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National AIDS Control Organisation
India's response to HIV & Sexually Transmitted Infections
Ministry of Health & Family Welfare, Government of India
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Azadi Ka Amrit Mahotsav

National Data Analysis Plan

Round II

National AIDS Control Organisation
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आलोक सक्सेना
अपर सचिव एवं महानिदेशक

Alok Saxena
Additional Secretary & Director General

राष्ट्रीय एड्स नियंत्रण संगठन
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार

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Foreword

NACO is committed towards reaching the SDG Goals 3.3, i.e., the target to end the AIDS epidemic as a public health threat by 2030. Interventions of NACO have been hailed internationally as one of the success stories. One of the key factors of the NACP's accomplishments is its effective use of Strategic Information in programme planning and implementation. Information generated from more than 35,000 NACP facilities across the country, HIV surveillance and research studies forms the backbone of the strategic information for the programme.

The National Data Analysis Plan (NDAP) was envisaged as one of the important activities of NACP-IV. The objectives of NDAP are to create a sustainable system for effective utilization of the programme data, to generate reliable recommendations for the programme and to produce scientific articles and technical briefs. After the completion of the first round of NADP (2014-15), the second round of NDAP was held during 2018-19. Sixteen institutions including ICMR institutes, Medical Colleges, etc. collaborated with NACO during this round of NDAP. There were 25 analysts and 24 mentors associated with this round from the collaborating institutions as well as from NACO and various SACS. From the indentified priority areas selected for the in-depth analysis several recommendations for the programmes were presented to NACP. It also resulted in a few technical briefs and peer reviewed journal articles.

This report provides an insight into the processes and outcomes of the second round of the National Data Analysis Plan.

Alok Saxena

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Director

राष्ट्रीय एड्स नियंत्रण संगठन
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Preface

The National AIDS Control Programme (NACP) launched in 1992 is one of the accomplished national programmes in the control, prevention and treatment of HIV/AIDS. One of the cornerstones of this success is its emphasis on evidence-based planning. Each of the interventions under NACP has an inbuilt data generation and recording provision for its monitoring and evaluation. The data generated through various mechanisms have been amplified over the years since inception of the NACP. Utilization of the programme data has enabled NACO to move forward effectively through expansion, reprioritization and upgradation of its strategies.

Introduction of the National Data Analysis Plan in 2014-15 has provided NACO with a new opportunity for institutional collaboration for analysis of the programme data in the selected priority areas. The NDAP also aims to create a pool of analysts through various capacity building processes including continuous mentoring from senior public health experts. NDAP is expected to come up with valid recommendations for the programmes as well as publications either in the form of scientific articles in peer-reviewed journals or as technical briefs. The process of NDAP is undertaken by the Strategic Information division of NACO. These efforts were ably supported by various developmental partners.

The second round of NDAP included analysts and mentors from SACS, ICMR institutes, Medical Colleges, etc. apart from the NACO officials, creating a multidisciplinary approach towards using the data within the programme. This round has also focused on the publication of technical briefs and peer reviewed journal articles. This report details the different stages and the resulting programmatic recommendations of the second round of National Data Analysis Plan.

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Message

Under the National AIDS Control Programme (NACP), data generated from NACP facilities is used to track the progress of HIV/AIDS epidemic in the country and for effective programme management, resource allocation as well as for taking timely corrective decisions. As the programme evolved through various phases, the data reporting systems also evolved from hard copy to fully online systems. Currently, under NACP, data is being captured in all aspect of HIV/AIDS which includes prevention, testing, treatment, laboratory services, research, survey, surveillance, etc. from more than 35,000 facilities from across the country.

The National Data Analysis plan (NDAP) was launched in the fourth phase of NACP to utilize this wealth of data systematically and effectively with the help of a multidisciplinary team selected from NACO, SACS, IMCR institutes, Medical Colleges, etc.

The first two round of NDAP were successfully completed; they both built ties with prestigious institutions, trained many analysts through various capacity building processes, several recommendations were made for the programme.

The details of the process of the second round of NDAP are included in this report. I am quite sure that the next round would also follow the path laid down by the first two rounds and build on their success to aid NACP to achieve the SDG goal to end HIV/AIDS as public health threat by the year 2030.

Shobini

Dr. Shobini Rajan

Message

Data generation, analysis, and dissemination to guide location and population specific programme planning is the hallmark of a successful AIDS response.

