Meeting Report

TechNet21 Consultation Meeting

Mexico City
26–27 October 2006

The Technical Network for Logistics in Health, or TechNet, was first established in 1989 to provide a professional network of experts in logistics who are involved in the management of immunization and other primary health care operations at the country and international levels. In 2001, its name was updated to Technical Network for Strengthening Immunization Services to reflect its widening audience, and the acronym to TechNet21. TechNet21 serves as a forum where issues relevant to implementation of immunization services can be discussed, debated, and clarified. Members of the forum meet every eighteen to twenty-four months to discuss issues current to immunization logistics management and to share experiences.

The 2006 TechNet21 consultation meeting was co-hosted by the Ministry of Health of Mexico and the Pan American Health Organization, under the coordination of the TechNet Secretariat based in WHO-Geneva. The Secretariat extends its gratitude to key partner agencies UNICEF and PATH, without whom the meeting would not be possible.

Pan American Health Organization
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Introduction

The ninth meeting of the Technical Network for Strengthening Immunization Services (TechNet21) took place in Mexico City on the 26th and 27th of October 2006. The meeting was held 'back to back' with the annual meeting of the Safe Injection Global Network (SIGN) on 24-26th October. WHO is the global secretariat for both Networks and was the organizer of these meetings. The meetings were each attended by over 120 participants with approximately one third of the collective participants attending both topics.[1] This document is a summary of the issues discussed and the conclusions reached by the participants of the TechNet21 meeting. A full set of presentations and supporting materials is available on the official TechNet21 meeting CD.[2] A report on the proceedings of the SIGN meeting will be separately released.

In his opening introduction, Dr Rudi Eggers (WHO) applauded the first hosting of a Technet21 consultation in Latin America and expressed satisfaction at the strong attendance of local and regional participants. He further defined the TechNet21 meeting as a means to update participants on new approaches and technologies in immunization logistics and an opportunity to obtain participants' views on selected issues on which WHO is currently developing policy.

Introductory remarks were made for the region of the Americas by Mr John Fitzsimmons (PAHO) and by Dr Paulo Froes (UNICEF). The meeting was divided into five sessions:

1. Vaccine Management
2. Equipment Management
3. Integrated Support Systems
4. Research Update
5. TechNet21 Business

This document summarizes the main issues and key conclusions for each session.

1. Vaccine Management

The vaccine management session was divided into three topics and two parallel evening satellite sessions:

- Vaccine Freeze Avoidance
- Vaccines Out of the Cold Chain
- Effective Vaccine Store Management (EVSM) Primary Stores Assessment
- Measles Aerosol Delivery (Satellite Session)
- Switching from Kerosene to Gas Refrigerators in Africa (Satellite Session)

Vaccine Freeze Avoidance

Evidence on the prevalence of inadvertent vaccine freezing in the cold chain was presented from studies in several countries, demonstrating that vaccines are frequently exposed to freezing temperatures, even in countries which were previously unaware of the problem. There was some debate on whether current data clearly demonstrates that exposure of freeze-sensitive vaccines to freezing temperatures results in reduced immunogenicity; evidence exists, however, to show loss of vaccine potency after freeze exposure. Greater losses occur at lower temperatures, with longer duration at freezing temperatures, after multiple freeze-thaw cycles, and upon movement of the vials

[1] Annex B refers only to TechNet21 meeting participants
[2] Available upon request to jouanc@who.int

during freezing. The risk is present and can be reduced significantly by simple changes in standard operating procedures for vaccine management and by changes in specification of refrigeration equipment.

Although the risks of vaccine-freezing have been raised and discussed in a prior Technet Meeting (Copenhagen, 1998), there remains a gap in such knowledge being clearly understood and translated into necessary changes in the field. Therefore, obtaining country-specific data is a critical first step in raising awareness and galvanizing support for establishing measures to prevent vaccine freezing. Once the scale of the problem of freezing has been investigated using the standard WHO Study Protocol for Temperature Monitoring in the Vaccine Cold Chain (WHO/IVB/05.01), eliminating vaccine freezing can be accomplished with simple yet sustained interventions including raising awareness, revising operating procedures, using chilled water packs for transport, improving temperature monitoring, and retraining. Indonesia demonstrated the impact of these simple interventions in a recent evaluation of its cold chain post-intervention.

