received WHO pre-qualification in 2006. It requires no reconstitution, reduces the potential for administration errors and increases efficiency of vaccination programmes through reduction of the immunisation process time. Furthermore, the single dose format limits vaccines wastage, reduces the potential for handling errors and contamination and ensures fewer missed vaccination opportunities when compared with multidose vials. To date, close to 200 million doses of Quinvaxem® have been supplied to over 50 countries.

In order to further improve vaccine delivery and EPI coverage, Crucell is developing Quinvaxem® pentavalent vaccine in Uniject™, which would further simplify handling and logistical requirements.

## PARALLEL WORKSHOPS

### 1.13. Update on HWM

*Facilitator: Yves Chartier, WHO*

The following six recommendations came out of the session:

- Management of waste from immunization activities must be part of a comprehensive global management of waste produced by healthcare activities.
- Evidence-based data from recent studies are needed to emphasize the role that HCWM plays in the public health and environmental health global agenda.
- Strengthen the network of HCWM players through better-defined and regular communication mechanisms.
- Reinforce the support provided to the development of appropriate technologies to respond to need for low income countries
- Increase proactive resource mobilization strategies using the WHO core principles and through approaching a broader number of stakeholders, including foundations, universities, industries.
- Advocate for mass immunization campaigns early planning (at lest nine months in advance) including the early mobilization of resources to reinforce the country's capacities.

### 1.14 Temperature monitoring systems, including country experiences (Philippines), and use of SMS monitoring etc.

*Facilitators: Andrew Garnett, Consultant and Jan Grevendonk, PATH*

**Session 1: FridgeTag® evaluation in Albania: highlights**

- Behavioural change that fridge tags may or may not bring. It was pointed out that the health workers have limited control over the functioning of their fridges. Thermostat adjustments would be one way to react.
- All electronic monitors face calibration issues after about 2 years. Manufacturers point out that recalibration is economically less viable than replacing the units.
- Some participants pointed out that adapted manual recording forms are needed to record the additional data (maximum, minimum and alarms) provided by these devices. As for the recording charts, the graphic format would give a better visual impact of the refrigerator's performance. It accommodates both the table and graph format.
- There is no doubt that loggers can improve management, but whose responsibility is it—the health worker's or the supervisor's?

**Session 2: Remote monitoring using SMS-enabled devices (Fone Astra and FridgeTag®)**

1. Advocate for the bundling of monitoring devices (freeze indicators and 30-day refrigerator devices) as part of wider vaccine introduction efforts.
2. Continue to document evidence of the impact of such devices on reducing vaccine loss, improving refrigerator maintenance and other programmatic benefits.
3. Provide better guidance on the use and implementation of disposable electronic temperature monitoring devices, including supply chain issues

around continuous replacement, and the timing of procurement relative to use (think of them as perishable devices).
4. Develop guidance on temperature calibration of long-life temperature monitoring equipment in larger stores (chart recorders and electronic devices). Further, equipment replacement requires sustained funding.
5. Advocate for the importance of temperature monitoring studies to qualify the supply chain either in whole or in part.
6. Temperature monitoring at the health centres needs to move from thermometers to logging devices. They will give a better sense of how refrigerators are working.

### 1.15. PQS and assuring the quality of locally purchased cold chain equipment

*Facilitator: Denis Maire, WHO*

Participants agreed that the use of domestic refrigerators for vaccine storage is an ongoing problem and identified the possible reasons for their preferred use instead of the pre-qualified ones:

- More viable when appliances are locally produced or assembled.
- Maintenance and spare parts easily accessible.
- Available at a lower price.

These refrigerators should have their performance tested in order to establish their ability in keeping vaccines safe in settings where electricity is readily available. But there is the concern that standards could be lowered if these refrigerators were formally accepted.

More work needs to be done in reaching decision makers, regulators and procurement agencies to alert them to the issue and to promote the purchase and use of pre-qualified equipment.

## Plenary session 3:
## Equipe/cold chain equipment

*Chair: Michel Zaffran, WHO*

### 1.16. Zero net-energy health centres

*Steve McCarney, PATH*

The Tunisian government and Project OPTIMIZE are demonstrating how an environmentally friendly, net zero energy cold chain can be provided. The demonstration will be at one regional location and three district sites.

First, an energy audit was conducted to determine solar resource availability and the reliability of the electric grid. Transport studies then determined if electric vehicles could displace most cold chain diesel use.