India's National AIDS Control Programme (NACP) is exemplary in this regard because of the rich and diverse epidemiological, behavioural, and programmatic data sets made available under the National AIDS Control Organisation, Ministry of Health and Family Welfare's Strategic Information Management System (SIMS), HIV Sentinel Surveillance, Behavioural Surveillance, HIV estimates, and other key initiatives periodically undertaken – along with the evidence made available by the National Family Health Survey (NFHS): a very large-scale national survey.

The National AIDS Control Organisation, which leads the AIDS response in India, is also placing ever increasing focus on data collection, analysis, dissemination, and use for decision making and action. This initiative to enable a greater secondary analysis of data – to plug information gap areas or provide evidence on areas needed by the programme – is a well-recognised and appreciated initiative of the National Data Analysis Plan (NDAP) instituted by NACO under NACP phase IV.

Following completion of NDAP round one in 2014-15, the second round was launched in 2017-18 and timely and systematically implemented. Twenty-three topics were identified under NDAP II and engaged professionals from ICMR regional institutes, medical colleges, State AIDS Control Societies, as well as senior public health mentors. This round resulted in the strengthening of linkages between national and State-level institutions. The number of professionals engaged in NDAP were trained on data analysis via various capacity building processes. The programme has also been consistently informed by the different findings and key recommendations from various analytic studies concluded.

On behalf of UNAIDS, I would like to congratulate the NACO leadership for NDAP II: especially the Data Analysis and Use team in the Strategic Information Unit which lead this work acting as the 'NDAP Secretariat.' Congratulations also to all organisations and institutions which were engaged in and supported this very important national process.

UNAIDS was pleased to have supported this round of NDAP along with partners like WHO and CDC. Finally, I would like to reiterate our continued support to NACO to further strengthen the national Strategic Information system to guide HIV prevention, mitigation, and control actions toward ending AIDS by 2030 in India.

David Bridger
UNAIDS Country Director for India

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Acknowledgement

The National Data Analysis Plan (NDAP) is a vital process for in-depth programme data analysis at NACO. We acknowledge all the contributors, colleagues and developmental partners who were involved in the second round of the NDAP.

NACO would like to congratulate all institutions/organizations including Indian Council of Medical Research (ICMR) institutes, medical colleges, State AIDS Control Societies (SACS) and development partners who were part of this round of NDAP.

Programme divisions of NACO were a part of the process from the stage of identification of areas for in-depth analysis of programme data till the publication of reports. We are grateful to all the Heads of Divisions of NACO for guiding this process through their valuable views, comments and feedback at different stages.

Without the handholding and encouragement of Mentors, the entire process of NDAP would not have been possible. NACO acknowledges all the Mentors who have been guiding lights of the NDAP process.

Support of the Developmental Partners was very integral to the NDAP processes. NACO would like to thank all the Developmental Partners, including UNAIDS, Centers for Disease Control and Prevention (CDC)-India, World Health Organization (WHO)-India and Population Council for their support and active engagement throughout the process. Special thanks to UNAIDS for extending support for designing and printing of this document.

Last but not the least, we acknowledge the contribution of the Data Analysis team of Strategic Information Division which was very substantial and crucial in the completion of this round of NDAP. The team worked as the NDAP Secretariat for NDAP activities. The team facilitated data access and communication between the programme, analysts and mentors to ensure timely completion of the activity, report writing and its logical conclusion.

I hope that this report will be beneficial to all stakeholders.

Chinmoyee Das

Dr. Chinmoyee Das
Public Health Specialist- Grade I
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Contents

Abbreviations

ANC	Antenatal Clinic
ART	Antiretroviral Therapy
CDC	Centers for Disease Control and Prevention
CMIS	Computerized Management Information System
CRS	Constant Return to Scale
DEA	Data Envelopment Analysis
FHI360	Formerly known as Family Health International
FSW	Female Sex Workers
FY	Financial Year
HRG	High-Risk Group
HSS	HIV Sentinel Surveillance
IBBS	Integrated Biological and Behavioural Survey
ICMR	Indian Council of Medical Research
ICTC	Integrated Counselling and Testing Centre
IDU	Injecting Drug User
IMS	Integrated Management System
IT	Information Technology
KP	Key Population
MSM	Men Who Have Sex with Men
NACO	National AIDS Control Organisation
NACP	National AIDS and STD Control Programme
NARI	National AIDS Research Institute
NDAP	National Data Analysis Plan