The joint UNICEF/PATH inter-country workshop held in Panama in 2006 was cited as a particularly successful method of sensitizing program and logistics managers to the problem of accidental freezing of vaccines and currently available solutions. A draft WHO aide memoire for the prevention of vaccine freezing was circulated in the meeting. It aims to provide guidance to countries on reducing the inadvertent freezing of vaccines. Feedback from participants was invited and their views will be integrated into the final draft prior to WHO clearance and eventual dissemination.

Conclusions:

- Efforts to eliminate vaccine freezing are part of best vaccine management practices and should be prioritized both locally in vaccine management practices and globally in specifications for cold chain equipment.
- Countries should conduct cold chain temperature monitoring studies using the WHO study protocol to assess the risks of vaccine freezing and to prioritize actions to prevent freezing.
- The WHO draft ‘aide-memoire’ should be finalized, cleared, and widely disseminated for use in training and advocacy to prevent inadvertent freezing of vaccines.

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- Countries should conduct cold chain temperature monitoring studies using the WHO study protocol to assess the risks of vaccine freezing and to prioritize actions to prevent freezing.
- The WHO draft ‘aide-memoire’ should be finalized, cleared, and widely disseminated for use in training and advocacy to prevent inadvertent freezing of vaccines.
- Conducting additional research to demonstrate a) to what extent freezing damages vaccines and b) the correlation between the shake test and vaccine potency would provide more rigorous and concrete data.

Vaccines out of the cold chain

Until 1996, all vaccines remained within the cold chain system from arrival in the country to the point of use. With the arrival of Vaccine Vial Monitors (VVMs) on oral polio vaccine, it became evident that even this most heat-sensitive vaccine used in the Expanded Programme on Immunization (EPI) could be carried and used beyond the reach of the cold chain in difficult or remote areas, thereby achieving access to populations otherwise unreached by immunization.

VVMs are still a critical component of an out-of-cold-chain strategy, alerting the user to excessive heat exposure. Results from several countries show the benefits of an out-of-cold-chain strategy in reaching hard-to-reach populations with certain vaccines. Examples from China, Indonesia, Vietnam, and Sudan demonstrate significant improvements in access to underserved populations with oral polio and hepatitis B vaccines using this strategy.

The application of out–of-cold-chain strategies is appropriate to specific circumstances, such as when there is a need to expand beyond the reach of the current cold chain or when it facilitates the existing delivery system. An out-of-cold-chain strategy is likely to be highly successful in certain situations, such as delivering the hepatitis B birth dose, but inappropriate in others, such as measles vaccine delivery, because ice is required to cool reconstituted vaccine.

Out-of-cold-chain use of vaccine can prevent freeze damage in selected vaccines without compromising vaccine efficacy or safety. A hepatitis B vaccine study in Vietnam described during the meeting showed higher immunogenicity in the out-of-the-cold-chain group, probably due to reduced freezing.

Although experiences with and benefits of out-of-cold-chain strategies are documented and WHO publications already refer to the practice[3], countries such as China and Vietnam are seeking more explicit guidance to help obtain national approvals for out-of-cold-chain use of hepatitis B vaccine.

Conclusions:

- Additional WHO global policy guidance is needed to enable country programs to review the feasibility of out–of-the-cold-chain strategies. Such information is particularly important in countries where national regulatory authorities are resistant to the use of such strategies; concerns are due to the perception of using vaccines in a manner inconsistent with manufacturer labeling (e.g., 'off-label' use).
- At this stage of experience with out-of-the-cold-chain strategies, it may be more acceptable to limit the policy to oral polio, tetanus toxoid, and hepatitis B vaccines (all liquid vaccines and with VVMs) until wider experience has been documented.
- TechNet21 participants could help guide the design of appropriate out–of-cold-chain systems. Transportation, storage, and delivery systems are among critical issues.

