Best Practices in Strategic Information

Best Practices Series 5

Electronic Information Management System (EIMS)
– An effective case & program management tool for HIV/AIDS

Technical Assistance support and submitted by

The Voluntary Health Services (VHS),

Supported by **Centers for Disease Control and Prevention (CDC),**

(VHS-CDC Project),

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

Tamil Nadu, INDIA.

Submitted to

National STD/AIDS Control Programme (NSACP)

Ministry of Health, Nutrition & Indigenous Medicine, Govt. of Sri Lanka

No.29, De Saram Place, Colombo 10, Sri Lanka.

MINISTRY OF HEALTH SRI LANKA

NATIONAL STD/AIDS CONTROL PROGRAMME

VOLUNTARY HEALTH SERVICES VHS WE SERVE THE PEOPLE WHO SERVE YOU

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Foreword

HIV/AIDS response globally has been a fountainhead of innovations and best practices that were evolved to customise the program and match the needs of the epidemic. Last three decades of HIV programming has seen several systems and initiatives that evolved to be called global best practices. A few efforts have been made to systematically document such best practices in HIV/AIDS response so that the lessons learnt from them can benefit the other programs or other areas or countries. These best practices span the entire spectrum of the HIV/AIDS program primarily focussing on prevention and treatment strategies, service delivery, community participation, multi-stakeholder response, financial systems and supply chain. However, there are very limited instances of documenting best practices in Strategic Information Management related to HIV/AIDS.

National STD/AIDS Control Programme of Sri Lanka has evolved robust Strategic Information Management systems over the decades, upon the foundations of the much stronger STD control program in the country. STD surveillance system, HIV case reporting system, HIV cohort tracking system and data dissemination practices are some shining examples of best practices in Strategic Information for HIV/AIDS that NSACP has developed over years. An exercise has been carried out to systematically review such initiatives from the lens of documenting best practices and this publication is an outcome of such an effort. I sincerely hope that this publication will not only highlight the achievements and lessons learnt from the past experiences, but also show us the way forward in further strengthening them.

In preparation of these best practices, we thank Dr Ariyaratne Manathunge, Consultant-Venereologist and Coordinator-SIMU, NSACP for his leadership and coordinating the technical assistance to NSACP as nodal officer for SIMU-NSACP. His strategic guidance in developing and bringing out the best practices document (book on best practices, best practices series and book of abstracts on best practices) covering both existing and emerging is highly appreciable. As a part of this, VHS-CDC Project in partnership with NSACP is bringing out "Best Practices Series" covering one book on each best practice on Strategic Information. In this regard, this book on best practice titled *"Electronic Information Management System (EIMS) – An effective case & program management tool for HIV/AIDS"* has been developed for effective dissemination. We also appreciate the contributions made by SIMU team, all the NSACP senior officials, key stakeholders and peripheral STD clinic team members in developing these best practices.

We appreciate the technical support being extended by VHS-CDC Project with the support of Centers for Disease Control and Prevention (CDC-INDIA) in planning and conducting this study in a participatory manner for introducing evidence based comprehensive capacity building plan for the Strategic Information Management team.

We would like to thank The Voluntary Health Services (Cooperative Agreement Implementing Partner of CDC) for their contribution in bringing out this publication on 'Best Practices in Strategic Information under NSACP' with the review and suggestions from NSACP.

We acknowledge and thank the VHS-CDC Project team for their immense support in ensuring partnerships and continue to provide strategic technical support to NSACP on Strategic Information and serving as instrumental in bringing out this document. We appreciate and acknowledge the technical support extended by VHS-CDC Project and their team in identifying, collecting, documenting and bringing out these best practices. These best practices will be of very much useful for dissemination at national and international level.

We thank United States President's Emergency Plan for AIDS Relief (PEPFAR), Centers for Disease Control and Prevention (CDC/DGHT-India) and their team for their support in this model inter-country initiatives and contribution in evolving a comprehensive TA plan and coordination mechanism. We greatly appreciate and acknowledge PEPFAR and CDC/DGHT-India for their financial and technical support and providing strategic technical assistance. Also thank for the support extended in bringing out this document.

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

Acknowledgements

Voluntary Health Services – Centers for Disease Control & Prevention (VHS-CDC) Project is pleased to bring out this special document on 'Best Practices in Strategic Information under National STD/AIDS Control Programme, Sri Lanka'. This is a unique endeavour made in close collaboration with and guidance of Strategic Information Management unit of NSACP to systematically document the best practices in Strategic Information of HIV/AIDS in Sri Lanka. This exercise aimed to look at the existing and emerging SI initiatives from the lens of a best practice assessment and bring out the operational details, historical perspective, lessons learnt, potential for further development and recommendations for action. The methodology adopted and implemented with rigour ensured that it followed the globally recommended approaches while customising it to the context of Sri Lanka's program.