Energy consumption was reduced by management decisions integrating common requirements of pharmaceutical and vaccine distribution. Higher efficiency refrigerators and lights were installed. Vehicles using electricity instead of diesel fuel were purchased.

Electricity will be supplied by solar power systems to meet the estimated on-site power requirements. Any excess power will be fed back into the electric grid for other consumption needs.

Tunisia's strong solar resource, government financial incentives for grid connected solar power, national refrigerator testing/labelling programme and growing solar energy industry all support this demonstration.

### 1.17. The "Cold Chain Equipment Manager" tool (CCEM)

*Richard Anderson, PATH*

CCEM is a software application to maintain adequate cold chain storage capacity. CCEM includes a module for inventory management and another for modelling cold chain planning decisions. The strength of this application is that it combines domain knowledge with an equipment inventory and integrated analytics.

To accurately forecast future needs for cold chain equipment by facility, type and area, CCEM requires an investment in an inventory of the EPI cold chain. While expensive, the equipment survey cost is typically less than 0.2% of the value of the equipment park and less than 20% of procurement in a single year. A survey is needed once every 3-5 years if an effective updating system is installed, and it is argued that partners would provide equipment capital investment more readily if based on reliable evidence of need.

### 1.18. Marketplace of equipment manufacturers/partners

*Air Container, Berlinger, CCEM, Intellectual Ventures, LogTag, SAVSU, SEEDR3LC, True Energy, Vestfrost*

Intellectual Ventures Lab (IVL) and SEEDR each provided prepared presentations

SEEDR has developed a vaccine carrier and a vaccine cold box that are now ready for manufacturing and near-term market entry.

IVL is developing a product meant for long term (30-40 days cold life) with a long-range market potential.

Both are still seeking feedback to refine their designs. Field application of the products vary widely. Both would benefit from better-defined user requirements, e.g. length of cold life, volume of storage, portability, etc.

A more performance-based approach to PQS was noted as a route to encourage innovative solutions.


## Plenary session 4:
# Vaccines and Stocks
*Chair: Diana Chang-Blanc, UNICEF*

### 1.19. Experiences with VSSM in Paraguay
*Nora Rodriguez, PAHO*

The Ministry of Health of Paraguay is aggressively piloting VSSM. Personnel have been trained at the central store and sub-regional levels. The trainees included staff from the central level and from five sub-regional stores and two representatives from the regional distribution centres. Currently, the Ministry is in the process of completing the training of staff in the remaining 13 regions. To support the pilot testing in the remaining regions, 200 computers are being procured with internet access.

The Ministry has established a technical support team at the central level for providing supervision and technical support to the regions. Funds for the pilot

testing have been provided by the EPI, and other support has been provided by PAHO and UNICEF.

Based on the series of VSSM workshops in the Americas, VSSM has incorporated changes into its software.

### 1.20. Experiences with VSSM and DVDMT in Nigeria

*MoH, Nigeria*

No summary available.

### 1. 21. Data visualization project to avoid stock-outs

*Gregory Kiluva, UNICEF/Solo Kone WHO*

The importance of maintaining appropriate stock levels and monitoring the vaccine procurement pipeline has increased with the introduction of new vaccines, due to: (i) the increased demand on cold chain and in-country logistics infrastructure, and (ii) increased funding requirements and complex funds release processes as the newer, more expensive and bulkier vaccines are being introduced and countries gradually start taking over the financial responsibility of this procurement.

The Immunization Data Visualization Project seeks to develop data visualization and early warning tools, enabling easy identification and communication of the issue to avoid the risk of stock–outs, over-stocking or other supply related issues.

The tools being developed include a stock-level tracking mechanism that considers not only the current stock levels but also includes an overview of the vaccines in the pipeline or lack thereof. The intent is to share alerts and data between WHO, UNICEF.

Programming has commenced on the data visualisation, which will be followed by the development of the triggers to highlight potential risks. The intent is to undertake beta testing with historic data captured over the past three years to determine whether the tool would have captured the potential stockouts prior to the stockouts taking place.

This will commence using data captured from 30 countries in the AFRO region where UNICEF is procuring the vaccines and the WHO Stock Monitoring Tool is in use.