EVSM Primary Stores Assessment

The Effective Vaccine Stores Management (EVSM) initiative was launched by WHO and UNICEF following the 1998 TechNet meeting, which noted the technical and managerial weaknesses of many national, primary stores of vaccines, potentially impairing the potency of vaccines distributed to the field. With the expansion of immunization to include new vaccines and new population target groups, the importance of this focus on primary vaccine storage has grown in the last five years.

Presentations from two WHO Regions noted that EVSM has been effective in strengthening best practices in primary-level vaccine management and storage and that in most cases higher standards

[3] Getting started with vaccine vial monitors (WHO/V&B/02.35); Making use of vaccine vial monitors: Flexible vaccine management for polio supplementary immunization activities (WHO/V&B/00.14)

have been maintained. However, only a third of targeted countries have conducted EVSM assessments since 2003 and very few of these countries have conducted self-assessments more than once to show improvement of standards. Only two countries now meet the criteria of at least 80% on all critical indicators for certification.

Nevertheless, EVSM has stimulated interest and action to introduce better, computerized stock control systems for vaccines and other immunization supplies. Examples cited from Sudan, India and Indonesia provide reports, inventory levels, and low-stock alarms and are claimed to be sufficiently user friendly to be sustainable once introduced with appropriate training.

EVSM has been helpful in sensitizing countries to the importance of the Vaccine Arrival Report (VAR) system that has been implemented by UNICEF and is the first critical performance indicator of EVSM. UNICEF reported extremely high compliance in the completion and return of the VAR, which has facilitated investigation of shipping problems and has provided an overview of the performance of the vaccine supply system. However, the process of transferring the feedback reports to the governments through the national UNICEF offices needs improvement.

Conclusions:

- Although the effectiveness of EVSM has been well-established, progress in assessing primary stores of countries has slowed in the recent past. One proposal to accelerate progress was to make the execution of EVSM assessments a requirement of new vaccine introduction that is financed by GAVI.
- WHO should ensure that the Model Quality Plan, part of the EVSM package, be reviewed every two years to ensure consistency and incorporation of new technological or managerial developments.
- Professionally designed computerized software is proving to be an effective stock control method to facilitate vaccine management and reduce vaccine wastage. Such systems are becoming a feature of best-practice in the management of primary vaccine stores and, as such, should have standardized functional specifications.
- To speed up response time, VARS could be completed electronically. Analyses of the VARs should be made available to members of the ICC, and the appropriate offices of the Ministry of Health in the arrival country. Should corrective action be necessary (by the supplier or by UNICEF), a detailed description of necessary actions should be included.

Satellite Sessions—Measles Aerosol Delivery/Switching from Kerosene to Gas Refrigerators in Africa

Satellite sessions were held in parallel for voluntary attendance by interested participants in the evening on two subjects:

Measles aerosol delivery was introduced and was the subject of a later presentation by Dr Anna Maria Henao Restrepo of WHO. The session concerned the development and introduction of aerosol delivery devices for standard measles vaccine administered by inhalation. Three aerosol delivery devices from different manufacturers were presented at the meeting. During the satellite session, participants were invited to raise their concerns and questions relating to the use of such devices in immunization programs. Responses were collected, structured, and answers to queries provided the following day.

Switching refrigerators from kerosene to gas is an issue that particularly affects Africa where over 60% of refrigerators operate in areas where there is no regular supply of electricity and where for many years kerosene has been the preferred source of energy for refrigerators. The case for switching

to gas was made by Dr. Emmanuel Taylor, UNICEF–Ethiopia, citing the improved performance and temperature control of gas-powered equipment, their lower burden of maintenance, and reduced fuel cost. However, the critical success factor for gas remains its availability and reliability of supplies to African countries, a subject much discussed in this session. While the whole-life cost of gas-powered refrigerators has been less than solar (PV) refrigerators, the purchase price of solar systems are set to decline with new battery/regulator-free solar refrigerators.