We wish to highly appreciate and acknowledge the leadership, support and guidance being extended by the Director, NSACP, Sri Lanka in the entire process of technical collaboration and bringing out this report.

We sincerely acknowledge and appreciate the critical leadership and guidance provided by Dr Ariyaratne Manathunge, Consultant-Venereologist and Coordinator-SIMU, NSACP, Sri Lanka in planning, execution, providing strategic guidance, sharing experiences and coordination of the entire process of development and finalisation of the document on best practices.

We also acknowledge the contributions of the entire SIM unit of NSACP. Further, we appreciate and thank contributions made by the key stakeholders: senior officials-NSACP, SIMU team, EIMS development team, website development team, consultants-Venereologist from various STD clinics, SI team members working at peripheral STD clinics and all those who has contributed for this documenting the best practices.

We would like to appreciate the strategic guidance and coordination extended by Dr T Ilanchezhian, Senior Technical Advisor, VHS-CDC Project in planning and completion of the entire document and providing needful technical support in bringing out this document by adopting a participatory process.

We acknowledge the contributions of Dr Yujwal Raj, Technical Advisor-SI, VHS-CDC Project for his technical expertise in developing the best practices and contributing in development of this document in a more meaningful manner.

VHS-CDC Project has undertaken efforts to bring out publications in the form of: book on best practices, best practices series and book of abstracts for dissemination by NSACP at national and international level. As a part of this technical cooperation initiatives, VHS-CDC Project in partnership with NSACP has also developed "Best Practices Series" on seven titles as one Best Practice book on each title.

VHS-CDC Project and VHS place on record our sincere thanks and gratitude to Dr Timothy Holtz, Country Director, CDC/DGHT-India for his dynamic leadership and strategic guidance being extended in providing Technical Assistance to NSACP, Ministry of Health, Nutrition & Indigenous Medicine, Govt. of Sri Lanka and Mr Lokesh Upadhyaya, Associate Director for Management and Operations and Ms Srilatha Sivalenka, Public Health Specialist, CDC/DGHT-India and CDC team for their ongoing technical guidance and support in this technical assistance initiative.

We also thank Ms T Sudha, Senior Program Associate, VHS-CDC Project for her support in ensuring communication and coordination.

We trust that, these documents will be of more useful to the readers for understanding the best practices for adoption and replication.

Once again, we acknowledge the support extended by SIMU unit-NSACP, NSACP and CDC in providing technical assistance to NSACP on SI related initiatives.

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

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
CDC	Centers for Disease Control and Prevention
DHIS 2	District Health Information System 2
DIC	Drop in Centre
EID	Early Infant Diagnosis
EIMS	Electronic Information Management System
EMR	Electronic Medical Record
EMTCT	Elimination of Mother to Child Transmission
FSW	Female Sex Worker
GFATM	Global Fund to Fight AIDS, TB and Malaria
HIV	Human Immunodeficiency Virus
ICTA	Information Communication Technology Agency
KP	Key Population
LIFE	Lanka Interoperability Framework
LFU	Loss to Follow Up
LIMS	Laboratory Information Management System
M & E	Monitoring and Evaluation
MSM	Males who have sex with males
NGO	Non-Government Organization
NSACP	National STD/AIDS Control Programme
NSP	National Strategic Plan
PLHIV	People Living with HIV
PMS	Pharmacy Management System
PMTCT	Prevention of Mother to Child Transmission
SI	Strategic Information
SIMU	Strategic Information Management Unit
SOA	Service Oriented Architecture
SOP	Standard Operating Procedure
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TB	Tuberculosis
UNAIDS	Joint United Nations Program on HIV/AIDS
VHS	Voluntary Health Services
WHO	World Health Organisation

Electronic Information Management System (EIMS) – An effective case & program management tool for HIV/AIDS

EXECUTIVE SUMMARY

Introduction: NSACP has traditionally adopted a paper-based system of documentation and reporting from all its STD/HIV clinics. However, with the increasing caseloads at STD/HIV clinics and in view of the available technological solutions, there is a greater need for real time monitoring of program service delivery and individual tracking of HIV cases. In view of the above, SIM unit of NSACP has launched a program to develop an Electronic Information Management System (EIMS) as a replacement for the paper-based individual level recording and reporting system extant in NSACP currently. The development of EIMS was initiated during December 2017.

