MINISTRY OF HEALTH SRI LANKA

NATIONAL STD/AIDS CONTROL PROGRAMME

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REPORT

International Training on Data Management and Analysis of HIV/AIDS Data

16-18, June 2019, Chennai/India

Organized by

National STD/AIDS Control Programme (NSACP), Sri Lanka

&

The Voluntary Health Services (VHS), India

Supported by **Centers for Disease Control and Prevention (CDC/DGHT-India)**

(VHS-CDC Project)

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Report Title	:	International Training on Data Management and Analysis of HIV/AIDS Data – Training Report
No. of pages	:	121 pages including wrapper pages
Year of Publication	:	June 2019
Technical Guidance & Mentoring team	:	Dr Joseph D Williams, Director Projects, VHS Dr Ariyaratne Manathunge, Consultant-Venereologist, SIMU, NSACP
Documented by	:	Dr T Ilanchezhian, Senior Technical Advisor, VHS-CDC Project Ms T Sudha, Senior Programme Associate, VHS-CDC Project
Designed by	:	Ms T Sudha, Senior Programme Associate, VHS-CDC Project
Photo Courtesy	:	Dr Ariyaratne Manathunge, Consultant-Venereologist, NSACP Dr S Muraliharan, Medical Officer/Planning, NSACP
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Acronyms

ACASI	Audio Computer Assisted Self Interview
AIDS	Acquired Immunodeficiency Syndrome
ANC	Ante-Natal Care
AR	Attributable Risk
ART	Anti-Retroviral Treatment
CAPI	Computer Assisted Personal Interviewing
CDC	Centers for Disease Control and Prevention
CON'T	Continued
CSS	Cross-Sectional Study
CSS	Case-Control Study
C&S	Care & Support
CST	Care, Support & Treatment
DD	Data Dictionary
DGHT	Division of Global HIV & TB
DM	Data Management
DQA	Data Quality Assurance
EPI Unit	Epidemiology Unit
FcFT	Facilitator cum Feedback Team
FGD	Focus Group Discussion
FSW	Female Sex Worker
GIS	Geographical Information Systems
HIV	Human Immunodeficiency Virus
HSS	HIV Sentinel Surveillance
IBBS	Integrated Biological and Behavioral Surveillance
IDI	In-Depth Interviews
IEC	Information Education Communication
ITDM	International Training on Data Management
KAP	Knowledge Attitude and Practice
KP	Key Population
Litt.	Literature
M&E	Monitoring and Evaluation
MSM	Men who have Sex with Men
NSACP	National STD/AIDS Control Programme
OR	Operational Research
OR	Odds Ratio

PAR	Population Attributable Risk
PEPFAR	President's Emergency Plan for AIDS Relief
PHI	Public Health Inspector
PHLT	Public Health Laboratory Technician
PHNS	Public Health Nursing Sister
PLHIV	People Living with Human Immunodeficiency Virus
PM	Project Management
PMTCT	Prevention of Mother To Child Transmission
PPT	Power-Point Presentation
PrEP	Pre-Exposure Prophylaxis
PRT	Peer Review Team
RCT	Randomized Controlled Trial
REC	Research Ethics Committees
RR	Risk Ratio / Relative Risk
STD	Sexually Transmitted Diseases
STI	Sexually Transmitted Infections
SI	Strategic Information
SIMU	Strategic Information Management Unit
TA	Technical Assistance
TB	Tuberculosis
TNA	Training Needs Assessment
VHS	Voluntary Health Services
Vs.	Versus
WHO	World Health Organization

Foreword

Dr Rasanjalee Hettiarachchi
Director
National STD/AIDS Control Programme (NSACP)
Sri Lanka

I am happy to write a foreword to this training report on the *"International Training on Data Management and Analysis of HIV/AIDS Data"* organized by National STD/AIDS Control Programme (NSACP), Sri Lanka and The Voluntary Health Services (VHS), India - Supported by Centers for Disease Control and Prevention (CDC/DGHT-India) - (VHS-CDC Project) from 16-18, June 2019 in Chennai, India. The training was conducted with the following objectives:

- To build the understanding of the NSACP staff on the programmatic & epidemiological databases under NSACP;
- To introduce the basic principles and approaches of data management;
- To orient the participants on various methods of data quality assessment, validation & adjustments;

- To build the basic skills in statistical data analysis of program and epidemiologic data;
- To briefly introduce various software packages used for statistical analysis; and
- To improve the presentation, dissemination and use of data for programmatic purposes.

Training and capacity building are the key elements of VHS-CDC Project in providing Technical Assistance to NSACP on Strategic Information with the support of CDC/DGHT-India. This is one of the series of training activities planned and conducted according to the findings of a formal assessment of training and capacity building.

This training on Data Management was conducted for SIMU, NSACP and Peripheral STD Clinics team through participatory methodologies, contributed for enhancing knowledge and skills and supported with

hands-on training. This training further enhanced to build the data skills of participants in order to enhance the data quality, improve the data analysis and strengthen the use of HIV/AIDS data for epidemiological & programmatic decision making.

This training was very much useful for the participants in learning the skills of Basics of Data & Data Quality; Analysis of Data using Excel & SPSS software; and Presentation, Communication & Use of Data.

Along with the training, VHS-CDC Project has also facilitated exposure visit to understand the best practices in HIV/AIDS and Data Management.

This training report contains the training goal, objectives, profile of participants, process adopted including proceedings, steps involved in Data Management, guidelines & suggestions, key outcomes, feedback, recommendations & follow-up plans and other relevant details.

On behalf of NSACP, I wish to express my sincere thanks to Dr Joseph D Williams, Director Projects-VHS for his immense support in ensuring partnerships and continue to support in providing TA. We also appreciate the strategic support being extended by Dr T Ilanchezhian, Senior Technical Advisor, VHS-CDC Project for coordinating with NSACP and SIMU in providing technical assistance on strategic information and managing and coordinating this international training program.

Thanks to VHS-CDC Project team, resource persons/ trainers for the support extended in successful conduct of this training.

My gratitude should go to Dr Melissa Nyendak, Country Director, Division of Global HIV AND TB, CDC India for the strategic leadership and guidance in providing Technical Assistance to NSACP, Ministry of Health, Nutrition & Indigenous Medicine, Govt. of Sri Lanka and CDC team for their support and guidance in these technical assistance initiatives.

Appreciate Dr Ariyaratne Manathunge, Consultant-Venereologist & Coordinator-SIMU, NSACP for his strategic leadership in coordinating the technical cooperation initiatives on TA to NSACP on SI with VHS-CDC Project, CDC team and contributions on meaningful, successful conduct of the International Training on Data Management and Analysis of HIV/AIDS Data.

Acknowledgement

Dr Joseph D Williams
Director Projects
The Voluntary Health Services (VHS)
Chennai/INDIA

The Voluntary Health Services (VHS-CDC Project) with the support of Centers for Disease Control and Prevention (CDC/DGHT-India) in partnership with National STD/AIDS Control Programme (NSACP), Ministry of Health, Nutrition & Indigenous Medicine, Govt. of Sri Lanka is providing TA to NSACP on Strategic Information through a technical partnership initiative on following areas:

- Enhance SIM Unit capacity to utilize electronic and manual program data for decision making;
- Improve capacity of SIM Unit to carryout management, analysis, documentation, and dissemination of summary program data reports;
- Improve capacity of SIM Unit to conduct and disseminate results of operational research; and
- Consultation with stakeholders on monitoring & documentation of accomplishments & sustainability plans.

As part of this technical cooperation initiatives, VHS-CDC Project is providing capacity building initiatives, system strengthening, documentation and dissemination. In accordance with the capacity building initiatives, the project is organizing a series of training programs. VHS-CDC Project with the support of CDC/DGHT-India and in partnership with NSACP has organized an *"International Training on Data Management and Analysis of HIV/AIDS Data"* for three days and exposure visit on HIV/AIDS and Data Management.

To support this training, the project has developed the agenda based on needs assessment, resource kit (with presentations, exercises, tools and resource materials), identified and engaged international professional trainers along with VHS-CDC Project team and conducted the training program by adopting participatory approaches supported with intensive hands-on training. This training and exposure visit

was conducted with the great participation and contribution from SIMU-NSACP.

VHS-CDC Project has documented the training program and brought out this report titled "*International Training on Data Management and Analysis of HIV/AIDS Data*". This training report contains a brief on the key stakeholders and organizers involved in conducting this training program, CDC support on Technical Assistance to NSACP on Strategic Information; an overview of training on Data Management; (objectives & methodologies of training; details & profile on participants, facilitators & coordination team; Pre & Post-Training Assessment analysis & Post-Evaluation analysis; feedback of participants; and recommendations), day wise proceedings; exercise formats; outcome of the training; and follow-up plans. This training report comprehensively captured the overall plan, process and outcomes of the training program.

We thank Dr Rasanjalee Hettiarachchi, Director-NSACP for her leadership, supportive guidance in technical cooperation initiative and participation in this training.

We wish to acknowledge & thank Dr Ariyaratne Manathunge, Consultant - Venereologist, NSACP for his continuous support, strategic guidance and cooperation being extended in execution of this technical cooperation initiatives. Appreciate his strenuous support in systematic planning, serving as a facilitator and contributing for

successful conduct of the training. Acknowledge the support extended by SIMU team, senior consultants in NSACP, SI team in peripheral STD clinics and key stakeholders.

We sincerely thank & acknowledge the technical guidance & support being extended by Dr Melissa Nyendak, Country Director, Division of Global HIV AND TB, CDC India, Mr Lokesh Upadhyaya, Associate Director for Management & Operations, CDC/DGHT-India and CDC team. Wish to thank Ms Srilatha Sivalenka, Public Health Specialist, CDC/DGHT-India for her support in this cooperation initiatives.

We would like to thank Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project for his support and contribution in developing resource materials and conducting the training. We acknowledge Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project and Ms Ezhilarasi, Biostatistician, VHS for their contribution & support extended in conducting & facilitating the sessions.

We would like to thank Dr T Ilanchezhian, Senior Technical Advisor for his initiative, systematic support, planning and conducting this training and overall coordination.

We thank Ms T Sudha, Senior Programme Associate, VHS-CDC Project for her support extended in preparations for conducting the training and communication, consolidation of the report and designing of this document.

We thank Mr B Kamalakar, Finance Controller and Mr S Sathyaraju, Associate Manager Finance, VHS-CDC Project and admin team for their support in logistics coordination, finance management & other arrangements.

We thank Mr Suneel Kumar, M&E Officer, Mr Raj Raman, Technical Lead, VHS-CDC Project and Dr A Vijayaraman, Senior Consultant, VHS for participation & support.

Overall, this training program was successfully, meaningfully and effectively conducted. We greatly appreciate the fullest cooperation extended by NSACP & SIMU in this technical cooperation initiatives and in conducting this training program cum exposure visit.

Chapter 1: Introduction

National STD/AIDS Control Programme (NSACP), Sri Lanka: National STD/AIDS Control Programme (NSACP), Govt., of Sri Lanka is a comprehensive program aimed at prevention and control of STDs & HIV/AIDS being implemented by the Ministry of Health, Nutrition & Indigenous Medicine in all the provinces of Sri Lanka.

The key functions of NSACP includes: Preventive services; Diagnosis treatment and care services for HIV; Strategic Information Management; and Health Systems Strengthening. The country is currently implementing its National Strategic Plan (NSP) 2018-2022 for HIV/AIDS control. NSP 2018-22 aims at ending AIDS in Sri Lanka by 2025. NSACP networks with 31 full time, 20 branch STD Clinics and 21 ART centres.

Strategic Information Management Unit (SIMU): The Strategic Information Management (SIM) System is the key system that is responsible for providing information and evidence to guide the country in its health policy and planning, resource allocation, program management, service delivery and accountability. The monitoring and evaluation of the STD/HIV treatment & care and Laboratory services of NSACP is currently carried out using a manual paper-based system. Currently, SIMU-NSACP is in the process of developing an automated Electronic Information Management System (EIMS) which will provide timely information for efficient patient management and monitoring of HIV care and ART Program.

Some of the **unique strengths of Strategic Information (SI) system** includes: National HIV Monitoring & Evaluation Plan 2017-22 that outlines the broad vision, objectives, approaches and tools used in the program; standardized forms and formats specific to each field for feeding EIMS; redesigned the website for transparency and dissemination; bringing out comprehensive annual report; long-standing, dynamic leadership of SIM unit with strong institutional memory as a great asset to NSACP; good time series data on HIV prevalence through HIV Sentinel Surveillance and IBBS; system well-positioned to be evolved into a strong HIV case reporting system; and replacing the paper-based system with an EIMS for efficient patient management and monitoring of HIV care & ART program.

PEPFAR/India: The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) provides strategic, targeted support to strengthen the quality and impact of India's strong government-led response to HIV/AIDS. India's epidemic is concentrated among key populations, which include sex workers and their clients, men who have sex with men, transgender individuals, people who inject drugs, and mobile populations. The PEPFAR/India provides Technical Assistance (TA) to the Government of India (GoI) and its partners, to maximize impact on the HIV epidemic in India, by strengthening capacity in critical program areas within GoI, the private sector, and with civil society partners. PEPFAR/India has two implementing agencies in India: Centers for Disease Control and Prevention (CDC) and U.S. Agency for International Development (USAID).

CDC/DGHT-India: The U.S. Centers for Disease Control and Prevention's Division of Global HIV and Tuberculosis (DGHT) Program in India has focused its efforts on preventing new infections, increasing access to services for persons living with HIV and tuberculosis (TB), supporting a single monitoring and evaluation system, and strengthening the work of civil society organizations. DGHT provides TA on a broad range of issues, including prevention of HIV (including parent to child transmission), addressing care and treatment needs of key affected populations - people who inject drugs, men who have sex with men, commercial sex workers, trans-gender individuals, addressing comorbidities of TB and HIV, strengthening laboratory systems, blood safety, and strategic information.

The Voluntary Health Services – Cooperative Agreement (CoAg.,) implementing partner of CDC for providing TA on SI: Voluntary Health Services (VHS) was established in 1958 by Dr K S Sanjivi, an eminent physician, and visionary leader. Today, VHS is a 465 bedded multi-specialty tertiary teaching hospital guided by the philosophy of "*unto the last*". VHS is registered as a non-profit society under the Indian Registration of Societies Act, 1860. Since 1995, VHS with 60 years of committed service has been at the forefront of managing comprehensive community health and STI/HIV prevention programs. VHS has wide range experience in implementing innovative
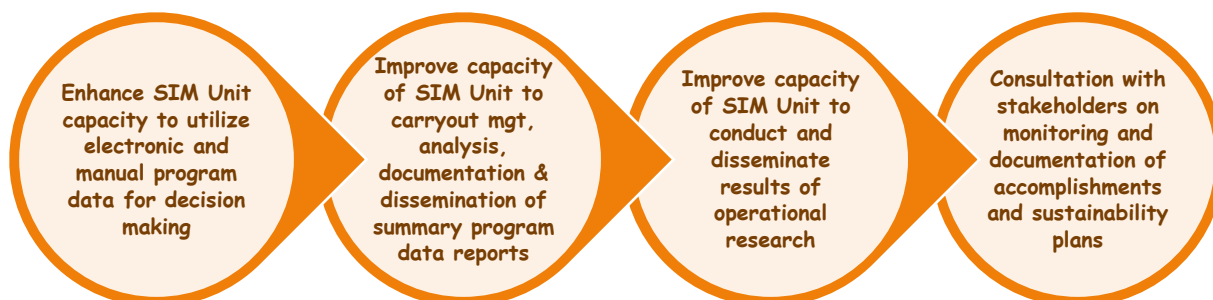
HIV/AIDS prevention, care and support programs, building the capacity of Civil Society Organizations (CSOs), training of Health Care Providers (HCPs), strengthening Strategic Information (SI), providing Technical Assistance (TA), facilitating knowledge transfer, etc. Over 25 years, VHS has been the nodal agency for implementing HIV/AIDS prevention, care, support and treatment programs in Tamil Nadu, partnering closely with the Government of India (GoI), National AIDS Control Organization (NACO), State AIDS Control Societies (SACS), line departments and other key stakeholders.

VHS has implemented several large, multi-site and multi-layered donor-funded programs including the USAID supported AIDS Prevention and Control (APAC) project; Bill and Melinda Gates Foundation (BMGF) supported Tamil Nadu AIDS Initiative (TAI) and GFATM supported Multi-country South Asia-Diversity in Action (MSA-DIVA) project. Currently, managing Centers for Disease Control and Prevention (CDC), Department of Health and Human Services, United States Government supported Technical Assistance to NACP IV. VHS has been involved in knowledge sharing initiatives both within the country and internationally. Through the USAID supported South-To-South HIV/AIDS Resource Exchange (SHARE) project, VHS provided TA to 12 selected sub-Saharan African nations and promoted bi-directional knowledge transfer of high-impact policies, practices and innovations for strengthening the HIV/AIDS program and improving health outcomes.

CDC support on Technical Assistance to NSACP on Strategic Information: The PEPFAR is a United States Governmental initiative to address the global HIV/AIDS epidemic. PEPFAR and CDC is providing support to NSACP through its' Cooperative Agreement implementing partner The Voluntary Health Services (VHS) through its VHS-CDC Project. Overall goal is to enhance the contribution of Strategic Information (SI) towards the National HIV/AIDS response in Sri Lanka by facilitating Technical Assistance (TA) and cooperation on identified priority areas. Key strategies on TA to NSACP being adopted will include Evidence-based TA; Horizontal exposure & vertical expertise; Bottom up strategy; and Comprehensive in outlook.

VHS-CDC Project and NSACP jointly facilitated the exploratory visits, inter-agency visits, interactions with senior officials at Ministry & NSACP, key stakeholders and facilitated field visits. Through this process, CDC, VHS-CDC Project and NSACP jointly identified the specific areas of TA on SI. For facilitating Technical Cooperation Initiatives, Letter of Intent (LoI) was signed between Ministry of Health, Nutrition and Indigenous Medicine, Govt. of Sri Lanka and CDC/DGHT-India during February 2018.

NSACP and VHS-CDC Project jointly held discussions and identified TA areas for support and developed a comprehensive technical assistance plan on the following four broad areas:

Enhance SIM Unit capacity to utilize electronic and manual program data for decision making

Improve capacity of SIM Unit to carryout mgt, analysis, documentation & dissemination of summary program data reports

Improve capacity of SIM Unit to conduct and disseminate results of operational research

Consultation with stakeholders on monitoring and documentation of accomplishments and sustainability plans

As part of this TA initiatives, VHS-CDC Project is providing capacity building initiatives, system strengthening, documentation and dissemination. In accordance with the capacity building initiatives, the project is organizing a series of training programs which includes:

- Training on operational research methodology (qualitative & quantitative).
- Enhance capacity to write abstracts for presentation at conferences.
- National training programs on data management and epidemiologic analysis for SIM and local reporting units.
- Training on DHIS2 for data analysis and effective program planning (to align with national and international requirements).
- National Training on Data Management for Public Health Inspectors (PHIs) and Consultants/ Medical Officers from Peripheral STD Clinics.

Considering the overall capacity plans evolved, VHS-CDC Project has organized "International Training on Data Management and Analysis of HIV/AIDS Data" for NSACP, SIMU and Peripheral STD Clinics team.

Chapter 2: Training on Data Management & Analysis of HIV/AIDS Data – An Overview

2.1. Training – An overview

"International Training on Data Management and Analysis of HIV/AIDS Data" was organized from 16-18, June 2019 at Ball Room Hall, Hotel Hyatt Regency, Chennai/ India for delegates from NSACP, SIMU, Epidemiology Unit and representatives from Peripheral STD Clinics. This training was jointly organized by NSACP, MoH-GoSL and VHS-CDC Project with the support of CDC/DGHT-India.

Goal

To build the data skills of NSACP staff in order to enhance the data quality, improve the data analysis and strengthen the use of HIV/AIDS data for epidemiological & programmatic decision making under NSACP

Objectives

- To build the understanding of the NSACP staff on the programmatic & epidemiological databases under NSACP
- To introduce the basic principles and approaches of data management
- To orient the participants to the various methods of data quality assessment, validation & adjustments
- To build the basic skills in statistical data analysis of programme and epidemiologic data
- To briefly introduce various software packages used for statistical analysis
- To improve the presentation, dissemination and use of data for programmatic decision making

Training Methodology

- Active Learning through discussions & review of examples & case studies
- Learning by Doing
- Individual Hands-on/ Practical Exercises
- Group Exercises
- Parallel work on selected data

2.2.   Participants

In consultation with SIMU, based on the criteria, SIMU-NSACP has identified and nominated 15 participants from NSACP, SIMU & Peripheral STD clinics for the training program and VHS-CDC Project capacitated them on Data Management. The category of participants are: Director-NSACP, Consultant-Venereologist, Consultant-Epidemiologist, Medical Officer/ Planning, Medical Officer/ Informatics, Acting Venereologists, Senior Strategic Information Officer, Public Health Nursing Sisters, Public Health Inspectors, Development Officer & Pharmacist.

The criteria adopted for selection of participants will include but not limited to:

- At present, the person should directly work in SIMU, NSACP and Peripheral STD clinics.
- Plans to continue to work in the same position.
- Interest in undertaking data collection, reporting, analysis & presentation of HIV/AIDS data.
- Person who manages the data and willing to use the data for programmatic decision making.
- Directly/ indirectly involved in data management, research, documentation & dissemination.
- Agreeing to participate and complete follow-up actions as evolved in the training program.
- Willing to learn through training and mentorship.