### 1.22. Immunization registries: Correlating administrative coverage and vaccine supply information at district level

*Jan Grevendonk, PATH*

Health workers in most developing countries use paper-based immunization registers, which is labour-intensive, and prone to errors and over-reporting. At the same time there is an increasing demand for accurate, relevant and timely data to support decision-making at all levels.

Better information systems for logistics are therefore needed. Computerized immunization registries can be used to reduce the number of defaulters, find the un-immunized, and ensure the right vaccines are distributed when and where they are needed, minimizing vaccine wastage and stock outs. They also allow for lot tracing down to the child level.

OPTIMIZE aims to demonstrate that national registries:

1. Can be implemented even in low-resource settings using mobile technologies;
2. Can generate more accurate, useful and timely data than aggregation-based reporting systems;
3. Allow for better planning and more adequate stock levels.

The presentation will present the cases of Albania and Vietnam.

## Plenary session 5:
# Managing supply chains
*Chair: Diana Chang-Blanc, UNICEF*

### 1.23. Experiences with outsourcing / private sector involvement
*Wannapa Sagunpram & Tanapat Laowahutanon, Government of Thailand*

Thailand started the EPI Vaccines programme in 1977. The programme now provides nine types of vaccines necessary for Thai children and the coverage rates have dramatically increased.

The new EPI management system has been designed to minimize the number of depots and stock-delivery hierarchy. The GPO VMI system is expected to decrease distribution complexity, redundancy of vaccine delivery to primary care units and reduce the excessive number of warehouses.

However some challenges still exist. They are: reduction wastage rates from opened vials, unopened vials and from doses diverted from target population; cold chain management improvement; optimization of distribution practice; and the

whole chain monitoring and evaluation. The major issue would be how this management system can cope with outbreak management.

### 1.24. EVM tool and field evaluations

*Hailu Kenea, WHO*

Consistently high levels of supply chain performance require good management practices, good quality buildings, equipment and vehicles that are well-maintained, well-trained and supervised staff, and adequate funding. The Effective Vaccine Management (EVM) sets common standards for these components at all levels in the supply chain and promotes the importance of effective management.

Experience gained through using the Effective Vaccine Store Management Assessment and Vaccine Management Assessment has demonstrated that systematic assessment of vaccine management procedures can lead to improved performance. However, there is a clear need to address the overlap between the two approaches and the gaps of the two in addressing the current challenges of the supply chain.

## PARALLEL WORKSHOPS

### 1.25. Lessons from H1N1 deployment

*Facilitators: Claudia Vivas, WHO & MD. Shafiqul Hossain, WHO*

To help countries protect people from developing severe disease from pandemic (H1N1) 2009, the World Health Organization (WHO) assisted country preparedness for deployment and vaccination, and coordinated the distribution of donated pandemic influenza vaccine to eligible countries.

This interactive session discussed the activities that WHO carried out for achieving these tasks, as well as the challenges and lessons learned to be considered in future pandemics for ensuring country readiness and effective deployment and vaccination in similar situations.

### 1.26. Research: Developing a better cold box: research methodology: experiences from CDC and Intellectual Ventures

*Facilitator: Steve McCarney, PATH*

A critical element of any immunization programme is its cold chain system. Vaccines must be maintained within strict temperature parameters to retain their efficacy. However there could be temperature excursions outside of these

parameters and these occurrences are well documented. Through an interdisciplinary collaboration, we reengineered a vaccine carrier and cold box with improved ergonomic features and superior cold-life that successfully averts freezing. Wide-ranging methods, including literature reviews, design-element teardown, an end-user survey, finite element analysis and a series of expert forums comprised this generative research process. A computer-based discrete event simulation model was also developed to estimate the public health impact and cost-effectiveness of these advances.

**1. 27. TechNet21 e-forum: feedback on beta version of the new website**
*Facilitators: Jhilmil Bahl, WHO, James Cheyne, Consultant & Ashley Kartchner, AVASA*

This breakout group reviewed and promoted the new TechNet21 website design, and proposed priorities for further development of the site in 12 months' time. The presentations described the full capabilities of the new site followed by questions and answers and real-time support for new users in the session. proposed some options for further development of the site in 2011 and 2012. The participants were asked to propose other developments and to prioritize the list for testing and implementation beginning in 2011.