Features: The proposed web based EIMS would be consisting of a comprehensive Electronic Medical Record (EMR) System for HIV care and monitoring, ART and other Pharmacy Management System (PMS), a Laboratory Information Management System (LIMS) and STD Clinic Management System. EIMS is a comprehensive data management solution that will take care of most of the data management needs of NSACP. EIMS will ensure individual level reporting of all cases from STD & HIV clinics, tagged with unique IDs. The system ensures smooth data flow between various modules. The system is linked to a barcode mechanism with barcode readers made available to all the clinics. DHIS 2 platform is being used for the analytic component of EIMS, that will enable customised report generation for various program managers at different levels.

Conclusion: EIMS will truly be a best practice in SI in future since it addresses all the critical functions required of an advanced HIV/AIDS data management system, that is justly needed for the end game strategy of end of AIDS. Linking all program components into one system, data collection at individual level and integration with advanced analytics are the unique features that make EIMS an emerging best practice.

BACKGROUND AND NEED

NSACP has traditionally adopted a paper-based system of documentation and reporting from all its STD/HIV clinics since the beginning of the programs several decades ago. Though it is a paper-based system, strong protocols and systems were put in place to ensure high level of uniform reporting, data compilation, analysis and dissemination from time to time. However, with the increasing caseloads at STD/HIV clinics and in view of the available technological solutions, there is a greater need for real time monitoring of program service delivery and individual tracking of HIV cases. Further, in view of the long-standing ART services provided to PLHIV, paper-based tracking has limitations.

In view of the above, SIM unit of NSACP has launched a program to develop an Electronic Information Management System (EIMS) as a replacement for the paper-based individual level recording and reporting system extant in NSACP currently. The development of EIMS was initiated during December 2017. This project is funded by GFATM through Ministry of Health, Nutrition & Indigenous Medicine, Govt. of Sri Lanka.

PROJECT OVERVIEW

The proposed web based EIMS would be consisting of a comprehensive Electronic Medical Record (EMR) System for HIV care and monitoring, ART and other Pharmacy Management System (PMS), a Laboratory Information Management System (LIMS) and STD Clinic Management System. The key features of the EIMS for NSACP should be able to integrate with the peripheral ART centres and other national level health projects. Some specific objectives of the EIMS development are as below.

- To design and develop the System used at the NSACP with regards to aggregate and individual case recording and reporting.
- To develop an interface to capture HIV testing data from Private Sector Hospitals, prisons and other HIV testing laboratories.
- To design and develop:
    - Electronic Medical Record (EMR) System for HIV care and monitoring, ART
    - Electronic Medical Record (EMR) System for Laboratory.
    - Electronic Medical Record (EMR) System for Pharmacy.
    - STD Clinic Management System.
    - Computerize the form "Strategic information on laboratory confirmed HIV infections
    - Develop a module to interconnect with DHIS2
- To provide user training to the relevant staff of NSACP and other relevant users.
- To implement the web based Electronic Information Management System (EMIS) for NSACP.
- To develop a strategy to obtain continuous support for the web based Electronic Information Management System to NSACP.

The system was also envisaged to ensure the following aspects.

- Adherence to e-Government Policy of Sri Lanka
- Adherence to Web 2.0 concepts, open standards and Service Oriented Architecture (SOA) principles.
- Adherence to Lanka Interoperability Framework (LIFe)
- The information system should have the capacity to be later integrated/interlinked with the national HIS in line with the national strategic planning for the period 2016-2020.
- Work collaboratively with ICTA and other related government organizations
- Develop a unique identifier ensuring confidentiality of the patient

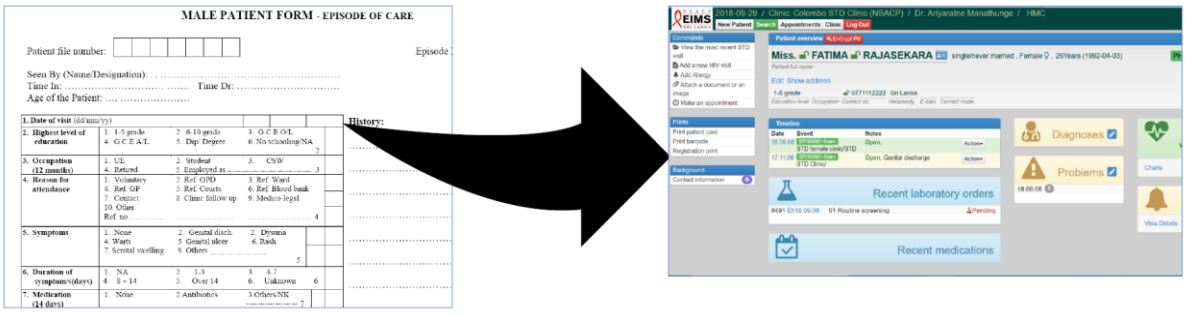
- Should have high level cyber security and should get report from National Centre for cyber security.