Overall, the classification of the participants will include:

Category	No. of participants
Participants represented from:	
NSACP	2
SIMU	5
Peripheral STD Clinics	8
Total	15
Gender:	
Female	8
Male	7
Total	**15 participants**

The *list of participants* undergone the training is given below:

S. No	Name, Designation and Address of the participant	Contact number & Email ID
1	Dr. R. Hettiarachchi, Director/ NSACP	0718147182 hrasanjalee@yahoo.com
2	Dr K A M Ariyaratne, Coordinator Strategic Information/NSACP	0777078443 ariyaratne1@gmail.com
3	Dr S. Muraliharan, MO/Planning/SIM unit/NSACP	0772920371 vmsmurali@yahoo.com
4	Dr L. Rajakaruna, MO/Informatics/SIM unit/NSACP	0777854477 lahirurajakaruna@gmail.com
5	Dr S. Beneragama, Epidemiologist/NSACP	0714447520 sbeneragama@hotmail.com
6	Mr Lakshan Fernando, Senior Strategic Information officer/SIM unit, GFATM	0777475778 lakshanlsf@gmail.com
7	Dr. Piyumi Perera, Acting Venereologist /SIM unit/NSACP	0772352785 piyumipp@gmail.com
8	Mrs. K Rajakaruna, Public Health Nursing Sister/ SIM unit/NSACP	0718113866 Jayanaka123@gmail.com
9	Dr Indika Malwatte, Acting Venereologist/STD clinic, Hambanthota	0776098552 indika_malwatta@yahoo.com
10	Dr D K J Thanthree, Acting Venereologist /NSACP	0713216647 drdamindu@gmail.com
11	Mr P K N S P Senevirathne, Public Health Inspector /NSACP	0757988029 senevipkns@gmail.com
12	Ms Chamini Lakpriya, Pharmacist/NSACP	0712295262 chamini88@gmail.com
13	Mrs. Chandima Nimali Perera, Development officer/SIM unit/NSACP	0703950330 pereranimali12@gmail.com
14	Mr P.A.P. K Sadaruwan Wijerathne, Public Health Inspector /HIV clinic/NSACP	0710542286 sandaruwan.keerthi@gmail.com
15	Ms JAYANTHILAGE Indrani Kulathunge, Public Health Nursing Sister/ STD clinic, Ragama	0729120046 ikulatungaja@gmail.com

2.3. Facilitators & Coordination Team

VHS-CDC Project has undertaken strategic and systematic efforts in identifying resource persons for facilitating and coordination of the entire training program. Considering this, VHS has undertaken efforts such as: secondary review, referral, use of VHS database of consultants, google search and other aspects. The criteria considered in selecting the facilitators may include but not limited to:

- Minimum 15 years of experience in designing and conducting the training programs at national level / international level.
- Experience of the consultants in conducting training on Data Management.
- Ability of the consultant in developing resource materials in accordance with training needs.
- Understanding of the country epidemic situation and systems in NSACP.
- Credibility of the trainers with acceptability among the stakeholders.
- Understanding and ability to coordinate between the facilitators.
- Willingness to adopt participatory and innovative methodologies including providing hands-on training.
- And other aspects.

The project has undertaken systematic, coordinated efforts in identifying, prioritizing and finalizing the facilitators and co-facilitators for conducting the training program.

Facilitators: VHS-CDC Project under the leadership of Director Projects Dr Joseph D Williams with the technical team had series of meeting in identifying, prioritizing and finalizing the core team of faculties considering the need for enhancing knowledge and skills on Data Management among the officials at SIMU-NSACP and Peripheral STD Clinics. The facilitators identified by the VHS-CDC Project as independent consultants for conducting the training are:

- Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project.
- Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project.
- Ms Ezhilarasi, Biostatistician, VHS Projects.

VHS-CDC Project developed Terms of Reference (ToR), facilitated concalls and conducted coordination meetings. This has contributed for effective team building in planning and conducting the training programs.

Co-facilitators: In addition to the facilitators, VHS-CDC Project has identified and engaged the following Co-facilitators:

- ☞ Dr Ariyaratne Manathunge, Consultant-Venereologist, NSACP.
- ☞ Dr S Beneragama, Epidemiologist, NSACP.
- ☞ Dr T Ilanchezhian alias Dr IC, Senior Technical Advisor, VHS-CDC Project.
- ☞ Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project.

The Co-facilitators were engaged for the following purpose:

- ✍ To share the relevant experiences about the technical collaboration initiatives, country scenario, context, requirements, training needs, etc.
- ✍ To serve as a complementing resource team during the training in providing clarifications, facilitating interactions, providing hands-on training to the groups during the practical/ group exercise, etc.
- ✍ To provide feedback to facilitators & contribute for planning for next day sessions.
- ✍ To extend support in evolving follow-up plans.
- ✍ To serve as a prompter by posing questions to enable the participants to get better clarity and thorough understanding.

Training Coordination Team (TCT): VHS-CDC Project had a consultation with SIMU-NSACP for planning, conducting, coordinating and ensuring follow-up for the training program. The project has evolved clear cut roles and responsibilities of each stakeholders at every stage of conducting the training program. The project has formed the TCT with the following members:

NSACP:
- ☞ Dr Ariyaratne Manathunge, Consultant-Venereologist & Coordinator-SIMU
- ☞ Dr S Muraliharan, MO/ Planning
- ☞ Dr Piyumi Perera, SR/ Venereologist

VHS-CDC Project:
- ☞ Dr Joseph D Williams, Director Projects
- ☞ Mr Kamalakar Bysani, Finance Controller
- ☞ Dr T Ilanchezhian, Senior Technical Advisor
- ☞ Mr Suneel Kumar, M&E Officer
- ☞ Ms T Sudha, Senior Programme Associate
- ☞ Mr Sathyaraju, Associate Manager-Finance

The role/ purpose of the TCT are:

- Identifying training needs.
- Confirmation and developing profile of participants.
- Briefing the experts and consultants.
- Contribute for logistics planning, resource materials development and distribution.
- Support in registration and ensuring time management during the training program.
- Providing feedback to the experts.
- Contributed for successful training in coordination with organizers/ trainers/ participants.

Periodicity:

- The TCT met on the previous day evening for planning the training program.
- The TCT met everyday evening for reviewing and providing feedback.
- The TCT had final meeting on completion of the training program and provided feedback.

Methodology: The TCT team had formal meetings during the training days and through virtual mode for systematic planning, suggestions and experiences.

Facilitators and Coordination Team
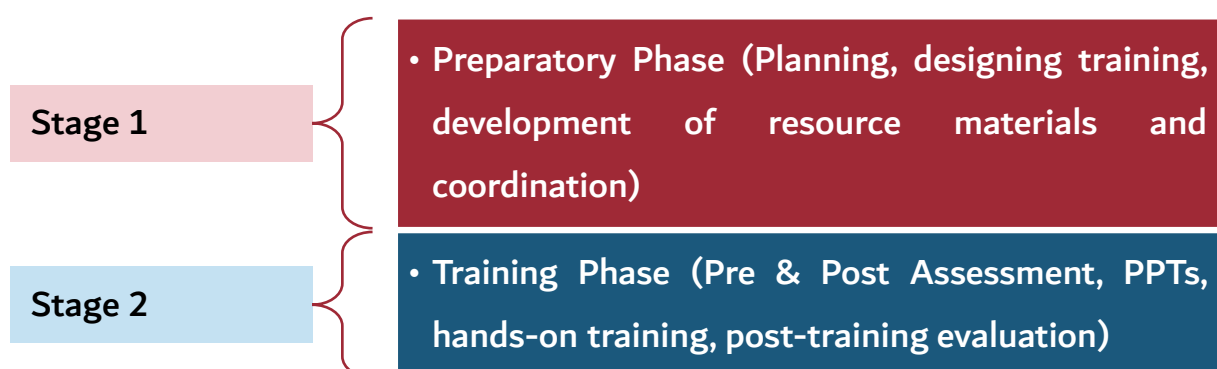
2.4.   Resource Materials

Need Assessment and Training Agenda: VHS-CDC Project has taken utmost efforts and developed the resource materials with pilot study and pre-testing. The project also had meeting with participants and SIMU team and identified the training needs. Also, developed the draft agenda and shared with the SIMU team, obtain feedback and incorporated the suggestions and feedback. Through a process, developed a comprehensive need-based training agenda for fulfilling the objectives and training needs.

Tools: Developed tools for conducting Pre & Post-Assessment and developed Post Training Evaluation Tool for undertaking evaluation with the participants on conclusion of the training.

Resource Materials (Presentation & Exercises): Developed presentations on the following:

- **Basics of Data & Data Quality:** Data sources, Databases & structures, Assessing datasets, Variables & Indicators, Data quality assessment and Data adjustments.

- **Analysis using Excel & SPSS:** Simple data analysis, HIV/AIDS specific data analysis, Mastering Excel for data analysis, Basic & Advanced Statistical Analysis, Using SPSS for data analysis and Best practices in HIV/AIDS Data Management.

- **Presentation, Communication & Use of Data:** Data Triangulation, Data Presentation, Data Interpretation, Communication of analysis results and Use of data for decision making.

2.5.   Planning and management of the training program

| Stage 1 | • Preparatory Phase (Planning, designing training, development of resource materials and coordination) |
| Stage 2 | • Training Phase (Pre & Post Assessment, PPTs, hands-on training, post-training evaluation) |

The project with the support and coordination of SIMU-NSACP undertaken systematic and strategic efforts for planning, conducting and undertaken follow-up plans.

The specific activities undertaken during every stage of the training program will include:

Stage 1- Preparatory Phase: Some of the key activities undertaken during preparatory phase are:

- Planning:
    - Planning meeting with SIMU and NSACP.
    - Development of brief outline based on the needs and expectations.
    - Discussions with the key stakeholders.
    - Training Need Assessment.
- Participants:
    - Development of criteria for participants.
    - Communication to the participants and coordination with the Training Coordinator.
    - Finalization of participants and development of their profile.
- Resource team:
    - The project evolved criteria, identified resource persons, prioritized and finalized the team.
    - Developed ToR and initiated contract signing for engaging the resource team in designing and conducting the training.
- Pre-production:
    - Identified the training needs and evolved plans.
    - Finalized agenda based on the training needs.
    - Development of tools, presentations, resource materials, reference materials, etc.
    - Suggestions and feedback on the materials developed and finalization of the resource kit.
    - Evolved plans for dissemination.
- Resource kit:
    - Developed resource kit with tools and presentations.
    - Shared the soft copies of the presentations and exercises through email to the respective participants for easy reference and undergoing hands-on training.
- Coordination:
    - Formed E-group for ensuring continuous information flow, sharing soft copy of the presentations, sharing exercise sheets, facilitate in submission of exercises undertaken/ reports developed, exchange of experiences, etc. Also, this e-group will be of permanent platform for facilitating interactions among all the trained members at regular intervals.
    - Shared communication with participants and SIMU at regular intervals including curtain raiser for creating hype on the program.

- Logistics planning:
  - Development of accommodation, travel plan, ticket booking, hall arrangements and other logistics support.
  - Finalization of the food menu and other requirements.
  - Systematic planning and efforts for arranging the hall with the cluster seating, sound system, communication aids, wi-fi and other needful infrastructure for creating enabling environment for conducting the training program.
- Branding:
  - Undertaken efforts for branding the display and other related materials including banner, certificates, presentations, etc.
- Planning for stationeries:
  - The project undertaken efforts for stationery and resource materials (bag, scribbling pad, pen, folder, communication aids, design and printing of certificates, etc.).
- Budget and financial planning:
  - Based on planning meeting, developed budget for planning & conducting the training considering various aspects such as resource materials, consultants, hall, accommodation, stationeries, resource kit, travel and other aspects.
- Training Coordination Committee Meeting (TCT):
  - Undertaken efforts for systematic planning and coordination of the training program by forming TCT & conducted interactions through virtual & formal meeting.

The project has undertaken systematic efforts in planning the entire training program for enhancing the capacities of SI team and for successful conduct of the training program.

Stage 2- Training Phase: Some of the key activities undertaken during the training phase are:

- Before Training:
  - Issue of welcome letter
  - Allocation of rooms
  - Registration and provided resource kit
- During Training:
  - Inaugural
  - Training Agenda
  - Training sessions
  - Group formation
  - Feedback sessions
  - Recap

- Group work/ hands-on training with peer review & review by facilitators & co-facilitators.
- Pre & Post Evaluation
- Post Training evaluation
- Follow-up plans

2.6. Innovative approaches

Some of the innovative approaches in conducting the training program will include:

Criteria for selection	**Simulation games**	**Advanced Statistical Analysis**	**Networked National Trained Team**
Training Need Assessment	**Participatory methodology**	**Developed knowledge & skills**	**Follow-up communications**
Need based agenda	**Intensive Hands-on experience**	**Recap**	**Facilitators Meetings**
Pre-Assessment	**Presentations**	**Post-training evaluation**	**Coordination Committee Meeting**
Resource kit	**E-group**	**Post-assessment**	**Feedback**

2.7. Coordination between the stakeholders

The key stakeholders involved in the training program will include: VHS-CDC Project/ facilitators, CDC and NSACP (including SIMU & Training Coordinator). VHS-CDC Project developed a concept note along with role of key stakeholders, presented with the key stakeholders in the planning meeting and finalized the overall training plan, execution plan and follow-up plans.
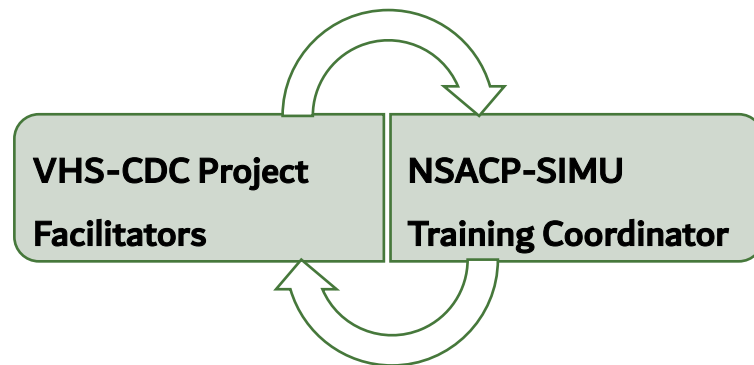
The coordination between VHS-CDC Project and NSACP-SIMU at every stage of the planning and execution of the program has helped in ensuring systems in technical delivery, logistics coordination and overall achievement of the objectives of the training. This training has demonstrated the success through greater engagement of each stakeholder at every stage of the program.

2.8. Outcomes

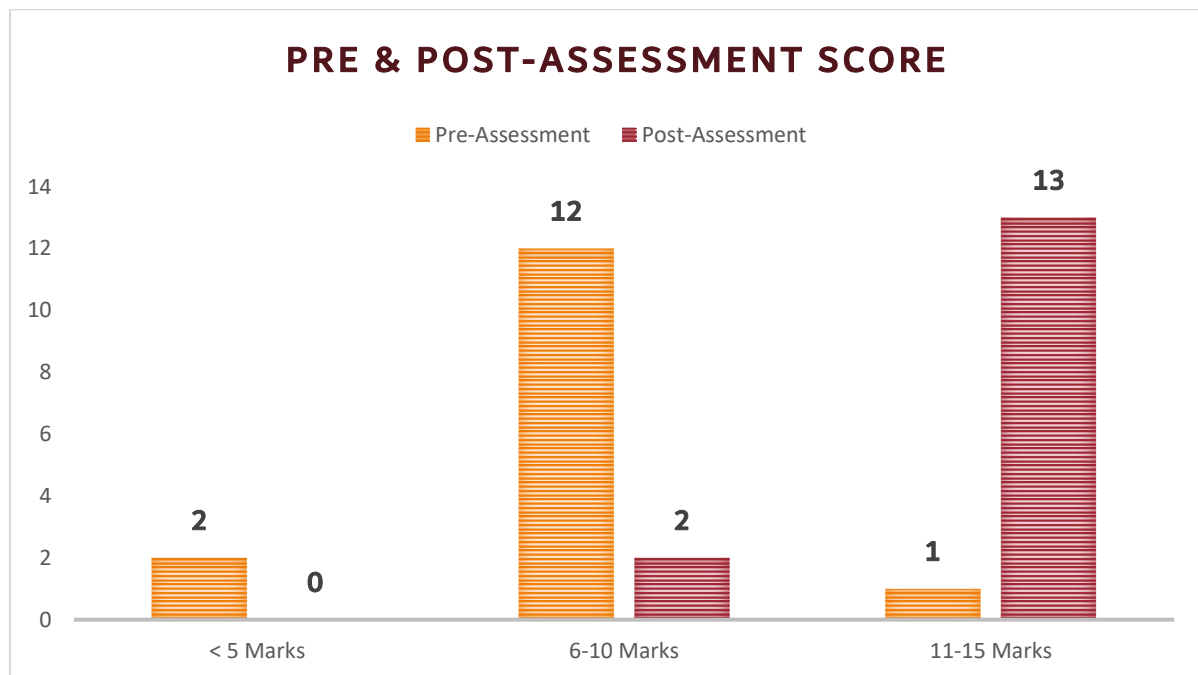## 2.9.   Training evaluation and effectiveness

2.9.1.   Pre & Post-Training Assessment Analysis

As a part of the training, pre & post assessment was conducted with the participants. Overall, 15 participants undergone the training program and all participants submitted the pre & post-training assessment forms. The overall comparison on the pre & post assessment is given below:

PRE & POST-ASSESSMENT SCORE

Pre-Assessment ■ Post-Assessment

	< 5 Marks	6-10 Marks	11-15 Marks
Pre-Assessment	2	12	1
Post-Assessment	0	2	13

In the **pre-assessment**,

- ✎ Overall 13% (2) respondents have fallen in the category of scoring < 5 marks.
- ✎ 80% (12) respondents have fallen in the category of scoring 6-10 marks.
- ✎ 7% (only 1) respondent has fallen in the category of scoring between 11 and 15.

Overall, 93% (14) of the respondents fallen in the category of scoring < 10 marks against the overall scoring of 15 marks.

In the **post-assessment**,

- ✎ Overall 84% (13) respondents has moved to the category of scoring 11-15 marks (moved from 6-10 scoring in pre-assessment) against the overall scoring of 15 marks.
- ✎ 13% (only 2) respondents has fallen in the category of scoring between 6 and 10 which includes moving of 2 respondents from < 5 marks to the level of scoring between 6-10.

Overall, more than 87% of the respondent has scored highest marks and above. All the respondents has improved in their knowledge through the training program. This shows the training has created effectiveness in providing needful knowledge and skills among the participants.

2.9.2.   Training Evaluation - Analysis

	Exemplary	Very Good	Good	Average	No Comments	Total	Total of (4 & 5)	Overall %
	5	4	3	2	1			
Course content								
I understood the learning objectives well.	11	4				15	15	100.00
The course content met my expectations & was in line with the learning objectives.	9	6				15	15	100.00
I found the course material (slides, handouts, exercises, etc.) useful & easy to follow.	13	2				15	15	100.00
Training received was adequate for my position/ experience.	9	6				15	15	100.00
The course will directly or indirectly improve the performance of my duties.	13	2				15	15	100.00
I am clear about where to find answers to questions that I have about Data Management.	6	7	2			15	13	86.67
Structure & process of training								
The training sessions are well structured & appropriately scheduled.	11	4				15	15	100.00
Instructional methods used during training are effective.	12	3				15	15	100.00
Participation and interaction were encouraged during the sessions.	12	2	1			15	14	93.33
The speed/ pace at which the training was conducted was appropriate.	6	7	1	1		15	13	86.67

	Exemplary	Very Good	Good	Average	No Comments	Total	Total of (4 & 5)	Overall %
	5	4	3	2	1			
I was comfortable with the length of the sessions & length of the training program.	6	9				15	15	100.00
Group works/ hands-on exercises are well structured with clear instructions.	4	9	1	1		15	13	86.67
Guidance & mentoring support was adequately provided during group works/ exercises.	9	6				15	15	100.00
Adequate chance was given for participants to ask questions and resolve doubts.	10	5				15	15	100.00
There was ample opportunity to practice the skills I am supposed to learn.	6	6	3			15	12	80.00
I received adequate feedback from the facilitators during the practice sessions.	10	5				15	15	100.00
Trainers & Mentors – Knowledge & Delivery Style								
The facilitators were knowledgeable on the subject matter.	13	2				15	15	100.00
The facilitators explained the concepts clearly and in an understandable way.	11	4				15	15	100.00
The facilitators effectively handled the questions that were asked.	11	4				15	15	100.00
The examples & experiences quoted by the trainers were relevant & apt to my situation.	9	4	1	1		15	13	86.67

	Exemplary	Very Good	Good	Average	No Comments	Total	Total of (4 & 5)	Overall %
	5	4	3	2	1			
I was well engaged during the sessions/ The sessions were kept alive, interesting & interactive.	9	6				15	15	100.00
How would you rate their facilitation skills overall, on a scale of 5?	10	4	1			15	14	93.33
Facility & Amenities								
The venue and seating arrangement were comfortable and suitable for the training.	10	5				15	15	100.00
The environment was free from distractions and conducive to learning.	10	5				15	15	100.00
The audio-visual set up was good and clear.	9	6				15	15	100.00
The quality of food was good.	9	4	2			15	13	86.67
Overall								
How will you rate the training, overall, on a scale of 5?	10	5				15	15	100.00
I am satisfied with the training course.	12	3				15	15	100.00
I will recommend this course to others.	12	3				15	15	100.00

Overall training evaluation has conducted in 5 areas with 29 questions by applying 5-point scale. The above table reveals the effectiveness of the training program and evaluation of the training program in the perspectives of the participants. Overall (72%) 21 questions/ evaluation criteria has scored 100% in all aspects (this shows all aspects are Exemplary and Very Good).