## Plenary session 6:
## Sustainability
*Chair: François Gasse*

**1.28. Preparing national cold chains for the future**
*Solo Kone, WHO*

Rationalized expansion/refurbishing of the cold chain infrastructure based on the new vaccines in the pipeline and the presentations and characteristics of the new products holds the key to preparing the cold chain for the future. A through analysis of existing storage capacity at all distribution levels needs to be undertaken Based on the analysis, the correct equipment has to be identified. In areas where there is no electricity, workable alternatives have to be identified. If necessary the supply chain has to be redesigned to avoid overstocking or stockout situations. Further, also explore the ways in which the burden on the cold chain can be reduced.

**1.29. Preparing national cold chains for new vaccines in Vietnam**
*Nguyen Tuyet Nga, PATH Vietnam*

Viet Nam has a strong immunization programme that consistently reaches 90% of its population with safe and effective vaccines. Its success is built on a far-reaching vaccine supply chain, a reliable information system, and a commitment to immunization services. In phase I, Optimize and National Institute of Hygiene and Epidemiology (NIHE) have conducted evaluation research to establish a common understanding of the current status of immunization logistics in Viet Nam and generate a knowledge base upon which to design and demonstrate systems and technologies for the future. In phase II, we will demonstrate technologies and system interventions that could improve the vaccine supply chain for the immediate future and to prepare for the future challenges in the next 10 to 15 years, including cooling devices for vaccine storage at commune level, electronic vaccine tracking and web-based reporting system, digital immunization registry, etc.

### 1.30. Issues related to HRD for logistics/supply chain management in public health

*Modibo Dicko, WHO*

Despite the increased complexity of the supply chain, increased workloads due to greater number of vaccines and bigger volumes per dose, increased values at stake due to the higher costs of new vaccines, countries have kept the same logistics workforce at all levels and immunization partners have done the same as well. As a result, the increased magnitude of the problems faced in supply chain management is not matched by an improved management capacity in both quantity and quality. An insufficient number of staff, who are unqualified and disempowered, are therefore managing public health supply chains leading to poor availability of drugs and other health commodities at the health facility level and to a high wastage of resources. The consequence is that public health programmes under perform and are unable to achieve health goals. The potential benefits of improving supply chain management through the use of professional supply chain managers are: greater access to health supplies, more efficient use of human, material and financial resources, more sustainable health systems and improved health outcome! For instance, by posting professional logisticians in pilot districts in Zambia, child mortality could be cut by 37% and will enable an additional 27,000 children to be saved by 2015. The solution is to create both demand and supply for professional supply chain managers in public health programmes.

### 1.31. Implementing pre-service training for Health Logistician: Developing the curriculum

*Phillipe Jaillard, AMP, André Savadogo, Bioforce*

Health logistics has been identified as a key missing link in health development and it is necessary to build up a workforce of professional health logisticians.

Following specific studies in five countries in Africa, the development of a generic professional skills framework composed of seven areas was developed by a group of agencies (WHO, UNICEF, Bioforce, AMP, JSI), as well as generic job descriptions for lower and intermediates levels, and a training curriculum for a diploma course (US Bachelor / Master, European 180 ECTS).

Those recommendations were discussed, improved, and endorsed during two consensus workshops on logistics for health.

The skills framework is as follows:

1. Plan logistics activities of health facilities and programmes at the district level.
2. Manage and coordinate logistics of health programmes and facilities.
3. Manage the supply chains for vaccines, drugs and other health products.
4. Coordinate the use, maintenance (including sub-contracting) of medical and technical equipment.
5. Coordinate the maintenance of facilities and housing, including water and sanitation of health structures.
6. Ensure effective logistics support to health emergencies and humanitarian operations.
7. Foster inter-sectoral collaboration and community participation.

The main challenges are:

1. Ensuring that countries recognize the qualification and status of health logisticians as a profession
2. Addressing the issue of brain drain of trained health logisticians
3. Ensuring the sustainability of the health logistics function within the health systems.

**1.32. Integration of logistics with malaria, TB, ARV and other supply chains:**
*Modibo Dicko, WHO*

Existing supply chains reveal that there is considerable duplication of functions. Every donor seems to want his own controlled supply chain. Based on data from 13 countries it was found that, each country, on an average, had 17 funders, 19 procurement agencies and 84 distribution channels. Even if the product is the same, the forecasting and planning is done separately, resulting in overstocks and expiries. There are multiple procedures for the different supply chains, placing undue burden on the supply chain personnel. There is little doubt that these supply chains need to be integrated.