NVBDCP	National Vector Borne Disease Control Programme
NFHS	National Family Health Survey
OTE	Overall Technical Efficiency
PALS	PLHIV-ART Linkage System
PEPFAR	The U.S. President's Emergency Plan for AIDS Relief
PLHIV	People Living with HIV/AIDS
PTE	Pure Technical Efficiency
RoT	Route of Transmission
SACS	State AIDS Control Society
SDG	Sustainable Development Goals
SE	Scale Efficiency
SI	Strategic Information
SIMS	Strategic Information Management System
STI	Sexually Transmitted Infection
TI	Targeted Intervention
UNAIDS	Joint United Nations Programme on HIV/AIDS
VRS	Variable Return to Scale
WHO	World Health Organization

Executive Summary

National Data Analysis Plan (NDAP) was initiated by NACO during NACP-IV. This initiative was aimed at filling the lacunae in the systematic analysis of programme data during the previous phases of the NACP and to build a sustainable system for the analysis and effective use of the programme data to generate more in-depth information to inform programme and policy. In addition, this activity also intended to build capacity in the field of HIV/AIDS research in the county. Major objectives of NDAP were: (i) to identify topics/thematic areas that can be studied by analysing available programme data, (ii) to structure analysis by identifying key questions and appropriate methodologies/tools for analysis, (iii) to commission analysis through a collaborative approach involving institutes, programme units and senior experts as mentors, with agreed timelines, (iv) to consolidate, discuss and disseminate the analytical outcomes for programmatic use, and (v) to promote scientific writing within the programme in the form of scientific papers, articles, reports and briefs.

After the successful completion of NDAP-I during 2014-15, the second round was initiated in the finical year 2017-18. The process of NDAP-II went through various stages which included: (i) identification and finalization of priority areas for in-depth analysis of the programme data, (ii) development of concept notes, (iii) extraction of appropriate datasets and collation of reference material specific for each of the selected areas for in-depth data analysis, (iv) orienting and mentoring of analysts , (v) formation of the NDAP Secretariat, (vi) signing of the data confidentiality document, (vii) review and finalization of the data analysis plan, (viii) capacity building of the analysts during each stage through continuous mentorship and through workshops, (ix) development of the data analysis results into scientific journal articles and or technical briefs, and (x) publication of the articles, briefs and reports on NDAP.

NDAP-II used the programme data pertaining to NACP III and IV. The data sources included, but were not limited to the Computerized Management Information System (CMIS), Strategic Information Management System (SIMS), Information Management System (IMS), HIV Sentinel Surveillance (HSS), National Family Health Survey (NFHS), HIV estimation, and Integrated Biological and Behavioural Surveillance (IBBS). Data analysis under NDAP is retrospective in nature. The analysts were selected from various reputed national institutions and included epidemiologists, statisticians, demographers, social and behavioural science researchers, and community medicine professionals. Since the data was of a very sensitive nature, all the analysts were expected to sign an undertaking for data confidentiality. The mentors selected for this process were senior public health professions from across the country. They formed the source of inspiration and scientific thinking. NDAP was ably supported by many developmental partners: UNAIDS, Centers for Diseases Control and Prevention (CDC), World Health Organization, India (WHO-India) and Population Council.

The priority area identified for the in-depth analysis could broadly be classified under the following heads: (i) prevention, (ii) testing, (iii) treatment, and (iv) Strategic Information (SI). These priority areas for in-depth analysis were identified and finalized in consultation with the divisions of NACO during the preparatory phase of the NDAP-II. In addition, concept notes were developed for each of the selected priority areas. Appropriate data and reference materials were sourced. The next phase started with the launch meeting where mentors and analysts were introduced to each other together with the priority areas. The technical session in this workshop were designed in such a way that the analysts could conceptualize the ideas for the data analysis plan. These conceptualized data analysis plans as developed by analysts were thereafter finalized with the inputs and feedbacks from the mentors and the NDAP Secretariat. The NDAP Secretariat which was formed to coordinate the activities of NDAP consisted of NACO officials and staff from the SI Division of NACO. The penultimate phase was in which the analysts conducted data analysis, prepared the tables and the prepared the preliminary manuscript. In the final phase of the process, NACO arranged a scientific writing workshop as well as a workshop for the development of technical briefs. These two workshops were very critical in the process. It enabled analysts to produce technical briefs with policy implications and manuscripts for peer-reviewed journals.