2.10.   Feedback of Participants

This training program was useful for understanding how to use the program data for effective data analysis, presentation and dissemination. Program Managers can identify for what kind of data analysis should be from the data set. Overall, this training was very useful for the entire team and for NSACP.

- Dr R Hettiarachchi, Director/ NSACP

Very useful training with hands-on training on data management. This improved the capacity of SIM staff. Training content, venue and facilities are excellent. Appreciate the VHS-CDC team support and efforts.

- Dr K A M Ariyaratne, Coordinator Strategic Information/NSACP

Well organized and conducted meaningfully and attractively. All contents were useful as part of our work responsibilities, relevant to my position and works carried out in my institution. Benefited through trainings on data management and got exposure to the Advanced Statistical Analysis. Overall, the technical deliberations and learnings were useful.

- Dr S. Muraliharan, MO/Planning/SIM unit/NSACP

First of all, I would like to thank the organizers for giving us such an excellent opportunity. The entire program has well organized. And I specially thankful to the facilitators for conducting the sessions and dedication. These sessions were very useful for further development of our Clinics (Pharmacy). Though we had a very limited period, it has covered a massive area on data management. Thereby I could refresh my knowledge and get added lots of new ideas and technology which will be very important to make the things easy. And the sessions and presentations are very clear and complete and as well as gave a chance for us to actively participate. As a Pharmacist who handle the ART drugs, this is very important for me to keep the stock without going short and estimating. Our pharmacy is the one who purchases and distributes the ART drugs all over the country. I would like to thank all the team members in VHS-CDC Project for organizing this wonderful training program.

- Ms Chamini Lakpriya, Pharmacist/NSACP

Training program was very successful and the resource persons are very competent and comprehensive on their work. The overall program/ training is very useful to me as a data management person. Content of the program, accommodation and the refreshments were really outstanding and I would like to thank all VHS-CDC team for their effort.

- Dr L. Rajakaruna, MO/Informatics/SIM unit/NSACP

The training was structured very well. Well-designed program. Content taught is clear. Gained a lot of insight in using the excel and SPSS. As a person who is handling the data, this training will be of helpful for me to be very efficient. Overall, support of VHS-CDC Project in continuous capacity building initiatives are very helpful and contributing to strengthen the system.

- Dr. Piyumi Perera, Acting Venereologist /SIM unit/NSACP

Gained new knowledge on data management & analysis through this training on Data Management. The methodology used is very understandable and enabled in developing knowledge and skills. This new knowledge will be very useful according to our job responsibilities.

- Ms JAYANTHILAGE Indrani Kulathunge, Public Health Nursing Sister/ STD clinic, Ragama

This training was very useful for each one of us. It's content, methodology, presentations, session plan and learnings are very good. Data Management and Analysis will directly improve the performance in my duties. Thanks to VHS-CDC and SIMU team for organizing such meaningful training and providing opportunity.

- Mrs. K Rajakaruna, Public Health Nursing Sister/ SIM unit/NSACP

This training program was very important to my job subject. Specially, I can use excel formulas for my STD database (average, if, V-look functions are very important). SPSS functions are very useful for analysing the data. So I can manage my database very accuracy based on this training and its usefulness.

- Mrs. Chandima Nimali Perera, Development officer/SIM unit/NSACP

Overall this training on data management was very good, informative, educative and useful. As a Public Health Inspector, it's contents, methodologies and learnings are very useful for me. I can use the knowledge for the EIMS work, STI clinic surveys and other public health related works.

- Mr P K N S P Senevirathne, Public Health Inspector /NSACP

A good training program content, methodology and exercises were all well organizer and explained. Useful in my own work progress at work. Thank you all for the given innovative ideas. I am sure, I will be able to integrate and practice the skills gained through this training program.

- Mr Lakshan Fernando, Senior Strategic Information officer/SIM unit, GFATM

This training program is very well organized and conducted in a timely manner. The hands-on skill of topics like data management, analysis, SPSS, excel data, etc., were very useful and encouraging.

- Dr D K J Thanthree, Acting Venereologist /NSACP

I learnt data management through this program and how to use excel in a correct form. Learned various aspects associated with use of excel based Data Management. Received good technical inputs, facilities and environment for learning. A very good opportunity to learn statistics. Got idea about systems that follow-up in India. Special thanks to organizers and facilitators for the fruitful training.

- Mr P.A.P. K Sadaruwan Wijerathne, Public Health Inspector /HIV clinic/NSACP

All basic aspects covered with in-depth focus to excel and SPSS. Program was very helpful in updating knowledge and also gained new knowledge and skills upto some extent. Got better understanding on the issues I had with the databases I managed so far. This will be useful for me to do my duties with more understanding and efficacy. I need to mention that sessions conducted were very interesting and informative.

- Dr Indika Malwatte, Acting Venereologist/STD clinic, Hambanthota

2.11.   Recommendations and suggestions

During the interactions, feedback sessions and during hands-on training, the participant felt and evolved the following recommendation considering the need for systematic follow-up:

- Participants were requested to continue to practice this data management in excel formats by using various methods introduced.
- Requested all the participants to develop systems and practices for effective use of data management by adopting various methods including Advanced Statistical Analysis.
- Transfer the knowledge and skills with core team members at SIMU and Peripheral STD Clinics.
- Some of the trained officers will extend support in providing training for the PHIs and Consultant-Venereologists in the proposed National Training on Data Management.
- SIMU will continue to extend needful strategic guidance, technical update and follow-up through the existing systems with all the trained participants.
- Participants were encouraged to write to SIMU and/or VHS-CDC for obtaining any additional clarifications, technical updates at any point of time.

Chapter 3: Training proceedings

3.1.   Proceedings of Day 1 – (16th June 2019)

3.1.1.   Registration

Registration of Participants: VHS-CDC Project and NSACP jointly has undertaken the registration process between 0900 – 0930 hrs in the training centre. The participants have registered in the registration format. Participants were also provided with resource kit including bag, pad, pen, agenda, etc. In addition to the registration and resource kit, each participant was provided with Welcome Note along with a brief on the logistic support as a part of the training program. Overall, 15 participants were registered for the training program on data management.

Registration of facilitators and coordination team: Along with the registration of participants, separate registration for facilitators and coordination team has also been undertaken.

3.1.2.   Brief Introductory Function

VHS-CDC Project and NSACP has jointly organized a brief introductory function between 0930 – 1000 hrs. Dr T Ilanchezhian, Senior Technical Advisor, VHS-CDC Project welcomed the participants, facilitators, organizing committee and VHS-CDC team. In addition, provided brief outline on the organizers of the training program.

Lighting of the Lamp was organized as a significance of inauguration of the training program by the following officials:

- ☞ **Dr Rasanjalee Hettiarachchi, Director/ NSACP**
- ☞ **Dr Ariyaratne Manathunge, Consultant-Venereologist & Coordinator-SIMU-NSACP**
- ☞ **Dr S Beneragama, Epidemiologist, NSACP**
- ☞ **Dr T Ilanchezhian, Senior Technical Advisor, VHS-CDC Project**
- ☞ **Dr A Vijayaraman, Senior Consultant, VHS**
- ☞ **Mr Raj Raman, Technical Lead, VHS-CDC Project**
- ☞ **Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project**
- ☞ **Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project;**
- ☞ **Mr S Sathyaraju, Associate Manager-Finance, VHS-CDC Project.**

Introduction of Facilitators: VHS-CDC Project team has introduced the facilitators of the training program. This session has helped to introduce the facilitators with the participants.

Mr Suneel Kumar introduced
Dr Yujwal Raj, facilitator
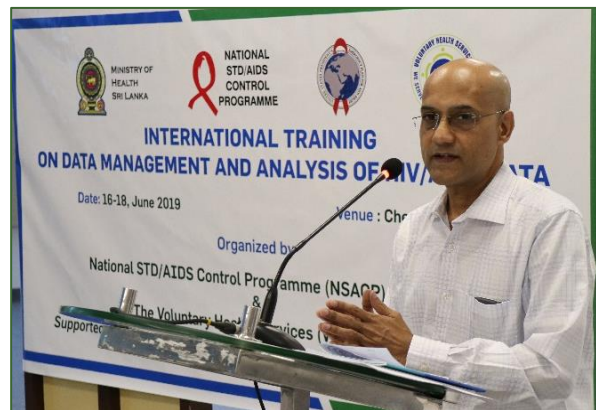
Mr Raj Raman introduced
Ms Lakshmi Anu Ramakrishnan, facilitator

Introduction of Participants:

Dr T Ilanchezhian requested each participant to share their name, designation, years of experience, place of work, experience in managing data and other relevant details. Each participant introduced themselves. This process has helped to enable the

facilitators to understand about each of the participant for facilitating interactive sessions.

Pre-Assessment: Dr T Ilanchezhian and Ms Sudha administered the pre-assessment by distributing forms to each of the participant. Each participant filled in the pre-assessment tool and submitted. This has helped the trainers to understand what they already know, what the participants are in need

of and planning for the training sessions to enable everyone to come to the uniform level of understanding on the training subject.

Objectives & Expected Outcomes of the training program: Dr Yujwal Raj facilitated interactions to understand on the needs and expectations from the participants in this training on data management. In response to this, each participant shared their expectations in the training program for the benefit of enhancing their knowledge and skills, improving their job responsibilities, enhancing the efficient data management, etc. In continuation of this, Dr Yujwal made a presentation on objectives & expected outcomes of the training in an interactive way.

During this session, he mentioned that, overall goal is to build the data skills of NSACP staff in order to enhance the data quality, improve the data analysis and strengthen the use of HIV/AIDS data for epidemiological & programmatic decision making under NSACP. In this session, he also discussed about objectives, training outcomes, facilitators, sessions/ session plans, materials, common guiding principles, day wise course content, training methodologies, etc.

He informed that, this training will be organized by adopting the following methodologies:

- Active Learning through discussions & review of examples & case studies
- Learning by Doing
- Individual Hands-on/ Practical Exercises
- Group Exercises
- Parallel work on selected data

and he emphasized that, this training will be more focusses on hands-on training considering the importance of acquiring more skills on data management by using excel. In this session, Dr Yujwal also informed the participants that,

- Participants requires familiarity with
  - HIV/AIDS program data
  - Microsoft Excel
  - SPSS
  - Basic understanding of data
- Participants should be involved in data collection, reporting, analysis and presentation of HIV/AIDS data.
- Participants should have laptop/ computer to do practical exercises.
- Participants should have a sample, preferably real, dataset to work on a relevant analysis.

In continuation of the presentations, Dr Yujwal encouraged question and answer session on understanding the overview of the program. Also, requested the participants to understand the needs expressed in the initial session and the content covered in the training by referring agenda. Overall, the training needs has been well thought and integrated in the training agenda and sessions. Further, Dr Yujwal encouraged the participants to clarify any of the doubts in the respective sessions. He also stressed that, lot of practical exercises will be undertaken as a part of this training methodology. He emphasized that, this training will primarily be introduced Advanced Statistical Analysis and will not do advanced analysis considering the time limitations and needs expressed.

Group Formation: Five groups have been formed with the following criteria:

- Three members in each group
- Combination of SIMU and Peripheral STD clinic representatives
- Experience in managing the specific program area related data and familiarity
- Enable team to work on respective theme on regular basis during the entire training days.

Based on the above criteria, five (05) program areas has been identified and groups has been formed:

Program Areas	Groups
PMTCT Data	Dr Indika Malwatte, Acting Venereologist/STD clinic, Hambanthota.
ART Data	Dr L. Rajakaruna, MO/Informatics/SIM unit/NSACP
Training and Capacity / STD clinic Data	Dr D K J Thanthree, Acting Venereologist /NSACP
ART Pharmacy Stock Data	Ms Chamini Lakpriya, Pharmacist/NSACP
ART Data	Ms Jayanthilage Indrani Kulathunge, Public Health Nursing Sister/STD clinic, Ragama
ART Clinic Data	Mr P.A.P. K Sadaruwan Wijerathne, Public Health Inspector /HIV clinic/NSACP
STD Data	Mr P K N S P Senevirathne, Public Health Inspector /NSACP
STD Data	Mr Lakshan Fernando, Senior Strategic Information officer/SIM unit, GFATM

Accordingly, the team was formed and positioned for participating in the technical session and hands-on experiences.

3.1.3. Session wise reports on day 1

<table>
<tr><td>Session Topic:</td><td>Planning data analysis -
Identifying programmatic questions &
mapping data sources</td></tr>
</table>

1015 - 1115 hrs

Discussion & Practical Exercise

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Dr Ariyaratne, Consultant-Venereologist, NSACP

Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

Dr Yujwal Raj facilitated a session on "Planning data analysis – Identifying programmatic questions & mapping data sources" by adopting interactive discussions and question & answer sessions. He mentioned that:
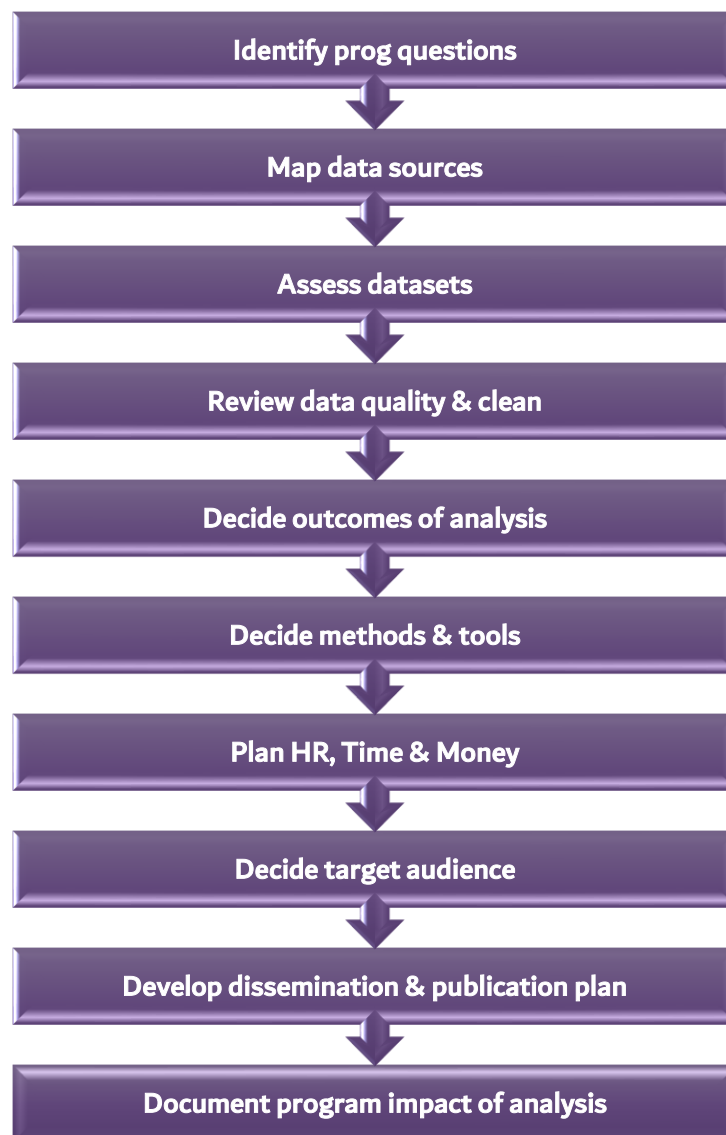

- Data will be helpful to analyse, interpret and present.
- Data will also help in obtaining answers to the questions.
- For all officials in STD clinic/ province/ national level, questions can be answered through data.

He presented on planning program data analysis will include:

1. Identify programmatic questions/ issues for decision making in your program.
2. Map the data sources/ datasets (Review these questions & identify, which data can help answer these questions).
3. Assess the datasets for key aspects before analysis.
4. Undertake data quality assessments, adjust & validate data wherever necessary (Data Cleaning).
5. Decide the key outcomes of the analysis.
6. Decide the type of analysis, methods & tools.

7. Plan resources for analysis – HR, Time, Money.

8. Decide the target audience.

9. Develop the presentation, dissemination & publication plan (Way to present & disseminate the results of analysis, for programmatic improvements/ changes in implementation).

10. Document the impact of your analysis (details of the means & outcomes of bringing in programmatic changes due to the results of your analysis).

Dr Yujwal also explained on the steps involved in planning program data analysis as:

Identify prog questions

↓

Map data sources

↓

Assess datasets

↓

Review data quality & clean

↓

Decide outcomes of analysis

↓

Decide methods & tools

↓

Plan HR, Time & Money

↓

Decide target audience

↓

Develop dissemination & publication plan

↓

Document program impact of analysis

He also highlighted the four (04) program areas and sample questions for each program areas:

Epidemic questions
✍ Why are HIV cases increasing at this clinic/ in this area?
✍ What is the profile of the new HIV cases detected at the clinic?
✍ What are the key drivers of HIV epidemic in this region?
✍ Which areas/ regions have higher/ rising HIV epidemic?

Progress & Priority questions
✍ How is the scale up of STD services in this province?
✍ Why STD/ HIV service uptake is low at a clinic?
✍ What has been the progress against NSP/ Global targets in Sri Lanka?
✍ Has the targets for prevention been achieved? Gaps? Reasons?
✍ Which provinces should be prioritized for EMTCT?
✍ How to improve ART adherence rates?

Performance questions
✍ Which STD clinics are the best performing in the country?
✍ Why service delivery performance is poor in a province?
✍ What are the top ten service delivery facilities that need focus under NSACP?
✍ How can the performance parameters be improved at ART centres?

Questions on evidence & information gaps
✍ How to generate evidence on role of international migration in HIV epidemic?
✍ What are the key information gaps that SI should focus in next two years?
✍ Which provinces suffer from lack of adequate good quality data?
✍ What are the barriers to strengthen data use for decision making under the program?

Exercise Session: In continuation of the technical sharing, Dr Yujwal requested the participants to:

> *List out & discuss the programmatic questions/ Issues for decision making,*
>
> *that you are concerned about, in your area of work under NSACP!!!*

Based on the exercise entrusted, each participant has come out with questions and the same has been presented in the chart.

The questions emerged through the process of discussion will include:

Questions	
1	How to define STD Clinic performance? – Grading/ Category wise
2	How to assess contribution of multiple factors to HIV?
3	Effectiveness of awareness program for school children.
4	Effectiveness of various training programs of NSACP.
5	Problems in data flow – Do they exist – What? and Why? – Need additional information.
6	What are resource requirements & constraints at STD clinics for effective service delivery?
7	How to address double counting of beneficiaries at STD/HIV facilities?
8	Clinic with less follow-up visits – Reasons?
9	Gender Based Violence (GBV) among FSW/TG/MSM. Are there services to address GBV? Is there S & D while providing these services?
10	Proportion of Key Population accessing STD clinic services.
11	Clinic attendance - Patterns / differentials.
12	Use of spatial data for KP prevention.
13	Identifying quality issues/ wrong data with program data.
14	Identifying the requirements for drug regiments - changes.
15	Forecasting drug requirements and stockouts.

16	Difficulties in reaching KP.
17	How to identify/ fix the duplications in ART data?
18	Double counting – footfalls vs. episodes – STD vs. cases.
19	Analysis of Cohort data.
20	Qualitative data analysis in program.
21	Triangulation with non-HIV/ health datasets.
22	Validating data.
23	Comparative analysis – local/ general.

Further Dr Yujwal requested the participants to review the questions on whether fit for secondary analysis considering the following aspects:

- ✎ Review these questions and identify, which data can help answer these questions?
- ✎ And is this data already collected elsewhere (Secondary Data)?
- ✎ Or does it need to be collected fresh from the field (Primary data)?

By applying the above, the participants reviewed each of the questions and finalized the following questions which are primarily programmatic questions and fulfilling the criteria for secondary analysis:

	Finalized Programmatic Questions for Secondary Analysis
1	How to define STD Clinic performance?
2	How to assess contribution of multiple factors to HIV?
3	Effectiveness of various Training programs of NSACP
4	Problems in data flow - Do they exist? What? and Why?
5	What are the resource requirements and constraints at STD clinics for effective service delivery?
6	How to address double counting of beneficiaries at HIV/ SITD facilities?
7	Clinics with less flow / visits- and reasons?
8	Gender based violence among FSWs / TG/MSM? are there services to address GBV? Is there stigma and discrimination while providing these services.
9	Proportion of KP accessing STD clinic services.
10	Clinic attendance - patterns and differentials.
11	Identifying quality issues/ wrong data, etc.
12	Use of spatial data for KP prevention.
13	Identifying the requirements for drug regiment changes.
14	Forecasting Drug requirements and stock outs.
15	Difficulties in reaching KP.
16	How to identify and fix duplication in ART data.
17	Double counting - foot falls vs. episodes, STD / vs. Cases.
18	Analysis of cohort data.