After a landscape analysis on supply chain integration, including a thorough literature review, OPTIMIZE has designed, with MoHs of Senegal and Tunisia, a few demonstration projects. Many challenges remain though in the areas related to equipment, information systems, programme management, monitoring and

evaluation, etc. By facilitating discussions in groups evolving around WHO, UNICEF Cold Chain and Logistics Taskforce and many other partners, a work plan has been adopted to answer many of these issues.

# Plenary session 7:
# Sustain/partner coordination

*Chair: François Gasse*

### 1.33. New TechNet 21 e-forum and website

*James Cheyne, Consultant/Ashley Kartchner, AVASA*

A new TechNet21.org website will be launched after the TechNet meeting. It retains the same functions as the existing site and adds five new features:

- Is open so that registered members can post their own comments and thoughts directly on the site
- A new photo depot where pictures of immunization services and the vaccine supply chain can be added
- A new blog zone for views and comments on any aspect of the supply chain or immunization.
- A new zone for planning and management software applications
- A new network area where members can share information 'offline' from the open site.

### 1.34. CCL Taskforce

*Oz Mansoor, UNICEF*

Developing country governments, development partners and donors need to invest more in CCL systems to improve performance and capacity to add new vaccines.

UNICEF convened the CCL Taskforce of immunization partners in 2007. Then the Taskforce held a workshop in November 2009 that refocused its work (http://www.unicef.org/immunization/index_42071.html). Four subgroups were established covering: Advocacy, Monitoring, Integration and Guidance. A Future Subgroup was added in 2010 to help in building the systems of the Future, with Project Optimize.

The Guidance Subgroup is developing a web site based on a comprehensive mapping of CCL system tasks (https://sites.google.com/site/cclguidance). All are welcome to contribute to the development of the site.

The Monitoring Subgroup has been focussing on the data visualisation project; and the Integration Subgroup has prepared a paper and is seeking a consultant to further develop this work.

### 1.35. GAVI Accelerated Vaccine Introduction: cold chain and logistics sub-group

*Solo Kone, WHO*

Cold chain logistics is one of the primary components of accelerating the introduction of new vaccines, especially given their complexity. The AVI CCL sub-group has a fairly clear agenda: analyse country CCL status; mobilize technical and financial supports to address constraints regarding CCL expansion & upgrading; monitor the implementation of the AVI workplan for CCL assessment for priority countries; identify barriers related to CCL encountered in the implementation of the AVI workplan and propose corrective actions; and document best practices in countries.

The group has undertaken a global estimation of primary cold storage needs covering both existing and new vaccines. A cost estimation has also been undertaken to determine the costs of refurbishing the existing facility or building a new facility. The cost of rehabilitating primary stores has been estimated at 3.1USD per child. Analysis has revealed that 62% of the countries have adequate capacity for 2010. All countries have plans to upgrade their facilities but no clear schedule. Further estimations need to be carried out to determine maintenance and human resources needs. Further, countries need technical support to design CCL.

## Plenary session 8:
## What's next?

*Chair: Rudi Eggers, WHO*

### 1.36. Constituents meetings: equipment manufacturers; regional and country logisticians; HQ and global partners

The participants were asked, as a group, to reflect on the presentations and discussions during the three days of the meeting. There were asked to also identify whether there are were any major gaps; spell out the areas that need more attention; and prioritize the activities that need to be undertaken over the two years to improve immunization programmes at the country level and to effectively introduce new vaccines. One person from the group then made a presentation summarizing the group discussions on a list of questions that they were presented.

### 1.37. Constituents report back: having been to this meeting, in the coming two years: what will we do? what do we need from others?

*Facilitator: Rudi Eggers, WHO*

Some of the recurring themes were that better use needs to be made of information at all levels. Information regarding new products has to percolate down and the TechNet21 website and forum could provide the space for information sharing. Further, innovation is important—whether related to new technology, equipment or vaccines and that there is a need to build evidence base. There was also a stress on the need for documentation, which has to be current, consistent, coordinated and accessible. Interventions and supply chains need to be integrated and duplication of efforts has to be avoided. Ownership was also discussed, with a consensus that regions and countries need to take the ownership.