Conclusions:

- WHO will use the feedback generated on aerosol measles vaccine delivery devices to work with manufacturers to refine the designs and to select the most promising devices for field evaluation and eventual introduction.
- In countries where the supply of bottled gas is ubiquitous and sufficiently reliable, gas-powered refrigerators clearly out-perform kerosene powered refrigerators and are more cost-effective.

2. Equipment Management

The Equipment Management session focused on two topics:

- Inventories and Needs Assessment
- Product Performance, Quality, and Safety (PQS)

Inventories and Needs Assessment

Inventories of cold chain equipment being used in health facilities throughout the health system are the foundation for multi-year planning for the replacement of old equipment and for the expansion of the system to accommodate new vaccines. An important component of the comprehensive Multi-Year Plan (cMYP) is the planning and costing of equipment replacement according to age, the addition of equipment to expand capacity, changes in the immunization program, and other selected parameters. This last function of inventories is currently receiving much attention as the number and volume of new vaccines strains the capacity of the cold chain.

The introduction of new vaccines, such as the rotavirus introduction in Latin America, impact cold chain and logistics in several ways:

- The packed volume of new vaccines per dose may be greater than that declared by manufacturers, so proper planning is difficult.
- Cold chain capacity is insufficient to accommodate these new vaccines. Increased supply frequency might be one way to handle increased volume, but may not resolve the problem.
- Cold chain capacity can be further challenged by other activities such as measles campaigns that generate increased volumes of vaccine.
- Packaging of new vaccines may not be compatible with existing equipment such as vaccine carriers: for example, one manufacturer's rotavirus vaccine did not fit in the traditional vaccine carriers used within the country.

The principle characteristics of an inventory system designed to meet current needs includes:

- Clear and tested SOPs for data collection and routine maintenance of the database.
- Ability to forecast the impact that the introduction of new vaccines would have on existing storage capacity
- Forecast of new equipment needs and related budget needs over several years, taking into account replacement and changes in program strategy
- Guidance on the selection of new equipment based on past performance and capacity needs.

The revised Vaccine Volume Calculator, described by WHO in this session, and the inventory software developed in Peru are tools that facilitate these processes. The Vaccine Volume Calculator is now an interactive decision-making tool that assists planners in comparing the volume impact of different vaccine options. It provides information on bundling, supplies stored at ambient temperatures, and medical waste volume. This information can be combined with cold chain inventory data to plan cold chain improvements and develop budgets.

Conclusions:

- Existing inventory survey methodology and analytical software should be made available to other countries establishing inventory systems.
- Vaccine manufacturers, WHO/UNICEF, GAVI and countries need to anticipate well-in-advance of introduction, the impact of new vaccines on the cold chain, and work to diminish its negative impact.

Product Performance, Quality and Safety (PQS)

The new PQS consists of a set of Standard Operating Procedures, Performance Specifications and Standard Test Procedures that are designed to replace the WHO Product Information System that has been used since 1979. The PQS will provide a transparent system to ensure that the quality and performance of products selected for use in immunization services meets international norms agreed between WHO and GAVI partners. Although the PQS system remains a WHO priority, it is behind schedule. Final specifications are expected in 2007 and reference laboratories are currently being identified for accreditation. Reference laboratories will verify equipment according to the new specifications so that equipment may be pre-qualified and listed in a new database that will be placed on the WHO website.

Participants expressed frustration at the delay in the PQS process and the subsequent difficulties suppliers have in pre-qualifying their products. Products designed to meet new specifications of the PQS, as yet not finalized, are particularly affected. Consternation at the delay in implementing the new PQS prompted several organizations to publicly offer assistance in accelerating the process including IASIT, UNICEF/TACRO and PATH. Additionally, in order to accelerate the PQS process, encouragement was given to either simplify it or staff/fund it appropriately to meet the needs.

In order to certify locally produced products for purchase by its immunization programs, India proposes using laboratories accredited by national accreditation authorities whom are party to the mutual recognition agreement of the International Laboratory Accreditation Cooperation (ILAC). Equipment suppliers from certain developing countries stated the following:

- they lacked information and support to enable them to participate in the PQS and
- non-UN, country-level procurement agencies remain unaware of the PQS tools and how to become part of the process.