In addition, Dr Yujwal also presented the rich evidence base available in NSACP as:

- Expanded HIV Sentinel Surveillance System
- Rich Program Data from STD/HIV Clinics & outreach
- Data from ANC clinics & PPTCT Centres
- Data from Blood Banks, TB Clinics, Hospitals & Labs
- Key Population Mapping & Size Estimations
- Integrated Biological & Behavioural Surveillance
- Intervention Data from Partner Agencies
- HIV Modeling, Estimations & Projections
- Increasing no. of Research Studies in HIV/AIDS
- DHS, Census Projections, Migration Statistics

Exercise 1: In continuation of the above exercise, Dr Yujwal provided another exercise (Exercise 1 – Part A & B):

EXERCISE 1: IDENTIFYING PROGRAMMATIC QUESTIONS & MAPPING DATA SOURCES

**PART – A: LIST OUT ALL THE KNOWN HIV/AIDS DATA SOURCES &
IDENTIFY THE KEY INFORMATION AREAS**

S. No.	Known HIV/AIDS Data Sources/ Datasets	Key information areas/ Broad themes

---

Each group has identified the "Known HIV/AIDS Data Sources/ Datasets" and developed "Key information areas/ Broad themes" in each of the data sources. On completion of the group work, group rapporteurs presented the data source and key information areas and broad themes in each of the data source. During the presentation, other group members have also contributed and provided value addition.

PART – B: MAPPING DATA SOURCES/ DATASETS WITH PROGRAMMATIC QUESTIONS

S. No.	Programmatic Question/ Issue for Decision Making	Probable Data Sources/ Datasets for Analysis *(Mention S. Nos. from Part A Table)*

Each group has discussed, contributed and developed the Mapping Data Sources/ Datasets with Programmatic Questions in the above template and presented to the audience.

This process has helped in understanding the importance of data analysis, steps involved in data analysis, program areas, how to frame programmatic questions, how to review the questions, data sources, identifying programmatic questions & mapping data sources, Known HIV/AIDS Data Sources & Identify the Key Information Areas/ Broad themes, etc. This technical session supported with hands-on training/ exercise models enabled the participants to understand on the importance of data analysis.

Tea Break: 1115 - 1130 hrs

Session Topic: Introduction to Principles of Database Management

1130 - 1215 hrs

Presentation & Practical Exercise

Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Dr Ariyaratne, Consultant-Venereologist, NSACP

Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

Ms Lakshmi explained in detail on the "Principles of Database Management" covering the aspects such as: defining data, information & knowledge, basics of data management, data lifecycle, database structure and key principles. She explained each aspect with examples and in an interactive way. Ms Lakshmi explained on what is Data, Information and Knowledge?

DATA	*Facts concerning people, objects, events/ other entities.* *Databases store data*

Data presented in a form suitable for interpretation	INFORMATION

| KNOWLEDGE	*Insights into appropriate actions based on interpreted data*

She explained on the importance of the data management and highlighted the following:

- Good data management practices ensure that data are of high quality (reliable, consistent, and complete) as well as readily available to stakeholders.
- Data management entails putting personnel, policies, procedures, and organizational structures in place to ensure that data are accurate, consistent, secure, and available.
- Encompasses all components of data flow from the data collection tools used during service delivery to databases used for data storage/accessibility along with all intermediate steps.

She further added in her presentation on the purposes of data management system which includes:

- Monitoring and evaluation of control programs
- Plan actions, programs and resources
- To prioritize the allocation of health resources
- To provide the basis for epidemiological research
- Accountability

She added on data management system & explained the data lifecycle by using the following picture:
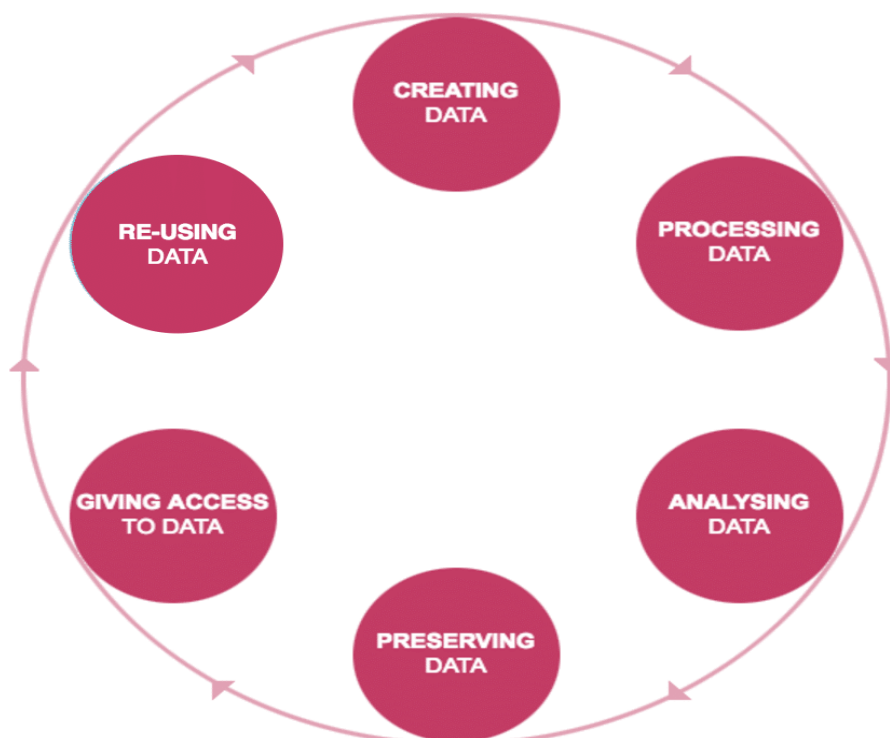
Creating Data:

- ☞ Design research or program data collection/ acquisition
- ☞ Plan management- formats, storage etc
- ☞ Plan consent / sharing
- ☞ Identify existing data sources
- ☞ Collect data –experiment, observe, measure

Processing Data:

- ☞ Enter data, digitize, transcribe, translate
- ☞ Check, validate, clean data
- ☞ Anonymise data as required
- ☞ Describe data
- ☞ Manage and store data

Analyzing Data:

- ☞ Conduct analysis
- ☞ Interpret data
- ☞ Produce various outputs
- ☞ Develop reports and publications
- ☞ Prepare for preservation

Preserving Data:

- ☞ Migrate data to appropriate format
- ☞ Migrate data to suitable medium
- ☞ Back up and storage
- ☞ Create metadata and documentation
- ☞ Archive data

Giving access to Data:

- ☞ Distribute data
- ☞ Share data
- ☞ Control access
- ☞ Establish copy right
- ☞ Promote data

Re-using Data:

- ☞ Follow up research
- ☞ New activities or research
- ☞ Undertake reviews
- ☞ Scrutinize findings
- ☞ Teach and learn

Ms Lakshmi also explained on creating database structures, key principles, compiled datasets, principles of good data management plan, metadata, coding and data dictionary, efficient and timely data flow, data storage and retrieval, data protection and sharing, maximizing data usefulness and other details on principles of database.

Exercise 2: Ms Lakshmi and Dr Yujwal jointly handled the exercise session on reviewing database and provided the following exercise 2 sheet with database.

<div align="center">

EXERCISE 2: REVIEWING THE DATABASE

Review the 'Exercise 2 Dataset' given to you and fill the following table.

</div>

S. No.	Observe/ Identify	Observations/ Details
1	Is it a single dataset or compiled dataset? Why do you say so?	
2	What is a case in this database?	
3	No. of cases	
4	No. of fields and their names	
5	Primary key	
6	Metadata is adequate and clear	
7	**Any of the key principles violated in the dataset?**	
A	One row for one case	
B	No duplicate variables/ column heads	
C	No duplicate primary key	
D	No sub-totals in rows; sub-totals/ totals in columns are OK	
E	No merged cells; No merged headings	
F	No blank cells (Fill blank cells with some code or Impute)	
G	No two data types in one column (Text/Num/Code)	
H	Short & crisp variable names; Not too long	

And requested each individual to identify the following from the exercise 2 dataset:

- ✄ What is a case in this database?
- ✄ No. of cases, No. of fields and their names
- ✄ Primary key
- ✄ Metadata is adequate and clear
- ✄ Any of the key principles violated in the dataset?

In line with this, each participant has reviewed the exercise sheet/ database and identified the same. This exercise was supported with mentoring and hands-on training by the facilitators and co-facilitators. This exercise enabled the team to understanding the methods of reviewing the database.

State	District_name	Site_name	Site_Type	2003 NT	2003 NP	2004 NT	2004 NP	2005 NT	2005 NP	2006 NT	2006 NP	2007 NT	2007 NP	2008 NT	2008 NP
Andhra Pradesh	Visakhapatnam	Priyadarshini Service Organization, Vishakhapatnam	FSW	250	32	250	35	250	39	250	27	250	22	248	12
Andhra Pradesh	East Godavari	East Godawari	FSW	250	113	250	102	250	67	250	23	250	39	244	45
Andhra Pradesh	Prakasam	Lakshmi Development Society, Ongle, Prakasam	FSW	250	61	250	27	250	18	250	11	250	18	235	16
Andhra Pradesh	Hyderabad	Hyderabad	FSW	250	40	250	25	250	30	250	24	249	18	250	37
Andhra Pradesh	Kurnool	Parameswari, Kurnool	FSW	250	22	250	25	250	8	249	6	249	9	249	12
Andhra Pradesh	Warangal	Warangal	FSW	250	32	250	47	250	32	249	22				
Andhra Pradesh	Guntur	Needs Society, Chilakaluripet, Guntur	FSW			250	36	250	33	250	15	250	32	213	19
Andhra Pradesh	West Godavari	Action for Development, Bhimavaram (New 07)	FSW									249	41	247	35
Andhra Pradesh	Khammam	JAGRUTI (New 07)	FSW									250	39	247	66
Andhra Pradesh	Adilabad	AIRTDS,Mancherial (New 07)	FSW									217	10	249	38
Andhra Pradesh	Nalgonda	ANKITA (New 07)	FSW									250	25	227	21
Andhra Pradesh	Srikakulam	Swageti Project,Youth Club of Bejjipuram (New 07)	FSW									250	15	243	10
Andhra Pradesh	Warangal	MARI, Hnamkonda (New 07)	FSW									120	8	248	12
Andhra Pradesh	Khammam	JAGRUTI (New 07)	FSW			248	12								
Andhra Pradesh	Nalgonda	ANKITA (New 07)	FSW					250	11						

FSW: Female Sex Workers; NT: Number Tested; NP: Number Positive

Session Topic: Understanding datasets under NSACP – Issues

1215 - 1330 hrs

Group Exercise

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project

Dr Ariyaratne Manathunge, Consultant-Venereologist, NSACP

Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project

Dr Yujwal Raj and Dr Ariyaratne jointly facilitated this group exercise. Dr Yujwal made a presentation on "Understanding program datasets under NSACP" in an interactive way.

Dr Yujwal shared on program data common issues, HIV testing data, PPTCT data, STD clinic data, ART data, assessment of data sources, issues at various steps, etc. In the presentation, he shared the following:

Program Data – Common Issues:

- Collected for monitoring; Using data for other purposes should be attempted with caution
- Mostly aggregate data; not individual level data
- Limited scope for slice & dice
- Varying quality from different centres at different times
- Changing formats and reporting mechanisms
- Changing program strategies affect the data reported & scale up of centres
- Interest & ability; absence/ change of personnel affects data
- Commodity supplies & stock outs affect data
- Largely paper-based; needs computerisation

HIV Testing Data:

- Mostly no. of tests; not individuals tested
- Limited information on risk profiling
- Beneficiary segmentation
- Routes of transmission data
- Couple testing and sero-discordance
- Linkages to ART

PPTCT Data:

- Mostly no. of tests; not individual pregnant women
- Documentation of trimester and gravida
- Background profile data
- Documentation of multiple testing is challenging
- Public sector – Private sector overlaps
- Linkages with ART
- Positive pregnancy follow-up data, baby testing & outcomes
- Longitudinal data often not maintained

STD Clinic Data:

- Footfalls vs STD Episodes vs Individuals
- Background profiles of STD Clinic Attendees
- Syndromic data vs Etiologic data
- Linkage to HIV testing & Partner testing data
- Re-occurrence of STDs; Incidence vs Prevalence
- Correct denominators for case rates, incidence, prevalence etc.

ART Data:
- ✍ Aggregate vs Individual data
- ✍ Cross-sectional vs longitudinal data
- ✍ Demographic, Epidemiological, clinical data
- ✍ PLHIV profiles and Sero-discordance
- ✍ Viral suppression data & key population treatment data
- ✍ Building testing and treatment cascades at sub-national level

During the presentation, he detailed out and explained on issues at various steps from collecting data till compilation & analysis. Issues faced at every stage in the datasets were explained as:

Collecting data/ Gathering Info from the beneficiaries or patients	• Skipping questions • Way of asking questions & eliciting information • Interviewer bias • Judgmental approach • Workload, timings & staff cooperation
Documenting in Registers	• Using the correct registers & formats • Inefficient documentation – Info split into multiple registers • Duplication & Transcribing errors • Filling the register without enquiring • Blank cells filled later or left unfilled • Illegible writing/ improper noting down
Compilation/ Aggregation	• Lack of clarity of definitions/ Absence of data dictionary • Errors in manual counting • Wrong method of including/ excluding criteria • Computation Errors in data to be computed from register
Data Entry	• Typo errors in data entry • Mismatch b/w register & data entered • Incomplete data entry/ gaps/ blanks • Entry in wrong fields/ wrong format
Reporting	• Non-reporting/ Irregular reporting • Lack of timeliness in reporting • Reporting in wrong/ outdated formats
Compilation & Analysis	• Compilation errors • Dataset merging issues • Missed/ excluded in compilation • Aggregation errors • Errors/ Wrong approaches in analysis

Further he explained on the assessment of data sources focusing on Utility & Usability as below:

S. No.	Criteria	Score: 3	Score: 2	Score: 1
1	Explains Epidemic	Explains very well	Explains moderately	Doesn't explain
2	Reflects Program Performance	Reflects very well	Reflects moderately	Doesn't Reflect
3	Availability of Data at Desired Level	Easily Available	Not Easily Available	Not Available
4	Feasibility of Extraction & Use	Easy	Difficult	Very Difficult

On completion of this technical session, Dr Yujwal and Dr Ariyaratne facilitated the question and answer session and provided needful clarifications to the participants.

Exercise 3: Dr Yujwal and Dr Ariyaratne jointly handled the exercise session on assessing NSACP Datasets and provided the following instructions to the team:

- Review the NSACP Dataset that you have brought for the following. Each group to take up one prog dataset.
    - Time period
    - Geographic scope
    - Data lifecycle for the dataset
    - Assessment of Utility & Usability
    - Probable issues with the dataset at various steps
        - Collecting data
        - Documenting in Registers
        - Compilation/ Aggregation
        - Data entry
        - Reporting

Based on the instructions provided by the facilitators, the team members undertaken group activities and undergone the process of filling up the program dataset by adopting a process in the format provided below:

<table>
<tr><td colspan="4" align="center">EXERCISE 3: ASSESSMENT OF NSACP DATASETS</td></tr>
<tr><td colspan="4" align="center">Review the NSACP Dataset brought by you in your group and fill the following table.</td></tr>
<tr><td>S. No.</td><td>Attributes of Dataset</td><td colspan="2" align="center">Observations/ Details</td></tr>
<tr><td>1</td><td>Name of the dataset</td><td colspan="2"></td></tr>
<tr><td>2</td><td>Reference Period of dataset</td><td colspan="2"></td></tr>
<tr><td>3</td><td>Geographic Scope</td><td colspan="2">National/ Provincial/ District/ Clinic
Details:</td></tr>
<tr><td>4</td><td>Data Lifecycle</td><td align="center">Who performs this function?</td><td align="center">When/ At what frequency?</td></tr>
<tr><td>A</td><td>Collecting data</td><td></td><td></td></tr>
<tr><td>B</td><td>Creating dataset</td><td></td><td></td></tr>
<tr><td>C</td><td>Processing data</td><td></td><td></td></tr>
<tr><td>D</td><td>Analysing data</td><td></td><td></td></tr>
<tr><td>E</td><td>Preserving data</td><td></td><td></td></tr>
<tr><td>F</td><td>Have access to data</td><td></td><td></td></tr>
<tr><td>G</td><td>Publish results</td><td></td><td></td></tr>
<tr><td>H</td><td>Using & reusing data</td><td></td><td></td></tr>
<tr><td>5</td><td>Assessment of Utility & Usability</td><td colspan="2">Score the following on a scale of 3, where 3 is good, 2 is moderate, 1 is low</td></tr>
<tr><td>A</td><td>Explains epidemic</td><td colspan="2"></td></tr>
<tr><td>B</td><td>Reflects program performance</td><td colspan="2"></td></tr>
<tr><td>C</td><td>Availability of data at desired level</td><td colspan="2"></td></tr>
<tr><td>D</td><td>Feasibility of extraction & use</td><td colspan="2"></td></tr>
<tr><td>6</td><td>Probable issues with the dataset at various steps</td><td colspan="2">Discuss & write the key issues affecting the dataset at each step below.</td></tr>
<tr><td>A</td><td>Collecting data</td><td colspan="2"></td></tr>
<tr><td>B</td><td>Documenting in Registers</td><td colspan="2"></td></tr>
<tr><td>C</td><td>Counting & Aggregation</td><td colspan="2"></td></tr>
<tr><td>D</td><td>Data entry</td><td colspan="2"></td></tr>
<tr><td>E</td><td>Reporting</td><td colspan="2"></td></tr>
<tr><td>F</td><td>Compilation & Analysis</td><td colspan="2"></td></tr>
</table>

The facilitators and co-facilitators provided hands-on training and mentoring support to each team in undertaking the exercise. On completion of the exercise, each team made a presentation in the common group and elicited suggestions.

Further, Dr Yujwal explained the information on variables and their types, source registers and columns, disaggregation and other relevant details. Overall, this training has enabled the participants to understand on program datasets under NSACP by identifying common issues in the data, assessment of data sources, various steps involved in datasets and issues associated with, etc.

Lunch Break: 1330 - 1430 hrs

1430 - 1530 hrs

Presentation & Practical Exercise

Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project
Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

In continuation of the small simulation game, Ms Lakshmi handled the session on "Variables and Indicators" covering aspects such as definitions, variables, levels of measurement, qualitative vs quantitative, metric scale, types of variables, types of variable values, indicators, types of indicators, computing indicators, examples for indicators, etc. During the presentation, she explained the following types of variables:

```
                            VARIABLES
                    ┌───────────┴───────────┐
            Discrete/                    Continuous/
            Categorical/                 Numerical/
            Qualitative                  Quantitative
          ┌──────┴──────┐            ┌───────┴───────┐
      Nominal        Ordinal      Interval          Ratio
      Category       Category     Continuous; No    Continuous; With
      Mutually       Mutually     absolute zero     absolute zero
      Exclusive &    Exclusive &
      Unordered      Ordered
         │              │             │                 │
   Gender, Blood   Disease stage,  Temperature; Time  Weight, Height,
   Group, Marital  Social class,   lapse              Age
   Status, Eye     Education level
   colour
```

Also, explained the following types of indicators:

- 🐌 **Indicators of need/ Epidemic indicators**
    - o **Size of KP, HIV prevalence**
- 🐌 **Input Indicators**
    - o **Finance, HR, Commodities**
- 🐌 **Process Indicators**
    - o **No. of outreach camps; No. of trainings; Counseling duration; Waiting time at ART clinic**
- 🐌 **Output Indicators**
    - o **No. of facilities opened; No. of tests done; No. of KP reached; Cascade indicators**
- 🐌 **Outcome Indicators**
    - o **Condom uptake; No. of sexual partners; Health seeking behaviour**
- 🐌 **Impact Indicators**
    - o **New HIV infections/ Incidence; AIDS deaths/ Mortality; Survival**

Exercise 4: In addition, provided examples for indicators and enabled each participant to answer on the types of indicators on the statement provided. This exercise helped the participants to understand the types of indicators. Followed that, she has also provided some examples and requested the participants to categorize on whether it is variable or indicator. This exercise has enabled the participants to differentiate between the variables and indicators.

Ms Lakshmi and Dr Yujwal has provided the following formats and requested the team in groups to undergo the process of exercise supported with hands-on training and mentoring:

EXERCISE 4: VARIABLES & INDICATORS

PART A: Review the NSACP datasets that you have brought. List out at least 20 variables from the dataset. Write the variable values. Classify them based on the level of measurement. Mention the source register & dis-aggregations available for the variable.