Key findings and major programmatic recommendations from NDAP-II studies are as follows:

- Unsafe injection drug use is the second highest route of transmission (12%) in the north-eastern (NE) States of India. In the States of Mizoram (37.4%) and Manipur (19.2%), this route accounts for a very significant proportion of the new HIV infections. More focus should be given to youth, male, moderately educated individuals, currently unmarried, and unemployed persons in the interventions to bring about a reduction in IDU based transmission in the NE States of India.
- With constraints on resources and call for improving utilization of the existing facilities, decision makers must seek ways to enhance the efficiency of service delivery. An appropriate change in the antiretroviral treatment delivery strategy with a focus on improving managerial operations has the potential to provide more services at a lesser cost.
- The linkages to ART services need to be improved, especially in the case of women, in the States of Bihar, Uttar Pradesh and Odisha. The associated variables to treatment outcome like the lost to follow-up and adherence to treatment should be improved for better treatment outcomes.
- Simple interventions such as couple-based counselling, periodic follow-up counselling and testing and provision of condoms could be highly beneficial in reducing the rates of HIV transmission among the sero-discordant couples.
- Analysis suggests that male to female sero-discordance is significantly higher than reverse one; therefore, special measures need to be taken to detect more male HIV-positive persons who are unaware of their HIV status.
- Couple testing for all pregnant women and their spouses for HIV in the PPTCT programme may be recommended and special testing measure like HIV self-testing for uninfected partners of sero-discordant couples may be promoted.
- Deaths among people living with HIV on ART could be reduced by increasing attention in the first 3 months of anti-HIV treatment initiation; providing closer follow-up services to male patients; providing additional care for elderly (above 45 years) PLHIV on ART; and providing special attention to patients presenting themselves late with lower CD4 count.

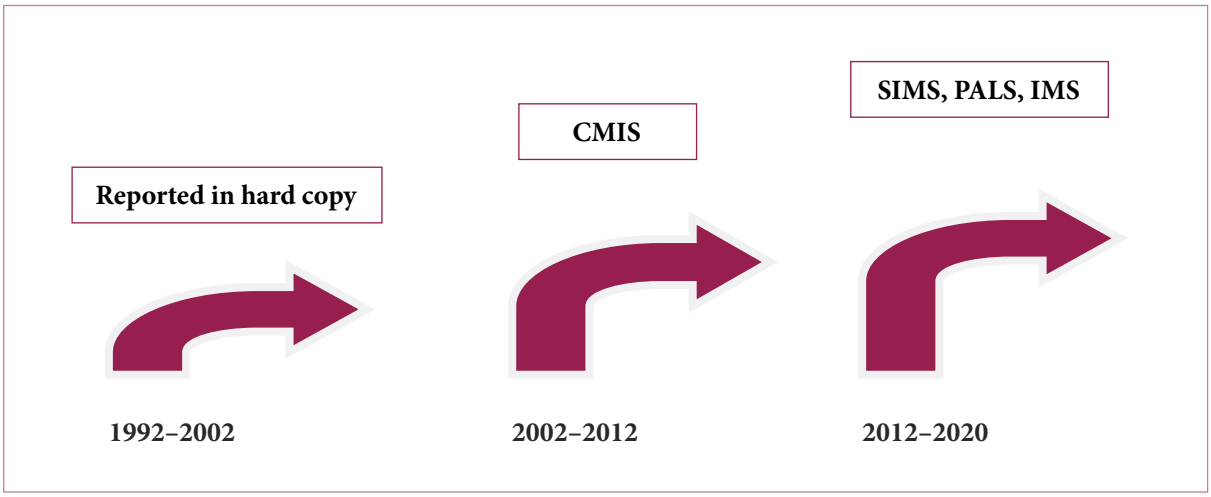
- Being a country with concentrated HIV epidemic among key populations, it is prudent to reach a saturation level of coverage of the estimated key populations at the earliest to check and reduce the rate of new infections in the country.
- Categorization, based on multidimensional, dynamic and State-specific framework, may be applied every two years to reclassify the districts in each State, as the HIV epidemic evolves and is being brought under control.
- Data analysis done in Gujarat State suggests that Kheda, Mehsana and Sabarkanta are the priority districts for HIV programme intervention. Epidemiological mapping of these districts should be done to understand the drivers of the HIV epidemic to design various programme interventions.
- The estimations of new infections from the programme data from targeted interventions projects may be estimated for each of the districts for a better understanding of the changing epidemic among the KPs.

01 Introduction

The National AIDS Control Programme (NACP) in India has evolved and expanded over various phases. Evidence-based planning has always been one of the main features of all phases of NACP.