New cold chain products have been designed to meet new specifications in the PQS and are in the process of prequalification and introduction. Updates were provided in this session on advances in refrigeration technology for vaccines and a new range of products now available for temperature monitoring in the cold chain. Automatic thermostats not adjustable to the user and cold-climate features to prevent freezing are being introduced. A new category of solar refrigeration that no longer requires battery and regulator systems has been introduced. Existing battery-powered solar units will still be available. Electronic temperature recording has now become more reliable, more compact and less expensive, permitting a more complete history of temperatures to be recorded at every stage of the cold chain, even at peripheral health facilities.

Vaccine Vial Monitors meeting the new PQS norms have been used on vaccines for 10 years. 1.5 billion have been supplied, providing advantages such as extending outreach, reducing wastage,

enabling the multi-dose vial policy, improving stock management, and enhancing cold chain flexibility enabling a reduction in vaccine freezing. However, only 45 out of 71 WHO prequalified vaccine products apply VVMs, and PAHO countries do not yet use VVMs.[4]

Conclusions:

- Requests were made for WHO to clarify how the existing PIS system can be used in the interim, especially for new technologies that were not covered by the PIS system.
- Because many refrigerator manufacturers have developed new technologies to meet draft specifications in the PQS, they are anxiously awaiting the planned release of the final specifications prior to manufacturing scale-up.
- Global implementation of VVMs will increase if PAHO decides to use VVMs in the region of the Americas and if countries procuring vaccines from pre-qualified or local sources request VVMs on these vaccines.

3. Integrating Support Systems

A panel of speakers from Ghana, Mozambique, Nigeria and Uganda was constituted to discuss their experience following a presentation on Maternal and Child Health (MCH) Days in Africa. The benefits of combining immunization with the delivery of other interventions were described by several panel members, mainly focusing on the effect of combined delivery systems on demand in a campaign scenario. Only the MCH Days seemed to have been planned in a way that integrated delivery, logistics and supply systems although, as periodic 'campaigns', they have not proved to be a good platform for routine service delivery. There were no examples presented of routine service delivery being fully integrated within the annual direct micro-planning process.

Although there is clearly now some experience and anecdotal evidence on integrated service delivery and support systems, it was noted during the plenary discussion which followed the panel consultation, that little rigorous documentation of the costs and the public health benefits of this approach is available to assess the synergies that are created by an integrated approach.

Conclusions:

- There is a need to document in a more rigorous way the costs and the benefits of integrated service delivery and support systems. It should be determined whether synergies exist among the integrated activities and if they can be measured.
- To broaden and maximize the impact of integrating immunization with other health services, a holistic approach should be adopted, covering not only service delivery, but also planning, monitoring, supply logistics, etc. Services in other sectors than health may also be integrated in the support of health service delivery.

4. Research Update

The research update session was introduced with a presentation prepared by the GAVI Secretariat. The session then covered the following two topics:

- Towards less heat/freeze sensitive vaccines
- Administering vaccines without a needle

[4] It should be noted that over 90% of the vaccine products procured by UNICEF possess VVMs; many of the product without VVMs, while WHO pre-qualified, are not purchased by U.N. agencies.

The introductory presentation described the commitment of the GAVI Alliance to stimulate innovative solutions to 'downstream' programmatic challenges concerning program management, demand creation and supply issues. GAVI is currently exploring how this is best done and has proposed a funding mechanism to support innovation and operational research. Two options are currently being considered for this mechanism: a country-specific small grants program and/or a multi-country larger grants program, or a combination of the two approaches. Grants would be awarded to national and partner organizations and/or consortia to support country-level innovation and operational research for new goods, technologies, and services. Current thinking is that neither basic science nor product development will be supported through this mechanism[5].