S. No.	Variable	Variable Values	Level of Measurement	Source Register	Disaggregation Available

PART B: Evolve 12 indicators – 2 of each type – based on the variables listed above. Classify them and indicate their num, den, units & importance

Indicator 1	
Type	
Num	
Den	
Units	
Importance	
Indicator 2	
Type	
Num	
Den	
Units	
Importance	
Indicator 3	
Type	
Num	
Den	
Units	
Importance	
Indicator 4	

Type	
Num	
Den	
Units	
Importance	
Indicator 5	
Type	
Num	
Den	
Units	
Importance	
Indicator 6	
Type	
Num	
Den	
Units	
Importance	
Indicator 7	
Type	
Num	
Den	
Units	
Importance	
Indicator 8	
Type	
Num	
Den	
Units	
Importance	
Indicator 9	
Type	
Num	
Den	
Units	
Importance	
Indicator 10	
Type	
Num	

Den		60
Units		
Importance		
Indicator 11		
Type		
Num		
Den		
Units		
Importance		
Indicator 12		
Type		
Num		
Den		
Units		
Importance		

Session Topic:	**Data quality assessment**

	1530 - 1630 hrs
	Presentation & Discussion
	Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project Dr Ariyaratne, Consultant-Venereologist, NSACP. Dr S Beneragama, Epidemiologist, NSACP. Dr T Ilanchezhian, Sr Technical Advisor, VHS-CDC Project. Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project

In continuation of the session on variables and indicators, Dr Yujwal Raj and Ms Lakshmi jointly facilitated an interactive session and discussion on "Data Quality Assessment". During the presentation, Dr Yujwal highlighted the following:

- GIGO – Garbage In Garbage Out
- Data quality services – the real-world project activities are implemented in the field. These activities are designed to produce results that are quantifiable. In an information system represents, these activities by collecting the results that were produced and mapping them to a recording system.
- Attempting data quality assessment & validation may not always ensure quality, but at least makes one aware of poor quality, if any, while drawing inference!! & gives an opportunity to improve it.
- Need for Data Quality Assurance are:
  - An essential step before actual analysis
    - It is careful consideration of data collected, before embarking on analysis
  - To help preparation of the *working* dataset/ database
    - To be used for further analysis
  - It may open up further questions
    - E.g. HIV positivity rates from ICTC & HSS at same site, different from each other needs exploration of both datasets
  - May require further more analysis
    - Eg. Settling an outlier identified in data

- o Empowers the investigator to either adjust, correct, or totally reject the data for consideration in final dataset
  - ▪ Ability to make an informed decision
- ✍ Importance to have qualitative data are:
  - o Accountability for funding and results reported increasingly important
  - o Quality data needed at program level for decision making
  - o Quality Data needed for any sort of operations research
  - o Quality data → Robust evidence → Appropriate policy

| Observations/ Raw Data | Data Quality Assurance | Ready to use data |
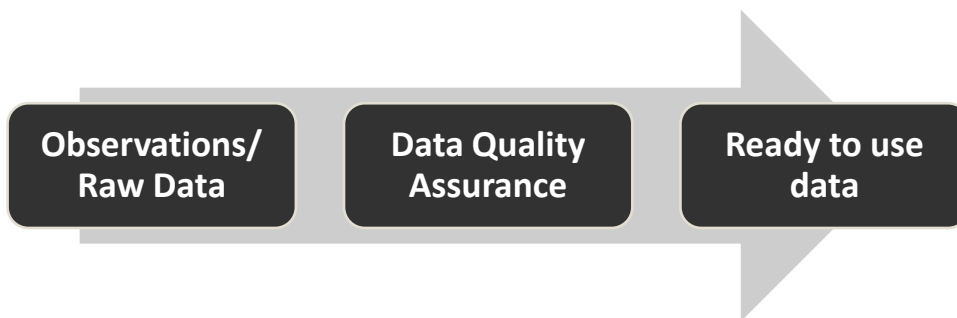
- ✍ Some of the common errors during data collection will include:
  - o Collecting incorrect information (e.g. information collected not as per the indicator definition)
  - o Collecting information from incorrect or unauthentic document
  - o Collecting information for incorrect reporting period
  - o Documenting the information improperly (e.g. making inadequate/rough notes which become difficult to comprehend later)
  - o Error in consolidating the data before entering into SIMS
- ✍ Key attributes for data quality will include:
  - o Availability/ Reporting Status
  - o Completeness
  - o Correctness/ Accuracy/ Validity
    - ▪ Consistency
    - ▪ Consistency over time
    - ▪ Consistency – Internal/ Reliability
  - o Consistency – External/ Validity/ Representativeness
  - o Precision
  - o Others
    - ▪ Timeliness
    - ▪ Integrity
    - ▪ Confidentiality

In continuation of the above, Dr Yujwal Raj and Ms Lakshmi jointly explained on each of the key attributes in detail supported with slides and examples.

At the end of the session, he summarized the following based on the overall presentation, technical deliberations, etc.

Data Quality Attribute	Indicator to Assess	Key thing to look for
Availability/ Reporting Status	Reporting %	Non-reporting facilities & quarters
Completeness	Completeness %	Missing Data
Correctness/ Accuracy	Verification Ratio & Cross-check Consistency %	Incorrect entries; Invalid data;
Internal Consistency/ Reliability	--	Cross-checks within data
Consistency over time	% of facilities without outliers over a year	Outliers
External Consistency/ Validity/ Representativeness	--	Sample size & Coverage %
Precision	--	Disaggregation available

Session Topic:	Data Adjustments & Validation

	1630 - 1730 hrs
	Demonstration & Group Exercise
	Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

In continuation of the session on Data Quality Assessment, Ms Lakshmi conducted the session on "Data Adjustments and Validation".

During the presentation, she explained the following details:

- ✎ Adjustments and validation refer to:
  - o Adjustment refers to taking action to fix the data quality issues and improve the quality of data
  - o Adjustment also refers to the actions to make the dataset more suitable and appropriate for analysis
  - o Validation refers to comparing the quality-controlled data with other data/ other source to ensure that we are dealing with plausible data
- ✎ Adjustments refers to:

Data Quality Attribute	Key thing to look for	Adjustment
Availability/ Reporting Status	Non-reporting facilities & quarters; Unreported data	Leave, Correct or Impute
Completeness	Missing Data	Leave, Correct or Impute
Correctness/ Accuracy	Incorrect entries; Invalid data;	Leave, Correct or Impute
Internal Consistency/ Reliability	Cross-checks within data	Leave or exclude; Can't do anything
Consistency over time	Outliers	Leave, Correct, Smoothen, adjust or replace
External Consistency/ Validity/ Representativeness	Sample size & Coverage %	Leave or exclude; Can't do anything
Precision	Disaggregation available	Leave; Can't do anything

- Analysis of missing patterns will include: Missing At Random (MAR); Missing Completely at Random (MCAR); and Missing Not At Random (MNAR).
- Methods of Imputation will be:
  - Mean Imputation – Replace with average of all months/ all facilities; average of before & after; moving averages;
  - Mode Imputation – Replace with the most common value
  - Nearest Neighbourhood Imputation – Replace with the value from the nearest similar case/ facility/ district
  - Univariate/ Single Imputation Methods
    - Linear imputation
    - Logistic regression imputation
  - Multiple Imputation by Chained Equations (MICE)
    - Using Linear Regression/ Predictive Mean Matching method for scale variables
    - Using Logistic Regression for categorical variables
  - More advanced methods also available
- Aspects to be avoided in the adjustments:
  - Too much manipulation of original data to be avoided
  - Too much of imputation of missing data not advised
  - Leave the originality of data as much as possible
  - Adjust and impute only where it is of significant value addition for the analysis

In continuation of the session, she explained on the other data adjustments, validation of quality control data and other relevant details.

Exercise 5: Aligning with the above presentation, Ms Lakshmi and Dr Yujwal jointly provided exercise on Data Quality Assessment and Adjustments. The exercise provided are:

- Continue to work on the NSACP datasets used for previous exercise
- Assess Reporting % & Completeness%
- Highlight the incorrect data
- Identify the outliers
- Do mean imputation for the missing data at facility level
- Document the steps undertaken and the data quality parameters

As a part of this exercise, requested team members to experiment on useful Excel functions covering:

- Sort & Filter
- Remove Duplicates
- Count if – for frequencies/ Reporting %
- Count blanks – for missing values/ Completeness

- Conditional Formatting
- If function – for recoding
- Average
- Replace

Sno	Province	District	Month	Name of the Facility	Total tested during the month	Total clients received post-test and result	Total ANC positives during the month	Total ANC Positives linked to ART during the month	Total Non ANC positives during the month	Total Non ANC clients linked to ART during the month	Total Positives (ANC+Non ANC)	Positivity Rate (%)	Total Positive clients linked to ART(ANC+Non ANC)	Linkage loss during the month
1	WP	Dist1	JAN 18	ICTC AMALAPURAM	702		0	0	14	12				
2	WP	Dist1	JAN 18	ICTC RAMACHANDRAPURM	483		1	1	12	11				
3	WP	Dist1	JAN 18	ICTC TUNI	652		0	0	10	9				
4	WP	Dist1	JAN 18	ICTC PEDDAPURAM	437		2	2	16	22				
5	WP	Dist1	JAN 18	ICTC DH – RAJAMEHINDRAVARAM	742		0	0	76	69				
6	WP	Dist1	JAN 18	ICTC RMC KAKINADA	722		0	0	46	44				
7	WP	Dist1	JAN 18	ICTC TBIDH GGH KAKINADA	583		0		23	18				
8	WP	Dist3	JAN 18	SA AH - BAPATLA (P&V)	815		0		154	15				
9	WP	Dist3	JAN 18	SA AH - NARSARAOPET (P&V)	1243		2		34	32				
10	WP	Dist3	JAN 18	SA CHC - CHILAKALURIPETA (V)	590		2	2	7	7				
11	WP	Dist3	JAN 18	SA CHC - MACHERLA (V)	350			0	5	7				
12	WP	Dist3	JAN 18	SA CHC - VINUKONDA (I)	315		1	1	9	8				
13	WP	Dist3	JAN 18	SA DH - TENALI (V)	673			0	39	35				
14	WP	Dist3	JAN 18	SA GGH - GUNTUR (V)	1480			0	54	46				
15	WP	Dist3	JAN 18	SA TBH - GUNTUR (I)	422			0	15	13				
16	WP	Dist2	JAN 18	SA AH - GUDIVADA (P&V)	1089		0	0	10	8				
17	WP	Dist2	JAN 18	SA AH - NUZIVEEDU (P&V)	874		0	0	14	13				
18	WP	Dist2	JAN 18	SA CHC - NANDIGAMA-OLD (V)	401		1	3	20	20				
19	WP	Dist2	JAN 18	SA CHC - RAJIVNAGAR-U (V)	602		0	0	17	15				
20	WP	Dist2	JAN 18	SA DH - MACHILIPATNAM (V)	508		0	0	12	15				
21	WP	Dist2	JAN 18	SA GGH - SIDDHARTHA MEDICAL COLLEGE	1670		0	0	78	57				
22	WP	Dist2	JAN 18	SA GGH - VIJAYAWADA (P)	1033		1	1	3	3				

Based on the instructions provided to the team on undergoing the exercise, the team members used the soft copy of the data provided in excel. The team used the soft copy of the data and undergone the process of learning supported with hands-on experience and mentoring support from the facilitators and co-facilitators.

Participants work on their datasets with facilitators

1730 - 1800 hrs

Group Exercise

All Participants

Dr Yujwal recalled the session on Datasets conducted in the morning. Facilitated a small recap on the details learnt during the session on recap. In continuation of this, Dr Yujwal requested each of the following team to use the program data and undergo the process of datasets:

1. STD
2. HIV
3. Pregnant Woman
4. ART
5. Case Reporting

Respective team used their program data & undergone the process of learning in the practical exercise. The trainers extended mentoring support and guidance to each team to develop needful knowledge and skills.

Dr T Ilanchezhian requested the team to plan for the recap session on the second day. Also, informed that all the presentations will be shared through e-group formed for this purpose. Requested each team to meet informally and facilitate interactions for further knowledge enhancement and obtaining skills. Suggested to have interactions between the team also for needful experience sharing. Encouraged the participants to seek additional clarifications and details from the facilitators during non-training timings for effective use of their expertise and efficient management of time.

3.2. Proceedings of Day 2 – (17th June 2019)

3.2.1. Recap

Dr Yujwal Raj, Dr Ariyaratne and Dr Ilanchezhian jointly facilitated a session on recap on the learnings from the day 1 sessions from 0900 - 09:30 hrs. The methodologies adopted for recap will include: list of sessions conducted, learnings in each session,

what are all the core learnings, etc. The participants shared the learnings. Also, the facilitators provided needful clarifications and additional information for ensuring uniform learning. This exercise has enabled each participant to understand the day 1 learnings, bringing all the participants to the uniform level of understanding and obtaining clarity through peer process.

3.2.2. Session wise reports on day 2

Session Topic:	Simple data analysis – measures & methods

	0930 - 1030 hrs

	Presentation & Practical Exercise

	Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project
	Dr S Beneragama, Epidemiologist, NSACP
	Dr Ariyaratne, Consultant-Venereologist, NSACP
	Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project
	Mr Suneel Kumar, M&E Officer, VHS-CDC Project

In continuation of the recap session, participants were oriented on "Basic Programmatic Analysis - Measures & Methods" by Dr Yujwal. During the presentation, he explained basic measures such as:

- Sum/Total
- Sub-totals
- Percentage
- Distribution
- Min-Max

- Cut-off based
- Top & bottom
- Quartiles
- Average/ Mean
- Median

Further he explained each measures in detail with examples. Further, he explained on the computing new variables which will include: Recoding text to numeric variables; Converting continuous to categorical variables; and Computing new variables – age groups, percentages. He also explained on indicator estimation: Number, Percentage, Rate and Ratio.

As a part of the presentation, Dr Yujwal explained in detail on useful excel functions as:

- Sort & Filter
- Replace
- Go to
- Pivot tables

- V-look Up
- Conditional Formatting
- Remove Duplicates
- Sum, Average, Median, Quartiles

On completion of this presentation, participants clarified their doubts on Basic Programmatic Analysis.

1030 - 1130 hrs

Demonstration & Practical Exercise

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Exercise 6: Dr Yujwal requested the participants to refer the soft copy of the program data shared in the excel (as a part of the exercise 5) and requested to use the same data. Participants were asked to undergo the process of learning and requested to learn the excel functions by "Using Excel for simple data analysis" such as: Sort & Filter; Replace; Go to; Pivot tables; V-look Up; Conditional Formatting; Remove Duplicates; and Sum, Average, Median, Quartiles.

This exercise was supported with mentoring and guidance by the facilitator and co-facilitators. The clarifications were provided on one to one, one to group and in common sessions to enable each participant to familiarize with excel functions.

Overall this session has enabled the participants to undergo hands-on experience in using Excel for simple data analysis and understanding the functions of excel.

Tea Break: 1130 - 1145 hrs

Session Topic: HIV/AIDS specific analysis from program data (Epidemic Monitoring, Progress Monitoring, Performance Monitoring, Cascade & Cohort Analysis)

1145 - 1315 hrs

Discussion & Group Exercise

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project
Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

Dr Yujwal Raj facilitated the session on "HIV/AIDS specific analysis from program data". As a part of the presentation, he covered the following four aspects:

- 🐀 Epidemic Analysis
- 🐀 Progress Analysis
- 🐀 Performance Analysis
- 🐀 Cascade & Cohort Analysis

Dr Yujwal explained in detail on each of the above and highlighted the following:

Epidemic Analysis	🐀 HIV & STD Positivity rates
	o Levels
	o Trends
	o Differentials by demographic & risk characteristics
	🐀 Size of beneficiaries
	🐀 Profile of beneficiaries
	o STD Clinic attendees
	o PLHIV
	🐀 Vulnerabilities/ Risk Behaviours among KP
	o Typology, Partner volume, condom use, STI uptake

Progress Analysis	☙ Progress against targets
	o Levels
	o Trends
	o Differentials by province/ district
	o Differentials by other characteristics
	☙ Gaps in Achievement
	☙ Different Denominators
Performance Analysis	☙ Performance Indicators
	o Levels
	o Trends
	o Differentials by province/ district
	o Differentials by other characteristics
	☙ Best & worst performing units
	☙ Performance Quartiles
	☙ Performance Quadrants
Cascade & Cohort Analysis	☙ Testing and treatment cascade
	☙ Prevention cascade
	☙ PLHIV cohort analysis
	o Incidence of Opportunistic infections
	o Mortality rates
	o Survival analysis
	☙ Positive Pregnant Women & Exposed Baby cohort analysis

Overall this session has helped the participants to understand the different types of analysis by using the program data.

Lunch Break: 1315 - 1415 hrs

Session Topic:	Basic statistical analysis

1415 - 1545 hrs

Demonstration & Practical Exercise

Ms Ezhilarasi, Biostatistician, VHS Projects
Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project
Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

Mr Raj Raman introduced Ms Ezhilarasi, Biostatistician, VHS Projects and requested to facilitate a session on "Basic statistical analysis". She briefly narrated about the importance of biostatistics in clinical research. She explained the following as a part of the session on Introduction to Biostatistics in Clinical Research:

- ✍ Role of biostatistician will include: Protocol development; Study Implementation (Data Analysis & Data Management); and Report/Manuscript writing.
- ✍ The biostatistics: It is an application of Statistics to the analysis of biological and medical data. It is the field of study concerned with the collection, organization, summarization and analysis and interpretation of data.
- ✍ Sources of data for statistician will include: Routinely Kept Records; Surveys; Experiments; and External sources.

- Population is the complete collection of data to be studied and it contains all the subjects and variables of Interest. Sample is the subset of the population.
- Variable is a characteristic which differs from a person, place or things, etc.
    - Quantitative Variable: Measurements made on quantitative variables convey information regarding amount. Ex – height. Weight, age.
    - Qualitative Variable: Measurements made on qualitative variables convey information regarding attribute. Ex – color of the eye.
- Measurement and Measurement Scales: It is the assignment of numbers to objects or events according to a set of rules (Nominal Scale, Ordinal Scale, Interval Scale and Ratio Scale).
- Sampling is the Process of collecting information from the sample. The types of Sampling are: Simple Random sampling, Stratified Sampling, Systematic Sampling, Multistage Sampling, and Cluster sampling.
- Types of Statistics:
    a. Descriptive Statistics: It describes or summarize the parameters of the population.
    b. Inferential Statistics: It is the procedure by which we reach a conclusion about a population on the basis of information from the sample.
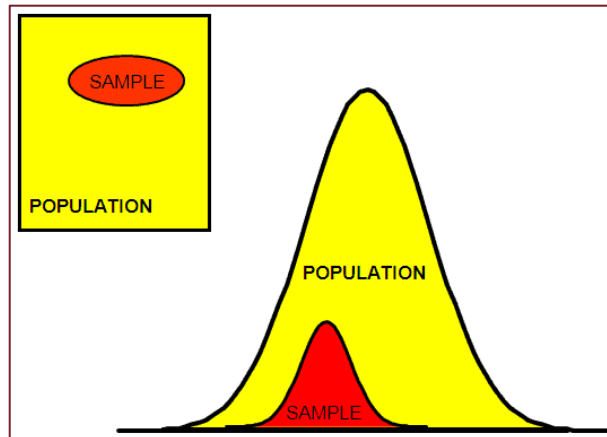
In continuation of this detailed technical briefing, she also explained in detail on the aspects in Descriptive Statistics, Tables, Pie Diagrams, other Diagrams and Graphs, Basic Measures of Central Tendency (Mean, Median, Mode, Geometric Mean, Harmonic Mean, Weighted Mean and Truncated mean), Basic Measures of Dispersion (Range, Inter Quartile Range and Standard Deviation), Measures of Association includes Correlation and Cross Tabulation, Inferential Statistics including Estimation and Hypothesis Testing, Components and Steps involved in Biostatistics and related details.

Further, she also explained with examples on the information related to decision based on the data, decision role, decision statistical tool used for data analysis, analytic techniques, data management and other related details.

In continuation of the presentation, the members clarified their doubts. Ms Ezhilarasi, Dr Yujwal and Dr Ilanchezhian jointly facilitated brief question and answer session on the above topic as a part of brief recap on the session learnings.

Session Topic:	Introduction to advanced statistical analysis & exposure to SPSS, Stata & R

1545 - 1700 hrs

Presentation, Demo & Practical Exercise

Ms Ezhilarasi, Biostatistician, VHS Projects

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

As per the expectations of participants, VHS-CDC Project conducted intensive training on use of excel for data management, data analysis and presentation. In addition, based on the request, VHS-CDC Project briefly introduced Advanced Statistical Analysis on SPSS for getting acquainted with.

Ms Ezhilarasi made a presentation on "Introduction to Advanced Statistical Analysis & exposure to SPSS, Stata & R". This session was supported with software, online demonstration, question and answer session, observation, etc. She has introduced the SPSS and shared the following:

- Usefulness of SPSS:
    - SPSS has been around since the late 1960s.
    - SPSS is the statistical package most widely used by social scientists
    - Of the major packages it seems to be the easiest with less coding
    - One can use it with either a Windows point-and-click approach or through syntax (i.e., writing out of SPSS commands.). Each has its own advantages, and the user can switch between the approaches.

- Syntax:
    - Originally, SPSS was written like a programming language. Users wrote SPSS syntax (often on a mainframe computer and even with key-punch cards) that performed the tasks they wanted.
    - In SPSS-Windows, users can still use syntax by using the syntax editor.
    - They would open the syntax window by clicking on File, dragging down to New, and choosing Syntax;
    - Type the SPSS syntax that they want to run;
    - Click on Run and drag down to All. (Alternatively, if they want to run only a few commands, they would highlight those commands, click on Run, and drag down to Selection.)