The data capturing system during these phases of NACP had also been upgraded from a paper-based reporting system in the initial stages to a fully online reporting system. During NACP-I, the programme data collection and reporting was paper-based. A Computerized Management Information System (CMIS) was developed and implemented during NACP-II across the country. Strategic Information Management System (SIMS) replaced CMIS in 2012. In addition to SIMS, NACO had also introduced PLHIV-ART Linkage System (PALS) and Integrated Management System (IMS) to capture the programme data during 2012 to 2020.

Figure 1.1: Evolution of Data Capturing System in NACO



India's successful response to the HIV/AIDS epidemic has been efficiently guided by its robust Strategic Information (SI) division through complementary IT enabled information systems. Under the SI Division, high quality data is generated through programme monitoring and evaluation, epidemic monitoring, and research.

1.1 National Data Analysis Plan

Wealth of programme data at NACO has grown immensely over the years, from a very small number of reporting units to several thousand reporting units across the country. As the NACP evolved, the need for programme planning has progressed from national level to State and to the district levels. Improved data collection procedures, data analysis capability and the need for evidence-based planning even at the district level has provided NACO with an excellent opportunity to utilize the programme data to its full potential. It is in this context that NACO has decided to introduce the National Data Analysis Plan (NDAP) in the NACP – IV (2012–2017).

The first round of National Data Analysis Plan (NDAP) was initiated in the FY 2013-14 to fill the lacunae in the systematic analysis of programme data during the first two phase of the NACP. NDAP aimed at building a sustainable system for the analysis and use of the programme data to generate more in-depth information that may have programme and policy implications. In addition, NDAP also intended to build on the capacity of HIV/AIDS research in the county.

1.2 Objectives of National Data Analysis Plan

- To identify topics/thematic areas that can be studied by analysing available programme data;
- To structure analysis by identifying key questions and appropriate methodologies/tools for analysis;
- To commission analysis through a collaborative approach involving institutes, programme units and senior experts as mentors, with agreed timelines;
- To consolidate, discuss and disseminate the analytical outcomes for programmatic use; and
- To promote scientific writing within the programme in the form of scientific papers, articles, reports and briefs.