*DISCUSSION HIGHLIGHTS*

- **Integration** is a **complex activity** when it comes to implementation, and funders are often wary about integration. The funder is uncertain that his/her programme will be given priority and feels that **accountability is being forfeited** to an unfamiliar individual. Even in EPI, many years ago, there was an effort to integrate diarrhoeal and immunization programmes because the training material was very similar but it did not work in practice. The other issue is that the **training needs become so vast that focus is lost**.

  There is need to identify which bits of integration work together and which do not and that requires information. In EPI there have been many efforts at integration like in Child Health Days but there is only a limited extent that one can go. There are examples of how integration has not succeeded. Solomon islands has integrated the supply of vaccines with all other pharmaceutical goods. But there have been **incidents of mixing up diluents**. When a staff worker was asked which diluent she would send with a certain vaccine, she said 'whichever one comes into my hand first.'

  When it comes to **outsourcing**, Fiji, which has a system where a private agency has been recruited to receive all the vaccines and redistribute them, faces the same problem. If the specific trained staff is absent then things do not proceed smoothly. The question is whether in the **quest for integration** are we being **overburdened with** regard to **capacity building** as the number of people who will need to be trained better increase.

  It is disheartening for everybody seems to think integration is desirable but what **reports from the field seem to suggest** is that **integration does not work**. The question is **have we tried to do it properly**? Has there been sufficient analysis of the pace, the direction, the method, the capacity

building that has to be put in place before embarking on integration? This probably needs to be done in a phased manner. Participants at the consultation need to provide information where integration efforts have been undertaken even if partial to understand what has been working and what has not to build evidence-based processes. There is no other way in the future than tapping more synergies among the various public health interventions.

Four points are **essential** for integration: **common sense, balancing act, good leadership and effective communications**. The health sector is facing increased criticism for doing vertical work. For instance, vaccines are preserved carefully but the same care is not extended to other drugs and medical supplies. Analysis of the local situation is necessary. UNICEF personnel have been asked, "How come you are strong on procurement etc. related to EPI but not on de-worming or vitamin A or other health interventions?" When you integrate, there is **need to delegate work**. There could be a dip in performance immediately but it is for better performance in the future.

**EPI**, which has shown the way to reach out to 80-90% of the children, should show the way forward. It **has to find way of working with other programmes** in a non-threatening manner. If EPI is not the focal point of such integration but plays only a contributory role, we should work in that direction.

- **Improving the brand image of the logistician:** Countries face the challenge of **influencing decision makers** to recognize and understand the importance of logistics. Collectively, the TechNet21 community could be far more influential in **raising the profile of logistics**, especially in the context of new and more expensive vaccines. As the risks increase, the importance of logistics will be more recognized. This meeting is an opportunity to define the actions that need to happen at the regional, country and global levels in terms of priorities for the coming decade. **Days of a simple EPI system are probably over** since we have to deal with new challenges and the solutions are more complex and technical. There is need for training and generating respect for this profession.

  Can we make the **logistician an effective functionary**? Terminology should not make a difference but if you designate somebody as a 'logistician' it does not seem to evoke the same kind of response as when you call him an 'operations/supply manager'. The latter term becomes a more attractive value proposition. Probably **re-branding the profession** would help to revalue the profession. It also corresponds more to the role that we want logisticians to play now. Further, the **logistician function is a managerial function**. But we also need to bear in mind that an operations officer will have to be functioning across all public health functions.

Since in many countries we do not have sufficient numbers of health workers at the lower-level health facilities, what can we do to 'de-professionalise' logistics a bit taking into consideration the human resources available? What are the **tasks that need to be done by professional health logisticians** and what are the **tasks that can be delegated** to other health or non-health workers? Additionally, there are distinct skills required for the daily logistics management and for tasks at the mid-level management though complementary.

- **Information dissemination and documentation**: There is need for more information and better documentation of projects and experiences in the field whether related to transportation management systems and best practices, AEFI or reconstitution errors. There are also challenges in improving VVM usage in the field as there are still health care workers who do not know how to read VVMs.

- **Data management tools**: In spite of several stock management tools becoming available, **vaccine stockouts are still occurring**. Tools alone are clearly not enough and data needs to be better evaluated, analysed and used. Stockouts are also caused by erratic availability of funding. The ultimate goal of logistics is **just-in-time (JIT) delivery**. Accuracy simplifies the supply systems. Migration is an important confounding factor in estimating supplies. Immunization registries allow maternal mortality and antenatal care activities to be integrated. With regard to data it is necessary to centralise all information and also include devices. There is need to correlate administrative coverage and vaccine supply information.