- Choosing Appropriate Scales and measures:
  - There are many different ways of collecting data
  - We need to measure output or performance on some objective criteria
  - In choosing appropriate scales, need to aware of reliability and validity
  - The reliability of a scale indicates how free it is from random error
- Reliability and Validity:
  - Reliability means consistency
  - Nunnally (1978) recommends a minimum level of .7 Cronbach Alpha value
  - Validity refers to the degree to which it measures what it is supposed to measure.
  - Research design → Objectives and goals of study → Questionnaire construction → code book preparation → data management and mining → selecting appropriate statistical tools and techniques to explore data towards achieving research goals and objectives.
- Scales of Measurement:
  - The variables are of two types: quantitative and qualitative, and the measurement of variables or levels of measurement are of four types. They are nominal, ordinal, interval and ratio (N, O, I, R).
  - Levels of measurement are very important and serve as a basis for which statistical tests are permitted on a given set of data and type of research.
- Preparing a codebook:
  - Preparing the codebook involves deciding (and documenting) how you will go about
  - Defining and labeling each of the variable
  - Assigning numbers to each of the possible responses
  - You should have a unique ID for each respondent or case
  - Keep minimum on open ended questions
- Rules for naming of variables:
  - Must begin with a letter (not a number)
  - Cannot include period, blanks or other characteristics like (!, ?, *)
  - Cannot include words used as commands by SPSS (all, ne, eq, to, by, or, gt, and, not, with etc.)
  - Cannot exceed 64 characters (SPSS V12) or 8 characters for earlier versions of SPSS
- Opening an existing data file:
  - Like opening a word document, double click on SPSS .sav data file
  - You will get an untitled blank spreadsheet like Microsoft Excel data sheet
  - You can open an existing data file by using Open menu and then pick Data
  - The data file will open which has data view and variable view
  - You can click on save to save your file

During the presentation, she scrolled the SPSS software to complement the technical details. The technical presentation supported with parallel demonstration has enabled the participants to understand the usefulness of SPSS.
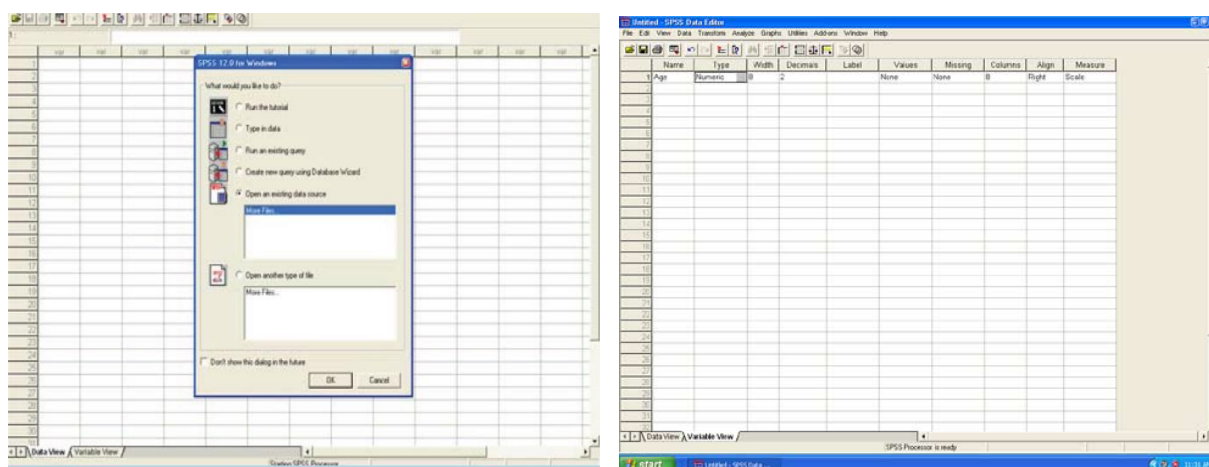
In addition to the parallel demonstration, she continued with the technical presentation and covered the aspects such as: opening an existing data file, creating a data file and entering data, variable names, defining variables and value labels, missing data, changing the SPSS option, data entry using excel, screening and cleaning the data and other details related to SPSS.

In addition to the presentation on SPSS, she also briefly introduced the advantages of Advanced Statistical Analysis such as: Stata & R.

Complementing the technical and demonstration session, she also explained the experiences of IDMC Project on ART Cohort Data in using the data in SPSS and excel for effective data analysis and presentation. During the experience sharing, she covered the following aspects:

- Introduced the patient profile – data collection format being used in IDMC Project which covers the patient personal data, patient ID, HIV Type, Opportunistic Infections, patient visited details, patient status, regiment details, adhering events, hospitalization details, visit details, etc. She also explained about the separate database being maintained for each patient for clinical notes.
- She explained about ART Cohort through Cohort Layer Dataset.

- Also, explained the demographic table and how this table is being used for analyzing the demographic details of the patients. Further explained about the data through Access, SPSS and SQL on programming.
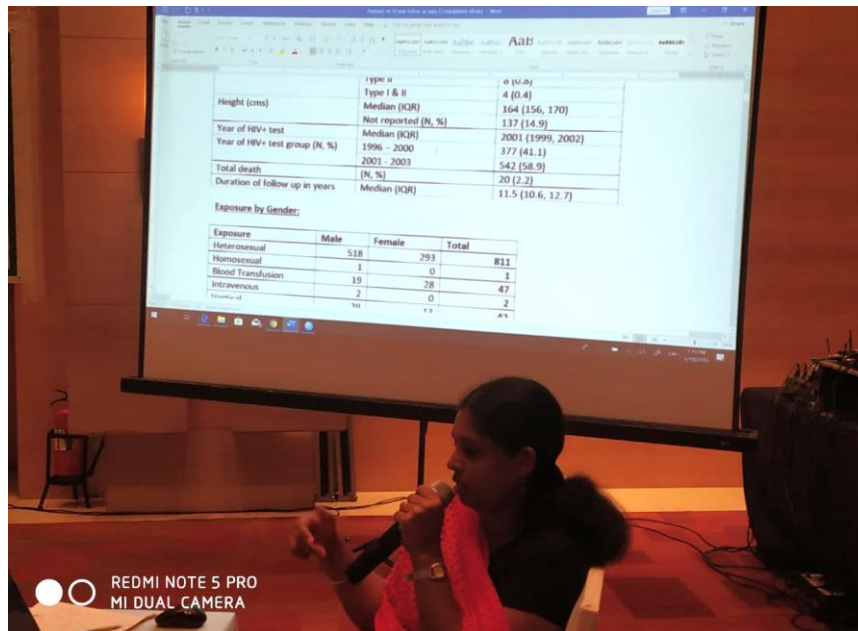
This demonstration and sharing of practical case study has provided eye-opener for the participants on Cohort Analysis.

In continuation of the completion of the presentation, question and answer sessions and discussions were held. Dr Yujwal Raj, Dr Ariyaratne and other co-facilitators shared additional information during the question and answer session. Some of the questions raised by the participants will include:

- How to avoid duplication?
- Whether data security is inbuilt?
- Where the backup data is maintained?
- What are all the difficulties in Cohort Indicators?
- How duplication is avoided at initial stages and at clinical level?
- Whether drug resistant is captured?
- How many publications have been brought out by using this Cohort data?

Overall, this session has helped in providing an introduction to Advanced Statistical Analysis & exposure to SPSS, Stata & R in the ongoing data management beyond using the excel.

Session Topic: Hands-on training on Excel

1700 - 1730 hrs

Hands-on Training

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project
Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project
Mr Suneel Kumar, M&E Officer, VHS-CDC Project.

Based on the technical sessions and hands-on trainings provided, Dr Yujwal Raj facilitated practical session support with hands-on training on use of Excel based on the different exercises and suggestions provided during the day 1 and 2. This hands-on training cum practical session has provided opportunity for the participants to recap, regain and gain confidence in using excel in a systematic way for effective data collection, analysis and presentation. Facilitators and co-facilitators together provided hands-on training and enabled each participant/ thematic group to use the excel data effectively.

3.3.   Proceedings of Day 3 – (18ᵗʰ June 2019)

3.3.1.   Recap

Dr T Ilanchezhian and Dr Yujwal Raj jointly facilitated the recap session covering day 1 and 2 from 0900 – 09:30 hrs. During the recap, the participants shared the learnings on principles of data management, type of variables and indicators, understanding the datasets, data quality assessments, data adjustments and validation, use of excel, simple data analysis, basic statistical analysis, introduction to Advanced Statistical Analysis, hands-on training on use of excel

and other related aspects. The participants also expressed the learnings in each session. Overall, this recap has enabled the participants to have uniform understanding on the two day learnings and preparing them for the learnings for the third day.

3.3.2.   Session wise reports on day 3

Session Topic: Advanced use of Excel – Pivot Tables, Formulae & Macros

0930 - 1100 hrs

Demonstration & Practical Exercise

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Ms Ezhilarasi, Biostatistician, VHS Projects

Dr T Ilanchezhian, Sr. Technical Advisor, VHS-CDC Project

Mr Suneel Kumar, M&E Officer, VHS-CDC Project.

Dr Yujwal Raj facilitated practical session support with hands-on training on "Advanced use of Excel – Pivot Table, Formulae and Macros". During the session, he explained the following:

Pivot Table	Pivot table is a table of statistics that summarizes the data of a more extensive table. This summary might include sums, averages, or other statistics, which the pivot table groups together in a meaningful way. Pivot tables are a technique in data processing. Pivot tables are one of Excel's most powerful features. A pivot table allows extracting the significance from a large, detailed data set.
Formulae	A formula is an expression which calculates the value of a cell. Functions are predefined formulas and are already available in Excel. For example, cell A3 below contains a formula which adds the value of cell A2 to the value of cell A1.
Macros	A macro is an automated input sequence that imitates keystrokes or mouse actions. A macro is typically used to replace a repetitive series of keyboard and mouse actions and are common in spreadsheet and word processing applications like MS Excel and MS Word. The file extension of a macro is commonly .MAC. There are several ways to run a macro in Microsoft Excel. A macro is an action or a set of actions that you can use to automate tasks. Macros are recorded in the Visual Basic for Applications programming language.

Each group started working on the excel and experienced in using Pivot Table, Formulae and Macros. Dr Yujwal Raj and co-facilitators jointly provided hands-on training in undergoing the process of learning on Pivot Table, Formulae and Macros. This process has enabled each participant to gain confidence in using excel.
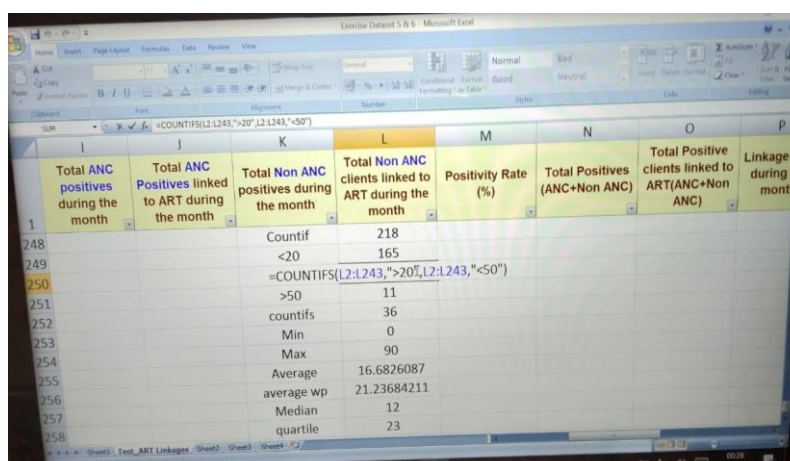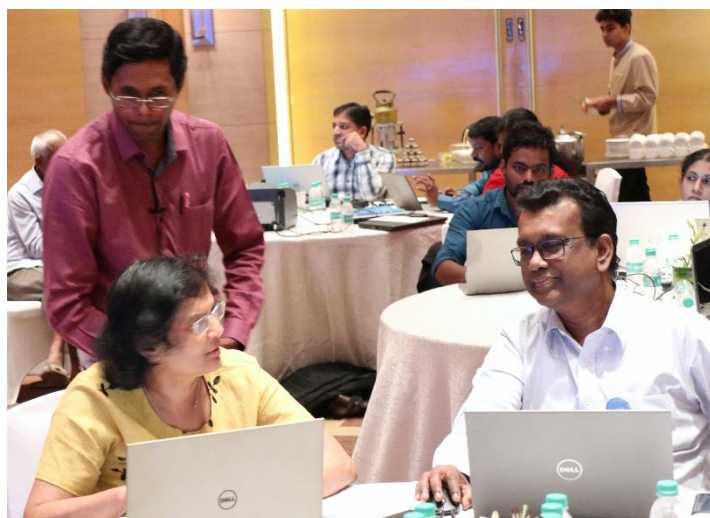
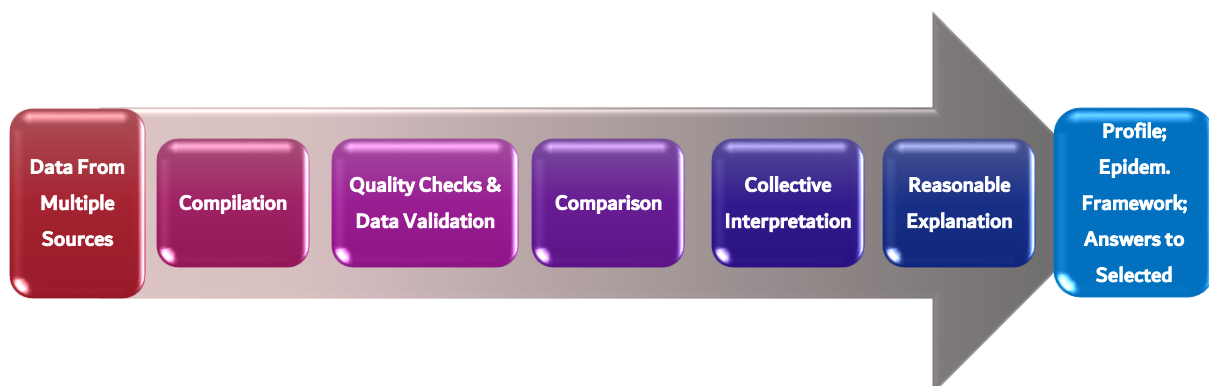**Session Topic: Data Triangulation**

1115 - 1215 hrs

Presentation & Discussion

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

After a tea break, Dr Yujwal Raj facilitated an interactive technical session on "Data Triangulation". During the session, he covered the aspects such as: concept and principles, what it does? When to use? Advantages, Questions for Data Triangulation, Data Sources, Data Quality Assessments, Methods of analysis and Hypothesis-building/ Epidemiological Framework.

Dr Yujwal Raj shared the following:

- Data Triangulation is an Analytical Approach that synthesizes data from multiple sources, to improve the understanding of a public health issue and guide programmatic decision-making to address the issue.

- Basic Principles of Data Triangulation is to analyse and interpret a dataset in the light of information emerging from other datasets so that the synthesis offers a better understanding of the issues than what will be inferred from a single dataset.

- Data Triangulation involves:

| Data From Multiple Sources | Compilation | Quality Checks & Data Validation | Comparison | Collective Interpretation | Reasonable Explanation | Profile; Epidem. Framework; Answers to Selected |

☞ Data Triangulation does the following:

Analyses data in the context of information from other datasets

Gives importance to every bit of information

Helps overcome limitations and biases inherent in each dataset

Adds value to each dataset and improves their utility

Undertakes thorough quality check and validation

Brings out crucial information gaps

Synthesises data from multiple sources into a meaningful framework

▶ **Improves Understanding of HIV/AIDS scenario in the district**

Answers vital program questions

▶ **Guides Programmatic Decision-making**

Indicates the level of reliability in any inference or conclusion or decision

☞ Explained on the differences between Research and Triangulation Analysis, Meta-Analysis and Triangulation:

Research analysis	Triangulation analysis
• Focus on statistical analysis • Designed to provide data that can be generalized • Variables from a single dataset • Focus on internal validity: *"Did A cause B to change among group C?"* • Emphasis on generating the highest scientific rigor of data for interpretation • Long delay between data collection and presentation of results	• May or may not use statistics. Use of statistical analysis will depend on available data • Variables from multiple datasets • Focus on external validity: *"Can observed effects in group C be attributed to the larger population as well?"* • Emphasis on the "best possible" interpretation of existing data for policy and programme decision-making • Quick turnaround between secondary data capture and presentation of results

Meta-analysis	Triangulation
Meta-analysis: combines rigorous scientific data of similar quality and design to conduct statistical analyses.	Triangulation: seeks to make use of data from diverse sources and study designs, and incorporate judgments, findings and interpretations on each data source's limitations

- ✎ Advantages of Triangulation will include:
  - o Can be easily employed in program settings
  - o Can be applied to virtually every program question, but more appropriate while seeking answers to broad questions on program and policy
  - o Helps in identifying more data sources
  - o Helps in bringing out information gaps
  - o Provides new insights and helps in generating new hypotheses
  - o Less resource intensive (relatively)
  - o Makes best possible use of available evidence; a good alternative to new data generation
- ✎ Steps involved in Data Triangulation:
  - o Step 1: Understanding Thematic Areas & Questions for Triangulation
  - o Step 2: Review of Data Sources and Assessment of Data Availability in the District
  - o Step 3: Decision on Questions to be answered for the district
  - o Step 4: Compilation of Secondary Data
  - o Step 5: Data Quality Assessments
  - o Step 6: Data Validation, Adjustments & Filling Data Gaps
  - o Step 7: Preparation of Data Tables with clean data for analysis
  - o Step 8: Data Analysis, Interpretation and Inferences; Describe Thematic Areas
  - o Step 9: Data Triangulation (Hypotheses Building; Answer Triangulation Questions)
  - o Step 10: Preparation of Draft Reports
  - o Step 11: Discussion & Consultation with stakeholders & Local experts on draft reports
  - o Step 12: Finalisation of conclusions and recommendations
  - o REVISIT QUESTIONS AT EVERY STEP

In continuation of this, Dr Yujwal Raj explained on epidemiological considerations, data quality assessments, framework for data triangulation, framework for descriptive analysis, framework for data triangulation, triangulation of information on the same data element from different sources, triangulation of information on different data elements, triangulating time data, triangulating geographical patterns, building an epidemiological framework and other details.

He has also presented different examples supported with pictures and slides on how data triangulation helps in understanding the vulnerabilities, density of population, district prioritization, positivity, risk categorization, etc.

This session was concluded with question and answer session. Dr Yujwal Raj and co-facilitators provided needed clarifications and explanations to the participants.

	Session Topic:	**Presenting Data Graphically – Tables, Graphs, Charts, Infographics, Data Visualisations**

	1215 - 1315 hrs

	Demonstration & Practical Exercise

	Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project
	Ms Ezhilarasi, Biostatistician, VHS Projects

Dr Yujwal Raj and Ms Ezhilarasi jointly explained on the need and importance of presenting the data graphically. During the discussions, Dr Yujwal Raj mentioned that, "a picture is worth a thousand words". He also added that, in Excel that means finding ways to represent numerical data pictorially

so that audience can quickly and easily understand it. It's often easier to look at a chart or graph that interprets trends in a set of data, than to just look at a set of figures.
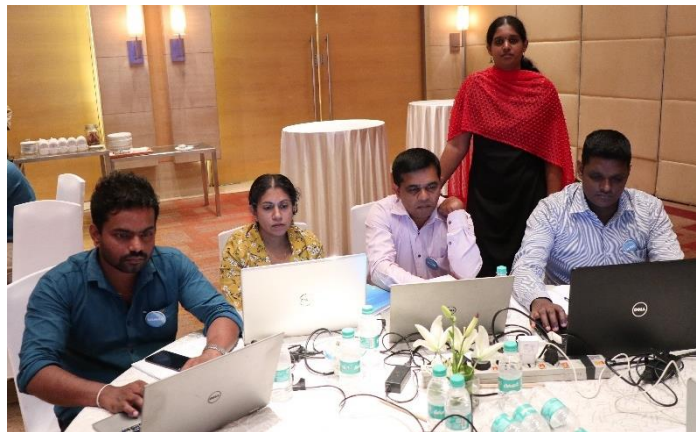
He requested each group to use the existing program data and develop tables, graphs, charts, infographics and data visualization. The facilitators and co-facilitators jointly provided mentorship and hands-on training to enable the participants to develop tables, graphs, charts, etc. Also provided needful clarifications to each group to gain related knowledge and skills for effective presentation of data in a graphical manner. Each group developed the data graphically and presented to the facilitators for review and suggestions.

Lunch Break: 1315 - 1415 hrs

Session Topic: Data Interpretation

1415 - 1515 hrs

Practical Exercise

Ms Ezhilarasi, Biostatistician, VHS Projects
Dr S Beneragama, Epidemiologist, NSACP

Ms Ezhilarasi and Dr Beneragama jointly facilitated the practical exercise on "Ways and means of effective Data Interpretation". During the discussion, informed that: "Data interpretations provide investigators with the information needed to make informed decisions about the issues and concerns their research was designed to address". The facilitators requested the respective team to work on the data interpretation

with the guidance of the mentors/ facilitators. Each group has undertaken practical learning on data interpretation with the guidance of the mentors/ facilitators. This process enabled the participants to understand effective data interpretation for programmatic decision making and dissemination.

Session Topic:	Communication of analysis results – Abstracts, Policy Briefs, Folders, Handouts, Posters, Papers

1515 - 1600 hrs

Presentation & Discussion

Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

Dr Yujwal Raj handled the session on "Communication of analysis results" for effective dissemination, influencing policy makers for decision making, introducing systems for programmatic decision making, etc. In the presentation, he shared detailed outline along with significance of communication of data analysis results in the form of Scientific Abstracts, Scientific Papers/ Articles, Policy Briefs, Handouts, Posters, Reports and Presentation.