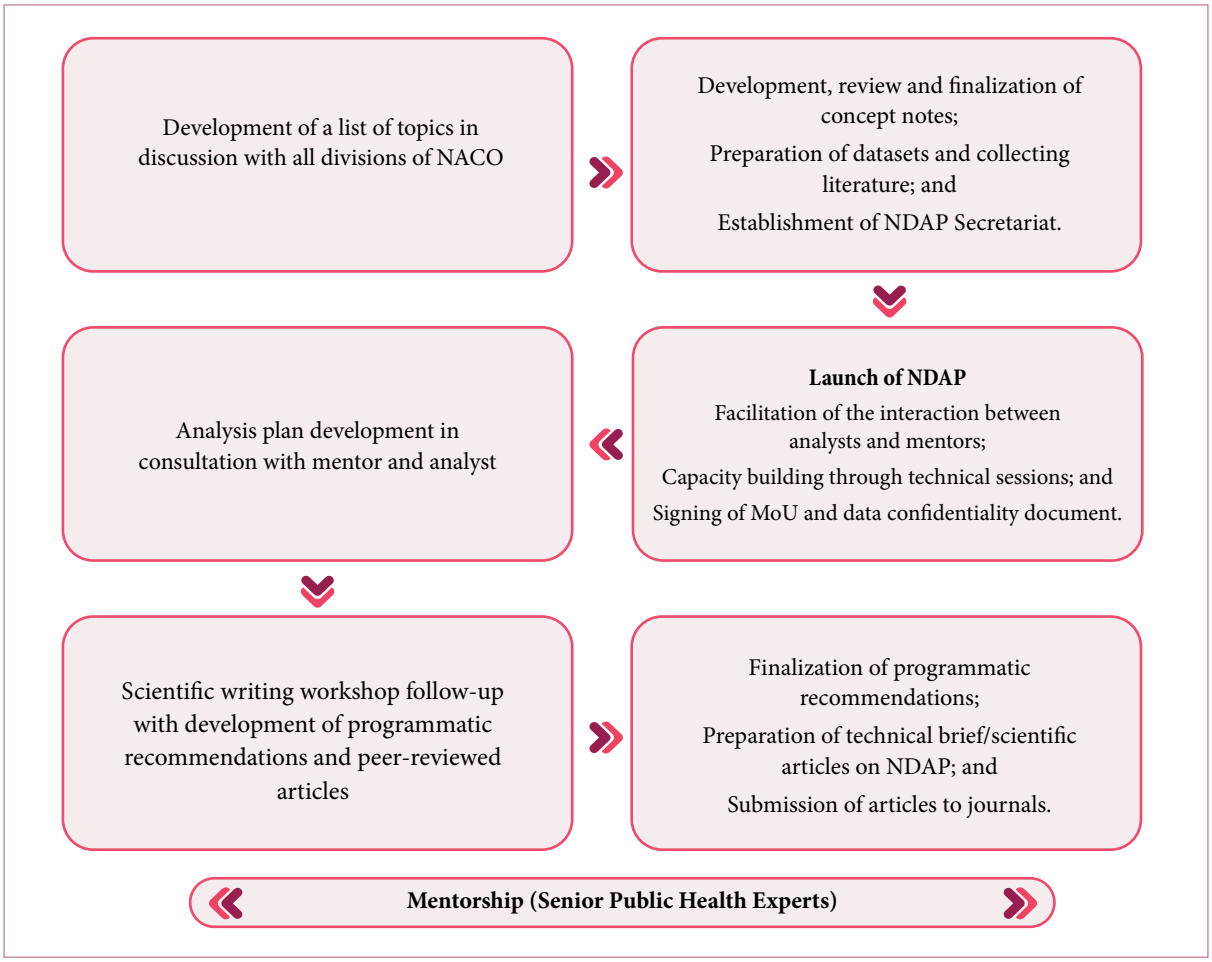
02 National Data Analysis Plan-II

The second round of NDAP was initiated during 2017–2018. Details of the different steps undertaken during the second phase is given below.

2.1 Preparatory Activities

Preparatory activities included (i) identification and finalization of priority areas, (ii) development of concept notes, (iii) extraction of programme data for the analysis, (iv) development of a library of reference materials, and (v) ensuring interest and availability of researchers from various institutions. Activities of NDAP-II is given in Figure 2.1.

Figure 2.1: Process of National Data Analysis Plan-II



(i) Identification and Finalization of Priority Areas

A preliminary list of priority areas was created in consultation with the divisions of NACO. In addition, few of the priority areas that were identified in NDAP-I but which could not reach the level of scientific writing stage and that were still relevant were also considered for this round of NDAP. There were 23 priority areas were finalized for in-depth analysis (List of topics is given in Annexure I).

Table 2.1: Finalized Number of Topics by Thematic Area

Thematic Area	No. of Topics for In-depth Analysis
Prevention	4
Testing	3
Treatment	8
Strategic Information	8
Total	23

(ii) Development of Concept Notes

Concept notes for each of the finalized priority areas were developed by NACO. These concept notes were brief and included the context, broad objectives, possible methodology, data sources and expected outcomes.

(iii) Extraction of Programme Data and Preparation of Datasets for the Analysis

The data sources included for the analysis for NDAP-II were CMIS, SIMS, IMS, HSS, IBBS, NFHS, Census data of 2011, data from NVBDCP, etc. Quality checks were performed for the programme data extracted from various sources. The indicators in each of the datasets were clearly defined at the time of the preparation of the final datasets for each of the priority areas.

(iv) Development of a Library of Reference Materials

Reference materials related to each of the finalized priority areas were collected and collated by the Data Analysis & Use unit of SI. These included published articles in the peer-reviewed international and national journals and unpublished HIV/AIDS programme reports. Reference materials, appropriate for their area of research, were shared with the analysts.

(v) Mapping of Mentor and Analysts and Institutional Collaborations

In the initial stages of NDAP-II preparatory activities, data analysts from various institutions across the country were contacted through emails and telephone to enquire about their interest and availability. These researchers were selected based on their prior experience in the HIV/AIDS programme and or publications in the field. In addition to them, senior public health experts in the country were contacted to enquire about their willingness and availability for mentoring the analysts in NDAP-II. A detailed list of the analysts and mentors involved in NDAP-II are given in the Annexures II & III respectively. NACO had allotted each of the priority areas to the appropriate team of analysts and mentors through rigorous deliberations.

(vi) Coordination Mechanism

To coordinate between the analysts and mentors, an NDAP Secretariat was formed at NACO. Details of the NDAP Secretariat are given in Annexure IV.

2.2 Launch Workshop

The NDAP-II was launched in a three-day workshop organized in Delhi from 7–9 March 2018. This launch workshop brought together the analysts and mentors for the first time under NDAP-II. Twenty-five analysts, identified from premier institutions from across the country participated in the workshop, along with 24 senior public health experts of the country who were identified as the mentors.