Towards Less Heat/Freeze Sensitive Vaccines

Traditional EPI vaccines are separated clearly into two groups: a freeze-stable but heat-sensitive group (e.g. lyophilized vaccines and OPV) and a heat-stable but freeze-sensitive group (e.g. liquid vaccines with aluminum adjuvants). This divide is not likely to be as clear-cut with newer vaccines, especially with the way they are packaged for industrialized countries. Although many new vaccines have low sensitivity to heat and freezing, some new vaccines will not meet high standards of thermo-stability or be offered in an appropriate format. Some new vaccines still require special handling and voluminous storage capacity.

PATH reported on the status of research being conducted in conjunction with several vaccine manufacturers to find ways to make highly heat-and-freeze stable vaccines. Product presentations are an important part of the development process. For example, formats that avoid manual reconstitution and minimize vaccine wastage are preferable. Benefits include improved effectiveness, reduced wastage, and, by potentially taking stable vaccines out of the cold chain, increased capacity for new vaccines.

The Hep B, tetanus toxoid, diphtheria-tetanus families of vaccines are highly heat stable and have immediate potential to be taken out of the cold chain, thus increasing cold chain capacity for new vaccines that are less stable. Carefully designed programs would demonstrate the feasibility and benefits of storing stable liquid vaccines at higher temperatures (for example, in air conditioned rooms) or of taking these vaccines entirely out of the cold chain (e.g., during transport legs or for outreach). It may also be possible to take less stable products out of the cold chain at lower stages of the distribution process if standards of central storage are well-maintained.

The need to cool reconstituted vaccines at the point of use constrains the future of refrigeration-free vaccine delivery approaches in the future, but the elimination of ice as the method of cooling in transport would reduce the risk of freezing.

Conclusions:

- Research and development on "point-of-use vial coolers" may provide an alternative to ice for cooling individual vials of reconstituted vaccine for up to 6 hours, thus permitting these vaccines to be used with others in an out-of-the-cold-chain, ice-free strategy.
- Demonstration programs are necessary to build the evidence required for policy changes affecting regulation and show vaccine manufacturers and country programs the benefits of, and interest in, stabilized vaccines. Because of their heat stability, Hep B, tetanus toxoid, diphtheria-tetanus families have immediate potential to be taken out of the cold chain.
- Maintenance of high standards of primary vaccine storage (EVSM) permits greater flexibility in the field to handle vaccines to the limit of their thermo-stability.

[5] GAVI is interested in the comments and ideas of TechNet members on these funding mechanisms and their implementation. Please address queries or ideas to Michel Zaffran at mzaffran@gavialliance.org

Administering Vaccines Without a Needle

WHO research activities have established that aerosol delivery of measles vaccine is as safe and immunogenic as syringe delivery. Aerosol delivery uses current formulations of measles vaccine, will follow current immunization schedules, should provide easier delivery and may not increase system costs. Elimination of the syringe will reduce disease transmission and should simplify disposal. The range of device design targets include single-use autodisable, simplicity, mechanical or solar power, low maintenance, reliability, and biodegradability. Reducing time per delivery, adverse events to staff, and number of staff required are current challenges.

Jet injection has been absent from immunization services in developing countries for several years due to the risk of cross-infection associated with injectors with a re-usable fluid pathway. New disposable cartridge jet injectors that have no risks of cross-infection are being developed and tested for routine immunization. PATH reported that the intra-dermal route for jet injection is being evaluated for its potential to enhance immune response and reduce vaccine dose. A reduced vaccine dose, if achievable with multiple vaccines, could impact both vaccine supply security and vaccine cost. An existing device on the market in the USA is being modified to improve usability and reduce costs. The new device uses an autodisable disposable cartridge and is currently undergoing field studies in three countries. Immune response and site reactions are critical outcomes.

Conclusion:

- The continued feedback and input of TechNet members is needed to help assess the field acceptability of designs of aerosol vaccine delivery devices and disposable cartridge jet injection devices.