- **Decade of Vaccines and the future**: In the next decade, with many new vaccines in the pipeline, the pace of vaccine introduction is likely to accelerate. This is in contrast to the slower pace in the previous decade. Keeping this in mind, logisticians will need to change their way of thinking and adopt a more forward-looking approach. The gap between development of vaccine and introduction of vaccine in the developing countries is also getting shortened. There is also the **challenge of timelines** for product development vs. country needs—the development process starts 15 years before the product hits market. So while there is a shift within industry in terms of recognizing the importance of country needs, there is a lag time for 'catch up' in terms of product development. There is need to balance product design vs. cost vs. acceptability by target populations—often price is not the only barrier.

**Objectives of the Consultation**

- Provide current information on recent technological innovations, strategies or practices that impact logistic systems management in national immunization programmes
- Share developing country experiences on field operations in the areas of vaccine storage and transport, vaccine management, cold chain and equipment performance, waste management, introduction of new vaccines or immunization technologies and overall systems monitoring.
- Stimulate dialogue and debate on the development and implementation of best practices.

**Day 1: Tuesday, 30 November 2010**

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| | ***PLENARY SESSION 1: INTRODUCTION AND CONTEXT*** <br> ***Chair: Md. Shafiqul Hossain, WHO*** | |
| 08:30 | Welcome & Introduction | Rudi Eggers, WHO |
| 08:50 | Keynote address: The future of vaccine management and logistics: Are we prepared? | Michel Zaffran, WHO |
| 09:20 | Updates from 2008 TechNet, expectations from 2010 TechNet; Policy updates from IPAC and SAGE | Rudi Eggers, WHO |
| 09:50 | Regional update from the host region | Md. Shafiqul Hossain, WHO/WPRO |
| 10:10 | Discussion | |
| 10:40 | Tea/Coffee Break | |
| | ***PLENARY SESSION 2: EQUIPE / VACCINES CHARACTERISTICS AND DELIVERY SYSTEMS,*** <br> ***Chair: Michel Zaffran, WHO*** | |
| 11:10 | What will future vaccines look like? | Jules Millogo, IFPMA |
| 11:30 | Thermostability of vaccines and the "Controlled Temperature Chain" (CTC) | Debra Kristensen, PATH |
| 11:50 | How do we get the vaccine characteristics that we need? | Rudi Eggers, WHO |
| 12:20 | Discussion | |
| 12:40 | Marketplace teasers (3 min. per manufacturer) | Cold chain equipment manufacturers & tools |
| 13:15 | Lunch Break | |

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| 14:30 | Making Multi Dose Vial Policy (MDVP) work (Visual cue and Vaccine Vial Monitor (VVM) update) | Jhilmil Bahl, WHO |
| 14:50 | Vaccine Presentation &Packaging Advisory Group update | Oz Mansoor, UNICEF |
| 15:10 | Discussion | |
| 15:30 | Delivering the Hepatitis B birth dose in Uniject: experiences in PNG | Bill Lagani, Ministry of Health, Papua New Guinea |
| 15:50 | Putting Pentavalent vaccines into Uniject | Yves Leurquin, Crucell |
| 16:00 | Discussion | |
| 16.15 | Parallel session teasers (3 min. per session) | |
| 16:25 | Tea/Coffee Break | |
| 16:45 | Parallel workshops:<br>1. Waste management *(facilitator: Yves Chartier, WHO)*<br>2. Temperature monitoring systems, including country experiences (Philippines), and use of SMS monitoring etc. *(facilitators: Andrew Garnett, Consultant and Jan Grevendonk, PATH)*<br>3. PQS and assuring the quality of locally purchased cold chain equipment *(facilitator: Denis Maire, WHO)* | |
| 18:30 | End of day one | |
| 19:30 | Social evening | |