The objectives of the launch workshop were:

- To officially mark the commencement of the second round of NDAP;
- To establish the roles and responsibility of the analysts, mentors and the NDAP Secretariat; and
- To help the analysts and mentors to bond and initiate the process of in-depth data analysis through the various technical sessions and panel discussions conducted during the workshop.

The concept notes and datasets on the proposed research were handed over to the analysts during this workshop. Technical sessions on the following topics were conducted during this workshop: (1) identifying key questions and formulating hypotheses, (2) literature review and documentation, (3) methods of analysis, (4) understanding of data source, (5) publication ethics, (6) preparation of data analysis plan, (7) scientific paper writing, and (8) policy communication.

A panel discussion on the issues and scope of each dataset in connection with the selected areas was also conducted in addition to the technical sessions. The analysts were given an opportunity to discuss and develop an analysis plan with their respective mentors during the workshop. Fifteen of the analysts presented their analysis plan after deliberations with their mentors.

Table 2.2: Number of Analysis Plans Presented at the Workshop by Thematic Areas

Thematic Area	No. of Topics for In-depth Analysis
Prevention	4
Testing	3
Treatment	2
Strategic Information	6
Total	15

The roles and responsibilities of the analysts, mentors and NACO were also discussed during the workshop. Analysts signed a data confidentiality undertaking thereby accepting that the programme data would not be shared with anyone and prior approval would be sought from NACO for publication of the results of the analysis (format for undertaking on data confidentiality is given in the Annexure V).

2.3 Review and Finalization of Analysis Plan

The analysts, under the guidance of the assigned mentors, finalized their data analysis plan. The NDAP Secretariat acted as a catalyst in this process by providing the necessary assistance to the analysts whenever necessary.

2.4 Capacity Building

To improve the skills of analysts in data analysis and preparation of scientific papers and to familiarize them with the HIV/AIDS dataset, two capacity building workshops and a continuous mentorship were provided during the course of the NDAP-II. Table 2.3 gives the information on the number of analysts from various institutions who have undergone capacity building at various stages of NDAP-II.

Table 2.3: Organizations of the Analysts

Organizations	Number of Analysts
NACO	8
SACS	8
ICMR Institutes	3
Medical Colleges	2
Other Institutes	3
Independent Consultant	1
Total	25

Mentorship

A pool of senior public health experts was identified for mentoring the analysts. Each of the mentors was assigned one or more analysts at the launch of NDAP-II until the submission of the final document. Mentors were expected to guide the analysts in the following:

- Structuring the analysis for identification and finalizing key questions;
- Finalizing methodology for analysis;
- Understanding analysis and finalizing result within stipulated timelines; and
- Consolidation and dissemination of outcomes and preparing key deliverable identified (report, scientific paper, etc.).

Scientific Writing Workshop

A scientific writing workshop was organized at Delhi from 24–27 September 2018 by NACO in partnership with UNAIDS and in collaboration with WHO, Population Council, ICMR Institutes and PEPFAR. The main objectives of this workshop were the following:

- To review and discuss the analysis that has been conducted by researchers with the support of their mentors during the period between the launch workshop and the current workshop and to obtain feedbacks from senior resource persons; and
- To train the analysts on scientific writing to prepare high quality abstracts as well as research papers for publication in peer-reviewed journals.

Welcome and opening remarks by Dr. Shobini Rajan, ADG (SI)

The workshop was attended by 14 analysts and five mentors, in addition to resource persons, NACO officials and representatives from the partner organizations. Eight topics were presented and discussed during the workshop. Analysts received feedback from the expert resource persons on their assigned topics. Over the course of the workshop, the analysts worked on their assigned topics on the basis of the inputs received through the technical sessions and in discussions with their respective mentors.

Participants of the scientific writing workshop NDAP-II

Technical Brief Development Workshop

A three-day workshop was conducted during 8–10 July 2019 at Lucknow for technical brief development.

Shri Alok Saxena, Joint Secretary, NACO giving the Opening Remarks of Technical Brief Development Workshop at Lucknow

The objective was to facilitate the development of technical briefs based upon the key programmatic findings from the secondary data analysis under the NDAP-II facilitated by NACO.

Three technical sessions were conducted as the part of the workshop:

- Key elements and importance of technical brief;
- Process of development of a technical brief; and
- Strategies and approaches for advocating key findings for programme uptake.

Based on the key findings of the programme data analysis and suggestions from the experts, technical briefs were prepared on four papers prepared under NDAP-II.