The overall development process is coordinated by the Strategic Information Management unit of NSACP under the overall supervision and guidance of Technical Evaluation Committee and Project Steering Committee, constituted by NSACP. The TEC has representation from the Ministry of Health, Nutrition & Indigenous Medicine as well as Information Communication Technology Agency (ICTA) – (ICT institution of the Government), besides key officers from NSACP.

STRUCTURE OF EIMS

EIMS will integrate all the key program components, capturing the data at the individual level. The main modules in EIMS are as follows.

1. Registration module
2. STD care module
3. HIV care module
4. Pharmacy module
5. Laboratory module
6. NGO/Private sector information module
7. Queue management system
8. Reporting module



UNIQUE FEATURES OF EIMS

EIMS is a comprehensive data management solution that will take care of the most of the data management needs of NSACP. EIMS will ensure individual level reporting of all cases from STD & HIV clinics, tagged with unique IDs. The system ensures smooth data flow between various modules. The system is linked to a barcode mechanism with barcode readers made available to all the clinics. HHMIS-ICTA-2009 is taken as the base for developing the system so that integration with larger health and hospital databases will be easier. High security of data is ensured through the required security protocols. User level

encryption is put in place. DHIS 2 platform is being used for the analytic component of EIMS, that will enable customised report generation for various program managers at different levels. A strong back up protocol is also in place with replication servers for all major servers, master back up and CD-back up options.

A well-structured training plan along with user manuals and SOPs are being developed to aid the roll out of the EIMS. Q-refs and data dictionaries are also being developed. Walk through video documentation for each module will be developed to facilitate self-learning.

HARDWARE REQUIREMENTS FOR EIMS ROLL OUT

The following hardware requirements have been worked out and are being procured by NSACP to ensure successful roll out of the EIMS across the country at all the STD clinics

Items	Quantity
No. of computers	245
No. Bar code Readers	241
No. of Label printers	78
No. of Scanners	38
No. of POS printers	36
Laser printer	38
Wi-Fi Routers	36
TV Screen	39
Webcam	42
Local Server	34
75mm x 50mm Label Roll, 2000Pcs	230
25mm x 15mm Film Roll, 10000Pcs	100
45mm x 18mm Label Roll, 2000Pcs	250
80mm x 300m Wax Ribbon	208
Resin Ribbon (Micro)	100

POTENTIAL CHALLENGES

Some of key challenges in successful roll out and implementation of EIMS include human capacity issues at peripheral STD clinics including computer and English skills. Internet connectivity and electricity issues also affect the functioning of computers at all centres. It may take some time before the NSACP and all its staff take complete ownership of the new system and new mechanism of data management. EIMS will be the first system installed on the cloud and hence may see some teething problems at earlier stages. Barcode based technology may pose some issues.

PLANNED TIMELINES for Development & Rollout of EIMS are as below.

Activity	Oct'16	Nov'16	Dec'16	Jan'17	Feb'17	Mar'17	Apr'17	May'17	June'17	July'17	Aug'17	Sep'17	Oct'17	Nov'17	Dec'17	Jan'18
Analysis of excisting PIMS system	■															
Requirement gathering	■															
Appointment of TEC and Project steering committee		■														
Calling for Quotations		■														
Awarding the project to the recommended company by TEC			■													
Project plan & Detailed Requirements			■	■												
Detailed Design ,Architecture & Test plan					■	■	■									
EMR for HIV & ART Monitoring – Application prototype, test cases & User training								■	■	■	■	■	■			
STD & Queue management system– Application prototype, test cases & User training														■	■	■

Activity	Feb'18	Mar'18	Apr'18	May'18	June'18	July'18	Aug'18	Sep'18	Oct'18	Nov'18	Dec'18	Jan'19	Feb'19	Mar'19	Apr'19	May'19
EMR for Laboratory – prototype, test cases & User training	■	■	■													
Field Visit to the peripheral institutions implementation, maintenance of the system				■	■											
Continues monitoring and evaluation						■	■	■	■							

SCOPE AS AN EMERGING BEST PRACTICE IN SI

EIMS will truly be a best practice in SI in future since it addresses all the critical functions required of an advanced HIV/AIDS data management system, that is justly needed for the end game strategy of end of AIDS. Linking all program components into one system, data collection at individual level and integration with advanced analytics are the unique features that make EIMS an emerging best practice. To enhance its productivity and value, it may also consider inclusion of entire spectrum of HIV case tracking starting from ANC clinics, TB clinics etc. Further, EIMS should facilitate longitudinal or cohort tracking of PLHIV on ART as well as pregnant women and exposed babies under PMTCT program. Customisable analytics module linked to a well-structured dashboard will make EIMS, one of the best HIV/AIDS SI systems in the world.