5. TechNet Business

The e-forum of TechNet continues to be well-subscribed at about 1000 members and the number of postings sent to members increased again this year. If the trend is maintained, postings will reach a record number with much reduced variation between months. The most significant change has been the increased quantity of technical information distributed or downloaded, which may explain the upward trend in subscriptions over the last two years. There was some discussion of the need to structure, screen and focus the choice and evolution of discussion threads. But a majority of participants seemed to favor continuation of the Forum and point to a de-regulated format. More participation by WHO would assure that discussion threads do not simply ‘die’ without resolution. These issues will again be assessed by a survey being conducted by WHO among TechNet members.

Regarding the value of the TechNet meeting, appreciation was expressed about the information update and technical exchange functions of TechNet. However, the absence of formal TechNet recommendations was regretted, as the key value to some is in contributing to the development of policy. Participants felt that the absence of a clear pathway towards the setting and modification of global and operational policies by WHO prevents TechNet from taking a clear role in the process alongside other stakeholders. The reappearance of old, unresolved issues in the agenda -- particularly the issue on vaccine freezing -- was blamed by some on the lack of institutional memory, with WHO being particularly criticized for its perceived neglect in this arena. A call was made for a fresh approach in the next meeting, which participants encouraged should be linked to the SIGN meeting, although some preferred a three-day format.

Conclusions:

- A decision was taken to plan for the next TechNet21 meeting in 18-24 months time and organize it again to occur with the SIGN meeting
- The e-forum of TechNet21 is appreciated and should continue in its current format, assuming this is confirmed by the forthcoming survey of subscribers

ANNEX A: Meeting Agenda

Day 1		Thursday, 26 October
Chair: R. Eggers/WHO		
08:00 – 09:00	***Registration***	
09:00	**INTRODUCTION**	
09:00 – 09:30	Welcome and introductions	R. Eggers/WHO
09:30 – 09:40	Review outputs from TechNet 2004, Antalya	R. Eggers/WHO
09:40 – 09:55	Americas regional overview of current priorities	J. Fitzsimmons/PAHO
09:55 – 10:00	Presentation of the TechNet agenda	S. Koné/WHO
10:00	**Session 1: VACCINE MANAGEMENT**	
10:00 – 10:05	Introduction to Vaccine Management session	R. Eggers/WHO
10:05 – 10:15	Report on the cold chain workshop in Panama	P. Froes/UNICEF
Topic 1.1: Vaccine freezing avoidance		
10:15 – 10:35	Vaccine Freeze Study protocol – example from Bolivia	R. Quiroga/UNICEF P. Froes/UNICEF
	(15 min) Tea/Coffee break	
10:50 – 11:05	Overcoming vaccine freezing in Indonesia	A. Widjaya/PATH Indonesia and J. Soepardi/ Indonesia MOH
11:05 – 11:15	WHO “Aide Memoire” on Vaccine Freezing	S. Wiersma/CDC
11:15 – 12:15	Plenary discussion on Vaccine Freezing avoidance	
	(1 hour) Lunch break	
Topic 1.2: Vaccines out of the cold chain		
13:15 – 13:30	Heat/freeze sensitivity of current vaccines: plenary exercise and presentation	J. Milstien/WHO
13:30 – 13:45	Hepatitis B vaccine out of the cold chain in China	L. Wang/PATH
13:45 – 14:00	Out of cold chain experience in polio eradication operations: Sudan and other African countries	H Everts/WHO (given by R. Davis/UNICEF)
14:00 – 14:30	Plenary discussion on Vaccines out of the cold chain	

Day 1	Thursday, 26 October	
Topic 1.3: EVSM primary stores assessment		
14:30 – 14:45	Global summary of implementation status of EVSM	S. Kone/WHO
	(15min) Tea/Coffee break	
15:00 – 15:15	Impact of assessments in the EUR region	D. Maire/WHO
15:15 – 15:30	Impact of assessments in the EMR region, focus on vaccine stock management	M. Haghgou/WHO, M.S. Mehanni/MOH-Sudan
15:30 – 15:45	UNICEF and country feedback on the vaccine arrival reporting system (VAR)	A. Salovaara/UNICEF Supply Division
15:45 – 16:15	Plenary discussion on Topic 1.3	
16:15 – 17:10	Facilitated discussion of Vaccine Management conclusions and recommendations	R. Eggers/WHO
Satellite Sessions		
17:10 – 18:40	Satellite session: Measles aerosol (Salon Alameda 5)	A-M. Henao Restrepo/WHO
17:10 – 18:40	Satellite session: Kerosene to Gas in Africa (Main Conference Room)	E. Taylor/UNICEF
19:00	Cocktail Reception	