**Day 2: Wednesday, 1 December 2010**

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| | ***PLENARY SESSION 3: EQUIPE / COLD CHAIN EQUIPMENT***<br>***Chair: Michel Zaffran, WHO*** | |
| 08:30 | Zero net-energy health centres | Steve McCarney, PATH |
| 08:50 | The "Cold Chain Equipment Manager" tool (CCEM) | Richard Anderson, PATH |
| 09:10 | Discussion | |
| 09:30 | Marketplace of equipment manufacturers/partners | Air Container, Berlinger, CCEM, Coldpack, Dulas, Intellectual Ventures, LogTag, SAVSU, SEEDRL3C, TempTime, True Energy, Vestfrost |
| 10.15 | Tea/Coffee Break (marketplace continues) | |
| | ***PLENARY SESSION 4: MANAGE / VACCINES & STOCKS***<br>***Chair: Diana Chang-Blanc, UNICEF*** | |
| 10:45 | Experiences with Vaccine Supplies Stock Management (VSSM) in Paraguay | Nora Rodriguez, PAHO |

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| 11:05 | Experiences with VSSM and District Vaccine Data Management Tool (DVDMT) in Nigeria | Rahman Ola Kelani & M.S. Dangana, Nigeria |
| 11:25 | Discussion | |
| 11:55 | Data visualization project to avoid stock-outs | Gregory Kiluva, UNICEF / Solo Kone WHO |
| 12:15 | Immunization registries: Correlating administrative coverage and vaccine supply information at district level | Jan Grevendonk, PATH |
| 12:35 | Discussion | |
| 13:00 | Lunch Break | |

***PLENARY SESSION 5: MANAGE / SUPPLY CHAINS***
***Chair: Diana Chang-Blanc, UNICEF***

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| 14:00 | Experiences with outsourcing / private sector involvement | Wannapa Sagunpram & Tanapat Laowahutanon, Government of Thailand |
| 14:30 | Effective Vaccine Management (EVM) tool and field evaluations | Hailu Kenea, WHO |
| 15:00 | Discussion | |
| 15:20 | Parallel session teasers (3 min. per session) | |
| 15.30 | Coffee/Tea Break | |

16:00 Parallel workshops

1. Lessons from H1N1 deployment *(facilitators: Claudia Vivas, WHO & Md. Shafiqul Hossain, WHO)*
2. Developing a better cold box: research methodology: experiences from CDC and Intellectual Ventures, (*facilitator: Steve McCarney, PATH*)
3. Technet e-forum- feedback on beta version of the new website *(facilitators: Jhilmil Bahl, WHO, James Cheyne, Consultant & Ashley Kartchner, AVASA)*

18:00 End of day two

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**_Day 3: Thursday, 2 December 2010**

***PLENARY SESSION 6: SUSTAIN***

***Chair: François Gasse***

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| 08:30 | Preparing national cold chains for the future | Solo Kone, WHO |
| 08:50 | Preparing national cold chains for new vaccines in Vietnam | Nguyen Tuyet Nga, PATH Vietnam |
| 09:10 | Discussion | |

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| 09:40 | Tea/Coffee Break | |
| 10:10 | Issues related to human resource development for logistics/supply chain management in public health | Modibo Dicko, WHO |
| 10:40 | Implementing pre service training for Health Logistician – Developing the curriculum | Phillipe Jaillard, AMP, André Savadogo, Bioforce |
| 11:00 | Discussion | |
| 11:20 | Integration of logistics with malaria, TB, ARV and other supply chains | Modibo Dicko, WHO |
| 11:40 | Discussion | |
| 12:00 | Lunch Break | |
| | ***PLENARY SESSION 8: SUSTAIN/PARTNER COORDINATION*** <br> ***Chair: François Gasse*** | |
| 13:00 | New TechNet 21 e-forum and website | James Cheyne, Consultant/ Ashley Kartchner, AVASA |
| 13:30 | Cold Chain & Logistics Taskforce Task Force | Oz Mansoor, UNICEF |
| 13:50 | GAVI Accelerated Vaccine Introduction - cold chain and logistics sub-group | Solo Kone, WHO |
| 14:10 | Discussion | |
| | ***PLENARY SESSION 8: WHAT'S NEXT*** <br> ***Chair: Rudi Eggers, WHO*** | |
| 14:40 | Introduction to constituent meetings and explanation of breakout groups <br><br> Constituents meetings: equipment manufacturers; regional and country logisticians; HQ and global partners | Rudi Eggers, WHO |
| 16:10 | Tea/Coffee Break | |
| 16:30 | Constituents report back: having been to this meeting, in the coming two years: <br> - what will we do? <br> - what do we need from others? | Facilitator: Rudi Eggers, WHO |
| 17:30 | Closing | Dr C. Capuano, WR, Malaysia |

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