Scientific Abstracts:	Scientific Paper/ Article:
✎ Short and Summarised; 250-300 words	✎ Published in Peer Reviewed Journals
✎ For conference and journal publications	✎ Detailed version of the data sources, methods and results
✎ Features	✎ Sections
o Objectives	o Introduction
o Methods	o Methods
o Results	o Results
o Conclusion	o Discussion – The most important section; Author's contribution
o Key words	o References
	o Acknowledgements
	o Conflict of Interest statement
	o Tables & Figures
Policy Briefs:	**Handouts/ Folders:**
✎ Targeted at Policy makers, senior level program managers & experts	✎ Larger than policy briefs; Smaller than Papers; Much smaller than reports

- Key take home messages to be very crisply worded and adequately highlighted; Should be at the top or on the cover page
- Extract of only the top-line, high priority findings
- Presented in a visually appealing manner for quick consumption; Graphs, Infographics, Pictures; Not in tables; Very limited text
- Very limited info on methods if required
- Not more than 2 pages
- Sometimes done as wall chart
- Colourful and elegantly designed

- 4-8 pages; designed as a folder/ folder chart/ booklet
- Targeted at key stakeholders – prog managers, communities, field staff, academicians, experts
- Easy to mail and circulate
- Presents the topline findings and other key findings
- Graphs & Tables
- Brief paragraphs or text on the intro / background /methods may be included
- Conclusions/ Key take home messages highlighted
- Contact details

Posters:

- Large sized visual presentation of the methods and results
- Mostly use graphs, maps, infographics; Limited text
- Targeted towards academic dissemination & conferences
- May also be used as standees during official meetings/ program events
- Sections:
  - Introduction
  - Methods
  - Results – Major section
  - Conclusions

Presentations:

- Using MS Powerpoint or Prezi
- Based on target audience
  - Detailed or Brief
  - Text or Graphics or both
  - Academic or Policy
  - High impact presentations vs Discussion-oriented
  - Interesting or boring
- Clean, less crowded slides (not more than 8 lines)
- Can embed videos and animation

Reports:

- More detailed and elaborate
- Complete details of the project, process, outcomes and discussion
- Sections and chapters
- Detailed presentation of results in text, tables & graphics forms
- Foreword/ Preface, List of abbreviations, List of tables, List of figures
- Detail references & acknowledgements
- Targeted at universal audience
- Final and complete consolidation of all the process and the results

This interactive session provided an eye-opener on various methods of communicating/ disseminating the data analysis based on the audience/ target groups. Also, discussed in detail, the advantages and limitations of each of the method.

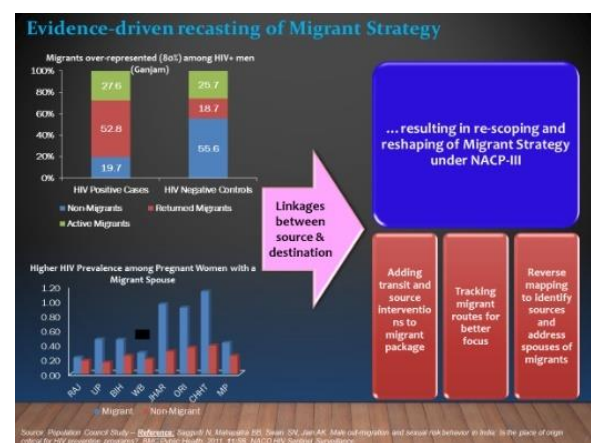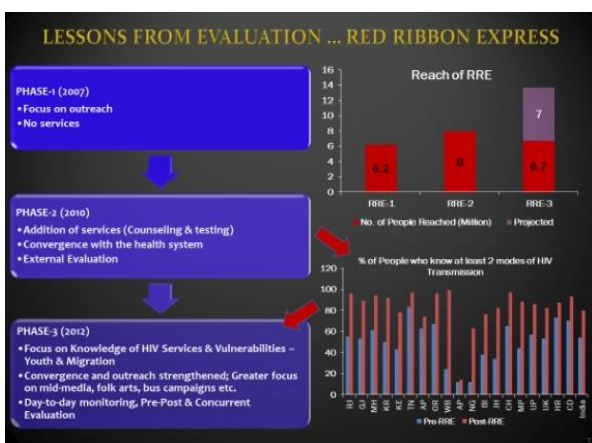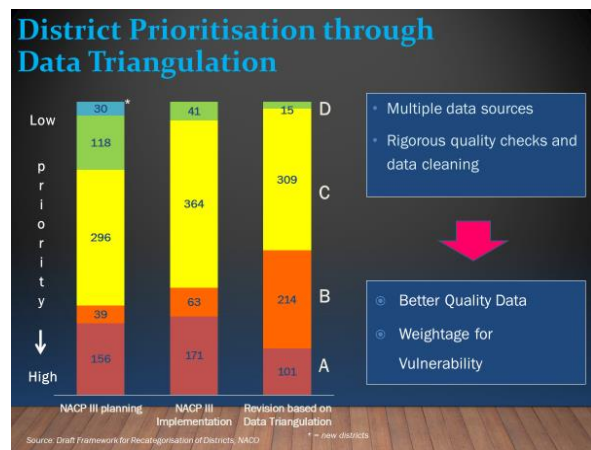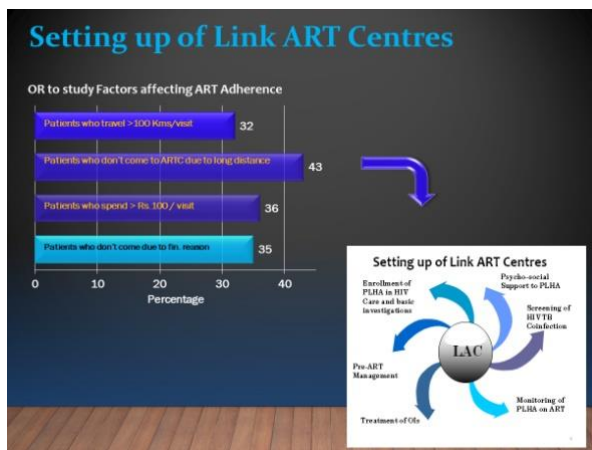|	
Session Topic:	**Use of Data for Programmatic Decision Making**
	1600 - 1645 hrs
	Presentation
	Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project

In continuation of the session on communication of analysis results, Dr Yujwal Raj made a presentation supported with discussions on "Data use for Programmatic Decision Making – A systems approach" with the focus on how data is used for programmatic decision making.

In the presentation, he has covered the following aspects and detailed out:

Successful control of HIV epidemic needs	✎ Effectiveness in delivery of services at every level….targeting the right thing ✎ Understanding local scenario and factors responsible ✎ District specific action plans with identified focus areas ✎ Customized choice of program interventions ✎ Contextualized emphasis on program components ✎ EFFECTIVE & TIMELY USE OF DATA AT ALL LEVELS
DATA USE - An approach, a mindset	✎ Developing the approach of using data for decision-making and program planning at all levels ✎ Inculcating, among program managers, a habit of looking at data regularly ✎ Encouraging simple analytical methods that anyone can employ ✎ Emphasizing the importance of local knowledge and contextual understanding

|	
	✍ Capacity-building of state & district level institutes/personnel for sustainability
A long term process...	✍ Trigger the interest in data analysis and use
	✍ Make program managers work on data of their own state/district & reflect upon the insights
	✍ Expose them to real time examples that demonstrate the use of data for decision making & program planning
	✍ Develop guidelines & tools to assist them in data use
	✍ Develop HR plans that sustain the interest & facilitate data use as an on-going process
	✍ SYSTEM STRENGTHENING FOR DATA USE

In continuation of this session, he shared different examples on how data were used for decision making. Some of the examples presented are depicted below:

State - No. of DAPCUs	% of DAPCUs submitted DAPCU Report	% of DAPCUs conducted monthly review meeting with HIV facilities	% of DAPCC meetings held in the last three months	% of HIV/TB Coordination meetings held in the last three months	% of DAPCUs facilitating Social Benefit schemes	% of DAPCUs initiated actions to improve the program quality at facility level	SACS conducting DAPCU review meetings in the last three months	% of Vacancies in DAPCUs in the reporting month	% of DAPCUs received/have operational funds	% of score	Score (>=85, 70-84, <70)
Andhra Pradesh - 13	2	2	1	2	2	2	3	1	3	67	1
Arunachal Pradesh - 1	3	3	1	1	3	3	1	1	1	63	1
Assam - 1	3	1	3	1	3	3	1	1	1	63	
Bihar - 3	3	3	1	3	3	3	1	1	1	70	2
Delhi - 4	3	3	1	1	2	1	1	1	1	52	
Gujarat - 10	3	3	2	3	3	2	3	1	2	81	2
Haryana - 1	3	3	1	3	1	1	1	1	3	63	1
Karnataka - 26	3	3	1	2	3	3	1	1	1	67	
Kerala - 2	2	3	1	3	2	3	1	1	3	70	2
Madhya Pradesh - 8	2	1	1	1	2	1	1	1	1	41	
Maharashtra - 30	3	2	2	2	3	1	3	1	3	74	2
Manipur - 9	3	2	1	1	3	2	3	1	1	63	
Mizoram - 3	3	1	1	1	3	3	1	3	3	70	2
Nagaland - 10	3	1	1	1	3	3	1	3	1	63	
Orissa - 7	3	2	2	2	3	3	1	1	3	74	2
Punjab - 2	3	3	3	3	2	3	3	1	3	89	3
Rajasthan - 7	3	3	1	3	2	2	3	1	1	70	2
Tamil Nadu - 27	3	3	1	3	3	2	1	1	2	70	2
Telangana-10	3	1	1	1	1	1	1	1	3	48	
Tripura - 1	3	1	1	3	3	3	3	3	3	85	3
Uttar Pradesh - 5	3	2	1	1	3	3	3	2	3	70	2
West Bengal - 8	2	2	1	1	3	3	3	1	2	67	
3	>95	>95	>85	>95	>75	>95	100	0-5	>90		3 Good
2	80-95	80-95	70-85	80-95	50-75	80-95		6 to 10	75-90		2 Average
1	<80	<80	<70	<80	<50	<80	<100	>10	<75		1 Poor

He also explained each best practice on how data analysis has helped in decision making for strengthening the program. He narrated some of the best practices based on India initiatives.

As a next step, explained the details on knowledge management and covered the aspects such as forms of knowledge, components of knowledge management, knowledge creation, knowledge collection and archiving, knowledge sharing and dissemination, knowledge translation (ensuring effective data use), need for system strengthening for effective knowledge management and other relevant details. He also presented on translating knowledge into practice, moving from structural to functional approach, Way Forward… New Evidence and Knowledge Management.
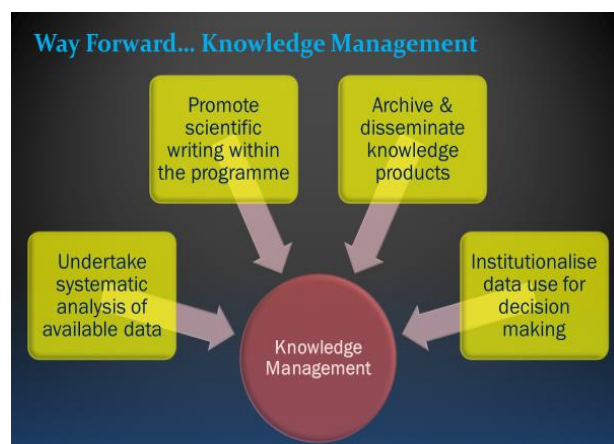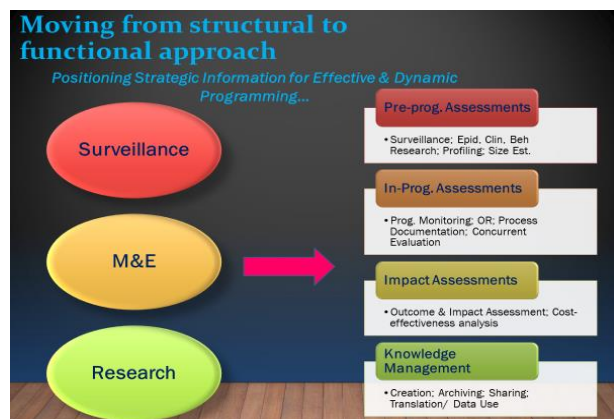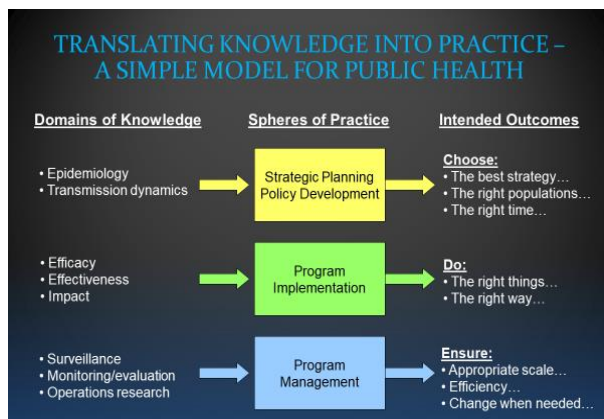
This interactive session supported with examples has enabled the participants to understand, need, importance, methods of use of data for programmatic decision making and strengthening knowledge management and translating knowledge into practice. The facilitators and co-facilitators provided clarifications and concluded the technical sessions.

> **Panel discussions on technical clarifications:** Dr Yujwal Raj, Ms Ezhilarasi, Dr Ariyaratne, Dr Beneragama, Dr Ilanchezhian and Mr Suneel jointly managed the panel discussions. Participants were asked to clarify any of the doubts on the three-day sessions and any additional information required on data management. The clarifications raised by the participants were provided with needed information, clarifications and details. This has provided opportunity for the participants to comprehend the overall learnings on data management and obtain clarity on the additional information needed.

Post-Assessment: VHS-CDC Project administered pre-assessment on the first day before commencing the training proceedings. Similarly, administered post-assessment by providing a standardized tool with each participant. Each participant has filled in and submitted the post-assessment form. The project team has analysed the pre & post-assessment (the analysis provided in the chapter Training program – An overview in the sub-section 2.9.1. Training evaluation and effectiveness).

Post-Training Evaluation: VHS-CDC Project has administered post-training evaluation by using the 5 point-scale covering the aspects such as: course content, structure and process of training, trainers & mentors – knowledge and delivery style, facilities and amenities and overall feedback. Overall, the evaluation tool has five sections with 29 questions. Each participant was encouraged to fill in unanimously to understand the overall feedback on the training program. The same has been analysed and presented in the chapter Training program – An overview in the sub-section 2.9.2. Post-Training evaluation and effectiveness).

3.3.3. Valedictory Function

NSACP and VHS-CDC Project jointly organized International Training on Data Management and Analysis of HIV/AIDS Data for three days. As a part of this three-day training, valedictory function was held between 1700-1730 hrs.

On behalf of NSACP, VHS-CDC Project and on behalf of Director Projects-VHS, Dr T Ilanchezhian welcomed the chief guests and participants for the valedictory function. During the welcome address, he also highlighted the process involved in conducting this training program, support extended by NSACP, efforts initiated by VHS-CDC Project and team, etc.

He also thanked Dr Rasanjalee Hettiarachchi, Director, NSACP and Dr Ariyaratne Manathunge, Consultant-Venereologist, NSACP for their continued support in planning and conducting this training program. He welcomed the organizing committee members from:

NSACP:

 Dr Muraliharan, MO/Planning/SIM unit/NSACP

 Dr Piyumi Perera, Acting Venereologist /SIM unit/NSACP

VHS-CDC Project:

 Dr Joseph D Williams, Director Projects, VHS

 Dr T Ilanchezhian alias Dr IC, Senior Technical Advisor, VHS-CDC Project

 Mr B Kamalakar, Finance Controller, VHS-CDC Project

 Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project

 Ms T Sudha, Senior Programme Associate, VHS-CDC Project

 Mr S Sathyaraju, Associate Manager – Finance, VHS-CDC Project

He welcomed Dr A Vijayaraman, Senior Consultant, VHS, Mr Raj Raman, Technical Lead, VHS-CDC Project, Mr Rajesh, Program Officer, CHARTERED and VHS team. During the welcome note, he mentioned that, this training program was successful because of the coordinated efforts, active involvement of all partners and participants, excellent technical team in facilitating the sessions, etc.

In continuation of the welcome address, VHS-CDC Project honoured the guests:
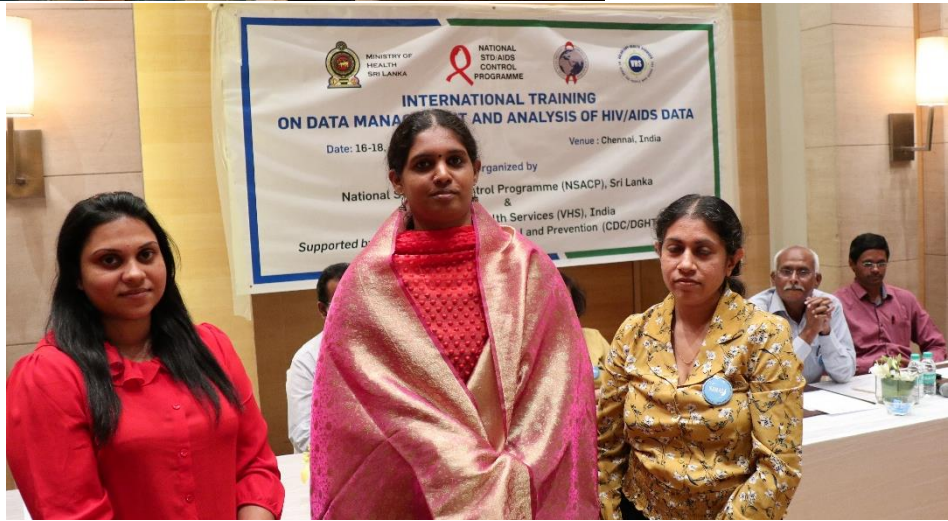
Mr Raj Raman invited Dr Yujwal Raj for making a presentation on the overview of the training on data management.

Dr Yujwal made a presentation on the key learnings/ take-home messages and next steps on training on data management and shared the following:

- ✍ Hands-on Training on:

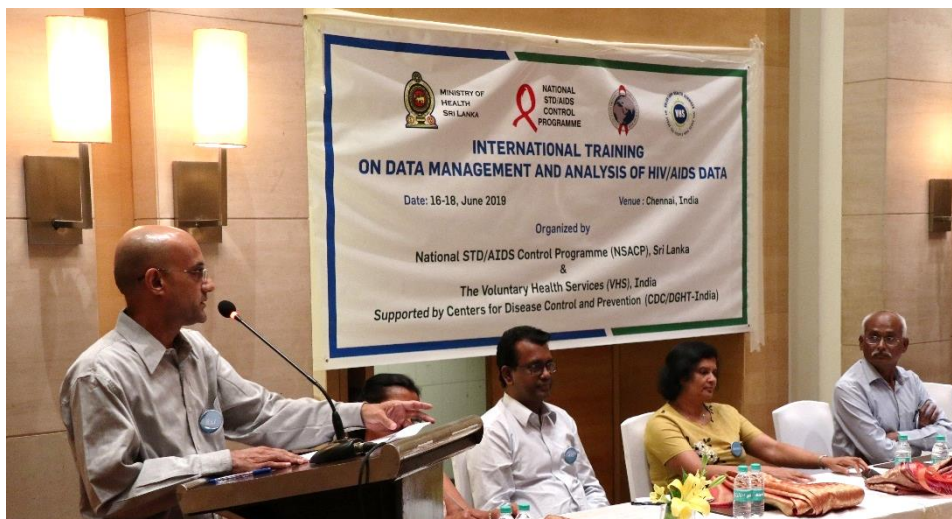 - ☞ Understanding datasets, components, structure & database management principles
  - ☞ Variables & Indicators – Types and how to manage
  - ☞ Data Quality Assessment & Adjustments using Excel
  - ☞ Data Management using SPSS
  - ☞ Exposure to Cohort Database using MS Access
  - ☞ Data Triangulation
  - ☞ Communication of Data Analysis Results
- ✍ Next Steps:
  - ☞ Work more on NSACP datasets
  - ☞ Explore Excel functions and options
  - ☞ Use SPSS with survey data
  - ☞ Identify topics for analysis and commission
  - ☞ Practice…. Practice…. & Practice….
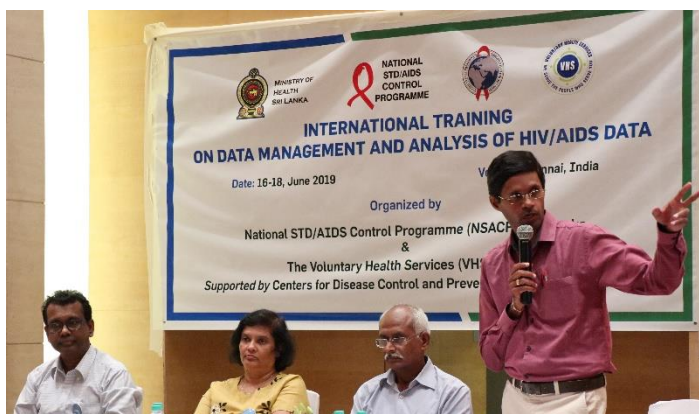
Dr Yujwal Raj requested each team to evolve tentative suggestions and decide the specific topics on each of the proposed area. Based on this, discussions held and Dr Muraliharan facilitated the topics and the responsible officer for ensuring follow-up:

PMTCT Data	Dr Indika Malwatte, Acting Venereologist/STD clinic, Hambanthota.
ART Data	Dr L. Rajakaruna, MO/Informatics/SIM unit/NSACP
Training and Capacity / STD clinic Data	Dr D K J Thanthree, Acting Venereologist /NSACP
ART Pharmacy Stock Data	Ms Chamini Lakpriya, Pharmacist/NSACP
ART Data	Ms Jayanthilage Indrani Kulathunge, Public Health Nursing Sister/STD clinic, Ragama
ART Clinic Data	Mr P.A.P. K Sadaruwan Wijerathne, Public Health Inspector /HIV clinic/NSACP
STD Data	Mr P K N S P Senevirathne, Public Health Inspector /NSACP
STD Data	Mr Lakshan Fernando, Senior Strategic Information officer/SIM unit, GFATM

The entire team has agreed on the proposed follow-up plans emerged during the Valedictory session.