Day 2		Friday, 27 October
Chair: R. Davis/UNICEF		
08:30	**Session 2: EQUIPMENT MANAGEMENT**	
08:30 – 08:35	Introduction to Equipment Management session	R. Davis/UNICEF
Topic 2.1: Equipment inventories and needs assessment		
08:35 – 08:40	Introduction to equipment inventories and needs assessment	J. Lloyd/PATH
08:40 – 08:55	Assessing storage capacity needs using the revised Vaccine Calculator	S. Koné/WHO
08:55 – 09:10	Equipment inventory assessment, maintenance and planning in Peru	F. Peres/UNICEF
09:10 – 09:25	Impact of Rotavirus vaccine introduction on cold chain equipment needs in Brazil and Venezuela	J. Fitzsimmons/PAHO
09:25 – 09:50	Plenary discussion on Topic 2.1	
Topic 2.2: Product Performance, Quality and Safety		
09:50 – 10:05	Introduction to WHO Performance, Quality and Safety system (PQS)	A. Garnett
10:05 – 10:25	New temperature monitoring devices & refrigeration products	T. Hart/ITPI; C. Nelson/PATH
10:25 – 10:40	Cold chain procurement & accredited lab testing – experience in India	V. Singh/India MOH
	(15min) Tea/Coffee break	
10:55 – 11:05	Vaccine Vial Monitors: Status report, 10 years after introduction	D. Kristensen/PATH
11:05 – 11:35	Plenary discussion of Topic 2.2	
11:35	**Session 3: INTEGRATING SUPPORT SYSTEMS**	
11:35 – 11:40	Introduction to Integrating Support Systems session and appointment of panel	R. Davis/UNICEF
Topic 3.1: Opportunities for delivering other interventions with immunization		
11:40 – 11:55	Experience with using immunization to deliver multiple services	R. Davis/UNICEF
11:55 – 12:25	Panel members recount & discuss field experience	R. Davis/UNICEF (Moderator) M.Diameni/EPI, Nigeria P.Zaninka/ EPI, Uganda S.Diamenu/ EPI, Ghana
12:25 – 13:00	Plenary discussion on critical actions to integrate support systems	
	(1 hour) Lunch break	

Day 2		Friday, 27 October
14:00	**Session 4: RESEARCH UPDATE**	
14:00 – 14:05	Introduction to Research session	J. Lloyd/PATH
14:05 – 14:20	How can GAVI support innovation in immunization?	S. Landry/Gates Foundation
Topic 4.1: Towards less heat/freeze sensitive vaccines		
14:20 – 14:35	Converting vaccines used in developing country immunization programs to thermo-stable formats	D. Kristensen/PATH
14:35 – 14:50	Review of heat/freeze sensitivity of new vaccine products	J. Milstien/WHO
14:50 – 15:20	Plenary discussion on Topic 4.1	
Topic 4.2: Administering vaccines without a needle		
15:20 – 15:35	Aerosol administration of measles vaccine	A-M. Henao Restrepo/WHO
15:35 – 15:50	Intra-dermal jet injection with dose reduction	D. Zehrung/PATH
15:50 – 16:05	Plenary discussion on Topic 4.2	
	(20 min) Tea/coffee break	
16:25	**Session 5: TECHNET BUSINESS**	
16:25 – 16:40	TechNet E-Forum annual report	C. Letarte/WHO
16:40 – 17:10	Plenary discussion on TechNet future	R. Eggers/WHO
17:10 – 17:30	Review of overall meeting conclusions and outcomes	C. Nelson/PATH
17:30	Official Closing SIGN/TECHNET meetings	Ministry of Health, Mexico

ANNEX B: List of Participants

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26–27 October 2006
Mexico City

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