Feedback: In continuation of this, Dr Piyumi and Mr Lakshan shared the feedback.

"I had a great opportunity to participate in the training on Operational Research, Scientific Writing and Data Management. Each of the training was very beneficial and complement each other. Overall, this training focused on data management with balancing the technical input and hands-on training. This international training on data management was very fruitful in gaining knowledge and skills. This training also achieved its objectives by ensuring technical team, good venue, active engagement of participants, technical input supported with hands-on training, logistics coordination, etc."

- Dr Piyumi Perera,
Acting Venereologist /SIM unit/NSACP

"*Training on Data Management was very much useful and enabled me to gain knowledge and skills on effective use of data for analysis, interpretation, presentation and dissemination. This training on data management will help in strengthening the data quality and undertaking programmatic decisions for further strengthening, scaling up, reviving or re-strategizing the program. This training was conducted with participatory training methodologies supported with hands-on training to the team and individuals to enable everyone to acquaint needed knowledge and skills. We can adopt the knowledge and skills in our practices and in our performances. This training has helped us to excel in excel and brief understanding on the Advanced Statistical Analysis. Thanks to VHS-CDC for arranging this training.*"

- Mr Lakshan Fernando,
Senior Strategic Information officer/ SIM unit, GFATM

Mr Raj Raman invited Dr Beneragama, Epidemiologist/NSACP to deliver felicitation address. In her speech, she mentioned that, "*this International Training on Data Management has achieved its objectives almost 100%. The success is because of training plan, training team, coordination team, involvement of participants, technical and hands-on training, resource materials, enabling environment and many more*". Appreciate the efforts undertaken by VHS-CDC Project and initiatives undertaken by Director-NSACP and SIMU team.

Mr. Raj Raman invited Dr Vijayaraman, Senior Consultant-VHS to deliver felicitation address. In his address, he mentioned that: "*Learning is a continuous process…. this International Training on Data Management has provided great opportunity to learn, update and practice. VHS has created this learning environment with excellent planning and coordination covering technical and administrative aspects. This training will be useful for all public health personnel.*
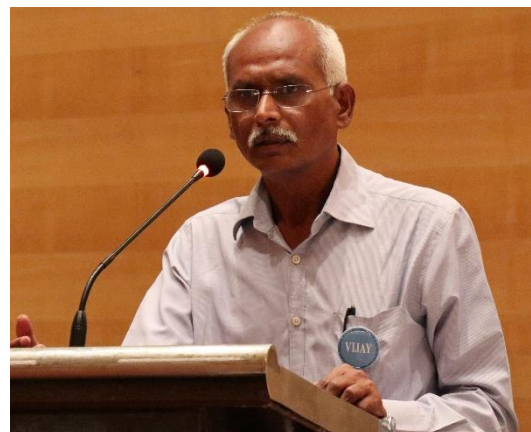
He also appealed on the need and importance of utilizing the knowledge and skills for data analysis, interpretation and presentation. This training provided knowledge and skills for strengthening program performances, achieving the job responsibilities and improving individual career. Application of this data management training experiences will always very much useful at every stage of our program management. He also applauded the active participation of the team and made a special remark and the punctuality of the participants on all days by everyone".

Dr Rasanjalee Hettiarachchi, Director, NSACP delivered valedictory address. In her valedictory address, "*Appreciation and thanks to Dr Joseph D Williams, Dr T Ilanchezhian and the entire team for their efforts in conducting this training in coordination with SIMU-NSACP. Admire with technical team identified and engaged in conducting this training program. VHS-CDC Project's Technical Advisor Dr Yujwal Raj can teach/ train any category of persons in a systematic way. She appreciated Dr Yujwal and the training team for their coordination efforts in*

training our team. As a Director, I have realized the importance of the data analysis and planning to request our program unit heads to undertake data analysis effectively and efficiently. She thanked VHS-CDC Project team and CDC team for their support. She also appealed on the need and importance of practicing and continue to practice the knowledge and skills gained through this training. Also suggested to use this training inputs for strengthening the data management for effective program management".

Dr Rasanjalee Hettiarachchi, Director, NSACP, Dr Ariyaratne Manathunge, Consultant-Venereologist, NSACP, Dr S. Beneragama, Epidemiologist/NSACP, Dr A Vijayaraman, Senior Consultant, VHS and Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project jointly distributed the certificates for each one of the participants underwent training on Data Management. On behalf of NSACP and SIMU, in appreciation, recognition, contribution and for successful conduct of training, provided simple traditional memento to the following officials in VHS-CDC Project:

Core team involved in organizing this training program	☞ Dr Joseph D Williams, Director Projects, VHS
	☞ Dr T Ilanchezhian, Senior Technical Advisor, VHS-CDC Project
	☞ Mr B Kamalakar, Finance Controller, VHS-CDC Project
	☞ Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project

	☞ Ms T Sudha, Senior Programme Associate, VHS-CDC Project
	☞ Mr S Sathyaraju, Associate Manager – Finance, VHS-CDC Project
Contributors	☞ Dr A Vijayaraman, Senior Consultant, VHS
	☞ Mr Raj Raman, Technical Lead, VHS-CDC Project
Facilitators/ Trainers	☞ Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project
	☞ Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project
	☞ Ms Ezhilarasi Chandrasekaran, Biostatistician, VHS Projects

In appreciation and recognition of the coordinated efforts, the team has also recognized the contributions of Dr T Ilanchezhian and Mr Sathyaraju by honouring with shawl.

Dr Ariyaratne has delivered vote of thanks. In his speech, he thanked:

- Dr Joseph D Williams, Director Projects, VHS for his leadership, continued support, encouragement and contributions in this technical cooperation.

- Dr T Ilanchezhian alias Dr IC, Senior Technical Advisor, VHS-CDC Project for his systemati c support in planning, conducting, coordinating this training this training program with active engagement of SIMU.

- Mr B Kamalakar, Finance Controller and Mr Sathyaraju, Associate Manager – Finance, VHS-CDC Project for their support in logistics coordination including venue, ticket, food, travel, transport and other related activities.

- Ms T Sudha, Senior Programme Associate, VHS-CDC Project for her continuous support in ensuring communication, documentation of the training, registration and all other support.

He also thanked the trainers Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project, Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project and Ms Ezhilarasi Chandrasekaran, Biostatistician, VHS Projects for their support in conducting this training program. He also thanked Dr Yujwal for his remarkable, professional capacity in conducting training on any subject for any audience. Thanks to VHS-CDC Project for identifying and engaging good trainers.

Thanked Dr A Vijayaraman, Senior Consultant, VHS, Mr Raj Raman, Technical Lead and Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project & team for their participation and contribution. On behalf of SIMU team, we also thanked Dr Rasanjalee Hettiarachchi, Director, NSACP for support extended for the team to participate in this training and for joining in training program. Also thanked Dr S. Beneragama, Epidemiologist/NSACP for participation & support. He concluded that, VHS-CDC Project with the support of CDC/DGHT-India has successfully conducted this training program and contributed for enhancing the capacity of the SIMU team.

In continuation of the Valedictory function, group photo session was held.
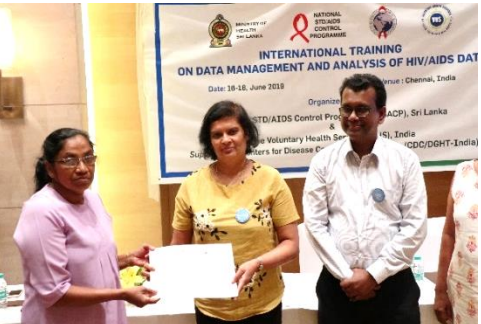
Certificate of Participation

MINISTRY OF HEALTH SRI LANKA
NATIONAL STD/AIDS CONTROL PROGRAMME
VHS

This is to certify that Dr/Mr/Ms...

from.. has successfully participated in the

"International Training on Data Management and Analysis of HIV/AIDS Data"

held from 16-18, June 2019 at Chennai, India.

Dr. Joseph D Williams
Director - Projects
VHS, Chennai

Dr. Ariyaratne Manathunge
Consultant – Venereologist
NSACP, Sri Lanka

Dr. Rasanjalee Hettiarachchi
Director
NSACP, Sri Lanka

Certificate Distribution

4. Exposure Visit to VHS Projects

NSACP and SIMU has expressed on the need for integrating exposure visit as a part of the International Training on Data Management. Considering this, VHS-CDC Project has facilitated the following:

Place of visit	Purpose	Persons contacted
VHS Projects	✎ To understand VHS and VHS Projects initiatives on HIV/AIDS ✎ To understand some of the best practices, innovations undertaken on HIV/AIDS prevention, care support & treatment, strategic information, etc. ✎ To understand the TA support being extended to NACP IV and the key learnings.	☞ Dr T Ilanchezhian ☞ Mr B Kamalakar ☞ Dr A Vijayaraman ☞ Mr Raj Raman ☞ Mr Suneel Kumar ☞ Ms T Sudha ☞ Mr S Sathyaraju ☞ Ms K Umarani ☞ And all the staff team
IDMC Project	✎ To understand the key activities and functions of IDMC Project. ✎ To understand the data management practices, existing systems and how data are being used. ✎ To expose to the existing software in data management.	☞ Mr Kishore Kumar ☞ Ms Ezhilarasi

VHS-CDC Project facilitated a visit to VHS Projects and IDMC Project and facilitated experience sharing, interactions, observation, question & answer session supported with sharing of resource materials.

ANNEXURES

Chapter 5: Annexures

5.1.   Training agenda

GOAL: To build the data skills of NSACP staff in order to enhance the data quality, improve the data analysis and strengthen the use of HIV/AIDS data for epidemiological & programmatic decision making under NSACP.

OBJECTIVES:

- To build the understanding of the NSACP staff on the programmatic & epidemiological databases under NSACP;
- To introduce the basic principles and approaches of data management;
- To orient participants on methods of data quality assessment, validation & adjustments;
- To build the basic skills in statistical data analysis of program and epidemiologic data;
- To briefly introduce various software packages used for statistical analysis; and
- To improve the presentation, dissemination and use of data for programmatic purposes.

OUTCOMES:

- Identified important questions/ topics of programmatic relevance suitable for secondary data analysis.
- Exposed participants to basic principles and methods of data management.
- Enhanced knowledge and skills on analyzing the data and use of data under NSACP through hands-on practice on examples and actual program data.
- Improved skills on effective use of data to make evidence-based decision making under the program.
- Evolved a data analysis plan as a follow-up to the training and identified the next steps.

FACILITATORS:

Facilitators – VHS-CDC Project Consultants	Co-Facilitators
☞ Dr Yujwal Raj, Technical Advisor (SI), VHS-CDC Project. ☞ Ms Lakshmi Anu Ramakrishnan, Consultant, VHS-CDC Project. ☞ Ms Ezhilarasi, Biostatistician, VHS Projects.	☞ Dr Ariyaratne Manathunge, Consultant-Venereologist, NSACP. ☞ Dr S Beneragama, Epidemiologist, NSACP. ☞ Dr T Ilanchezhian *alias* Dr IC, Sr. Technical Advisor, VHS-CDC Project. ☞ Mr Suneel Kumar Chevvu, M&E Officer, VHS-CDC Project.

SCHEDULE

Time	Session	Session Details	Facilitators
0900 – 1730	**Day 1 – 16/06/2019 (Sunday)**		
0900 – 0930	Registration		
0930 – 1000	Inaugural • Introduction of participants/ facilitators • Objectives & Expected Outcomes of the training		
1000 – 1015	Pre-assessment		
1015 – 1115	Planning data analysis – Identifying programmatic questions & mapping data sources	Discussion & Practical Exercise 1	Dr Yujwal Raj
1115 – 1130	Break		
1130 – 1215	Introduction to principles of database management	Presentation & Practical Exercise	Dr Lakshmi
1215 – 1330	Understanding datasets under NSACP – Issues	Group Exercise	Dr Yujwal Raj Dr Ariyaratne
1330 – 1430	Lunch		
1430 – 1530	Variables & Indicators	Presentation & Practical Exercise	Dr Lakshmi
1530 – 1630	Data quality assessment	Presentation & Discussion	Dr Yujwal Raj
1630 – 1730	Data Adjustments & Validation	Demonstration & Group Exercise	Dr Lakshmi Dr Yujwal Raj
1730 – 1800	Participants work on their datasets with facilitators		

Time	Session	Session Details	Facilitators
0900 – 1730	**Day 2 – 17/06/2019 (Monday)**		
0900 – 0930	Recap		Participants
0930 – 1030	Simple data analysis – measures & methods	Presentation & Practical Exercise	Dr Yujwal Raj Dr Beneragama
1030 – 1130	Using Excel for simple data analysis	Demonstration & Practical Exercise	Dr Yujwal Raj
1130 – 1145	Break		
1145 – 1315	HIV/AIDS specific analysis from program data (Epidemic Monitoring, Progress Monitoring, Performance Monitoring, Cascade & Cohort Analysis)	Discussion & Group Exercise	Dr Yujwal Raj Ms Ezhilarasi Dr Ariyaratne
1315 – 1415	Lunch		
1415 – 1545	Basic statistical analysis	Demonstration & Practical Exercise	Ms Ezhilarasi
1545 – 1700	Introduction to advanced statistical analysis and exposure to SPSS, Stata & R	PPT, Demo & Practical Exercise	Ms Ezhilarasi
1700 – 1730	Hands-on training on Excel	Hands-on training	Dr Yujwal Raj
0900 – 1730	**Day 3 – 18/06/2019 (Tuesday)**		
0900 – 0930	Recap		Participants
0930 – 1100	Advanced use of Excel – Pivot Tables, Formulae & Macros	Demonstration & Practical Exercise	Dr Yujwal Raj
1100 – 1115	Break		
1115 – 1215	Data Triangulation	Presentation & Discussion	Dr Yujwal Raj
1215 – 1315	Presenting Data Graphically – Tables, Graphs, Charts, Infographics, Data Visualisations	Demonstration & Practical Exercise	Dr Yujwal Raj Ms Ezhilarasi

Time	Session	Session Details	Facilitators
1315 – 1415	Lunch		
1415 – 1515	Data Interpretation	Practical Exercise	Ms Ezhilarasi Dr Beneragama
1515 – 1600	Communication of analysis results – Abstracts, Policy Briefs, Folders, Handouts, Posters, Papers	Presentation & Discussion	Dr Yujwal Raj
1600 – 1645	Use of Data for Programmatic Decision Making	Presentation	Dr Yujwal Raj
1645 – 1700	Post-assessment and training evaluation		
1700 – 1730	Valedictory		

5.2. Training Need Assessment Form

1. Mention the category of personnel/ officials proposed to participate in the training program and their key responsibilities.

Designation / category of persons	No. of participants	Key responsibilities

2. Whether the proposed participants has undergone any of the training on Data Management and Analysis previously? **YES / NO**

   If yes, please specify.

   ....

   ....

   ....

   ....

3. What are all the expectations from the upcoming International Training on Data Management and Analysis of HIV/AIDS Data including data skills, data quality, data analysis and use of HIV/AIDS data for epidemiological & programmatic? Please specify.

   ....

   ....

   ....

   ....

5.3. Pre & Post-Training Assessment Forms

(To be answered by the participants before & after the training.)

1. **Fields in a database refer to??** ( )
   (A) Rows (B) Columns (C) Cases (D) Data cells

2. **Information is…..** ( )
   (A) Raw Data (B) Processed Data (C) Input Data (D) Organized Data

3. **Which of the following is not a "Graphic representation"?** ( )
   (A) Pie Chart (B) Bar Chart (C) Table (D) Histogram

4. **Mean, Median and Mode are** ( )
   (A) Measures of deviation (B) Ways of sampling
   (C) Measures of central tendency (D) Variables

5. **What is Metadata** ( )
   (A) Data with data (B) Data in data (C) Data about data (D) Data for data

6. **Which of the following are the aspects of data quality?** ( )
   (A) Accuracy (B) Completeness (C) Consistency (D) All the above

7. **A good database is one without** ( )
   (A) Blank cells (B) Merged cells (C) Duplicate variables (D) All the above

8. **A descriptive list of names, definitions and attributes of data elements**
   collected in an information system or database is called ( )
   (A) Dataset (B) Data Manual (C) Data Dictionary (D) Variable List

9. **Mild, Moderate and Severe Hypertension is an example of** ( )
   (A) Nominal variable (B) Ordinal variable (C) Interval variable (D) Ratio variable

10. **Patient waiting time at an ART clinic is an example of** ( )
    (A) Output indicator (B) Outcome indicator
    (C) Process indicator (D) Input indicator

11. Precision of data refers to   (   )

(A) Completeness of dataset (B) Adequate details (C) Repeatability (D) Accuracy

12. Program data may not be useful for   (   )

(A) Progress monitoring (B) Performance monitoring

(C) Impact evaluation (D) Cascade monitoring

13. Function in Excel used to generate crosstabs of different variables is   (   )

(A) What If analysis (B) Pivot Tables (C) Macros (D) Formulae

14. Which of the following is not a descriptive statistic?   (   )

(A) Odds Ratio (B) Range (C) Standard Deviation (D) Mode

15. Data Triangulation   (   )

(A) Synthesises multiple datasets (B) Cannot be used in poor data settings

(C) Can only use three data sources (D) Does not include poor quality data

5.4.   Training Evaluation Form

Please rate your level of agreement with each of following statements on a scale of 1-5:

5	4	3	2	1
Exemplary	Very Good	Good	Average	No Comments

	Rate
Course content	
I understood the learning objectives well.	
The course content met my expectations & was in line with the learning objectives.	
I found the course material (slides, handouts, exercises, etc.) useful & easy to follow.	
Training received was adequate for my position/ experience.	
The course will directly or indirectly improve the performance of my duties.	
I am clear about where to find answers to questions that I have about Data Management.	
Structure & process of training	
The training sessions are well structured & appropriately scheduled.	
Instructional methods used during training are effective.	
Participation and interaction were encouraged during the sessions.	
The speed/ pace at which the training was conducted was appropriate.	
I was comfortable with the length of the sessions & length of the training.	
Group works/ hands-on exercises are well structured with clear instructions.	
Guidance & mentoring support was adequately provided during group works/ exercises.	
Adequate chance was given for participants to ask questions and resolve doubts.	
There was ample opportunity to practise the skills I am supposed to learn.	
I received adequate feedback from the facilitators during the practice sessions.	
Trainers & Mentors – Knowledge & Delivery Style	
The facilitators were knowledgeable on the subject matter.	
The facilitators explained the concepts clearly and in an understandable way.	
The facilitators effectively handled the questions that were asked.	
The examples & experiences quoted by the trainers were relevant & apt to my situation.	
I was well engaged during the sessions/ the sessions were kept alive, interesting & interactive.	
How would you rate their facilitation skills overall, on a scale of 5?	

Facility & Amenities	
The venue and seating arrangement was comfortable and suitable for the training.	
The environment was free from distractions and conducive to learning.	
The audio-visual set up was good and clear.	
The quality of food was good.	
Overall	
How will you rate the training, overall, on a scale of 5?	
I am satisfied with the training course.	
I will recommend this course to others.	

What did you like about the course?

List the three most important things you learnt from this training.

How can we strengthen and improve this training further?

Would you recommend including any other topics in the training course?

Any other comments.

MINISTRY OF HEALTH SRI LANKA

NATIONAL STD/AIDS CONTROL PROGRAMME

INTERNATIONAL TRAINING
ON DATA MANAGEMENT AND ANALYSIS OF HIV/AIDS DATA

Date: 16-18, June 2019   **Venue : Chennai, India**

Organized by

National STD/AIDS Control Programme (NSACP), Sri Lanka
&
The Voluntary Health Services (VHS), India
Supported by Centers for Disease Control and Prevention (CDC/DGHT-India)

VHS-CDC Project

The Voluntary Health Services (VHS), India

Supported by Centers for Disease Control and Prevention (CDC/DGHT-India)

T.T.T.I. Post, Rajiv Gandhi Salai, Taramani, Chennai – 600 113, Tamil Nadu, INDIA.

Ph.: +91-44-22541965 | Email: vhs.cdcproject@gmail.com