2.5 Finalization of Articles for Publishing

Following the scientific writing workshop, the analysts finalized and submitted the completed research articles to the NDAP Secretariat for the final approval. The submitted articles were reviewed at NACO with the help from NDAP team and concerned programme divisions.

03 Accomplishments of NDAP-II

Keeping in view of the mandate of the NDAP, the second round of NDAP concentrated on strengthening institutional collaborations, developing the programme data into analysis-ready datasets, capacity building of relatively new analyst in the field of HIV/AIDS research and development of the research papers into peer-reviewed journal articles and or into technical/research briefs.

3.1 Institutional Collaborations

Collaboration with various institutions of repute was one of the highlights of NDAP. The analysts and mentors who were associated with the second round of NDAP belonged to 16 reputed institutions across the country. These institutions included medical colleges, research institutions, ICMR institutes, development partners and multinational agencies (The details are given in the Annexures II and III).

3.2 Capacity Building

One of the major outcomes of the NDAP-II was the capacity building of the analysts. This was achieved through continuous mentoring by senior public health experts throughout the duration from the launch workshop till the submission of the final research papers to NACO. In addition to the mentoring process, NACO had also organized technical session during the launch workshop, a scientific writing workshop and a technical brief development workshop for the capacity building of the analysts selected under the NDAP-II.

Technical sessions during the launch workshops focused on different aspects of programme data and data analysis. There were 25 analysts, including eight each from NACO and SACS. The scientific writing workshop concentrated on the process of converting the finalized tables from the data analysis into research articles that could be send to peer-reviewed journals. Fourteen analysts participated in this workshop. The technical brief workshop facilitated the development of technical briefs from the key programmatic findings from the data analyses of NDAP and other research studies. Four technical briefs were developed from the finding of the in-depth data analysts conducted under NDAP.

3.3 Report/Publications

From the initial 23 priority areas selected for in-depth data analysis, 13 topics could reach on to the scientific workshop stage. Eight analyses that were near completion were presented at the scientific workshop for feedback and discussions leading to the finalization of their results. Consequently, of the completed papers submitted to the NDAP Secretariat, eight articles reached up to the level of scientific paper publication. A detailed list of the publications is given in Annexure VI.

Table 3.1 Thematic Area-wise Number of Completed Papers Submitted to NACO

Thematic Areas	No. of Submitted Papers
Testing	1
Treatment	4
Strategic Information	3
Total	8

Programme Implications

Eight analysts submitted completed papers to the NDAP Secretariat. Key findings with programmatic implications of all submitted analyses are ahead.

3.4 Report on the Programme Implications

Thematic area: Testing

(1)

Routes of Transmissions of HIV In India And Its Impact and Correlates – A Micro-level Study in North-Eastern States in India

Analyst – Dr. P. Sujith[1]

Mentor – Dr. Asha Hegde[1]

Objectives

The main objectives of this analysis were to understand the route of transmission of HIV in north-eastern (NE) States of India and to examine the sociodemographic correlates of the route of transmission.

Method

This study analysed the data on self-reported routes of transmission from PLHIV-ART Linkage System (PALS). Univariate and multivariate analysis were carried out to understand the route of transmission in the NE States. A binomial logistic regression was used to assess the association of the selected independent variables on Injecting Drug Use (IDU) as a route of transmission. SPSS was used for the data analysis for this paper.

Data Source

PALS data for the NE States for the FY 2017-18 was used for this analysis.

Key Findings

- There are more male (65.1%) than female (34.9%) PLHIVs according to PALS dataset for the year 2017-18 in NE States of India.
- Heterosexual route (83.4%) is the major route of transmission (RoT) of HIV in NE States. The percentage of the female PLHIVs (93.5%) becoming positive through this RoT is higher as compared to their male counterparts (77.9%).
- IDU (11.8%) is the second major RoT of HIV in NE States and its proportion is high in Mizoram (37.4%) and Manipur (19.2%).
- RoT of HIV through IDU is more among males (16.5%) as compared to females (2.9%).
- HIV transmission through IDU was comparatively more in the younger age group and proportion through this route decreased with the increase in age.

[1] National AIDS Control Organisation, New Delhi

- Proportion of RoT through IDU was high among less educated PLHIV, i.e., those educated till Secondary (16.3%) and Higher Secondary (20%) level than other groups.
- The binary logistic regression with the outcome variables as RoT as through IDU, suggests that being young, being a male, being not married, educated up to secondary or higher secondary school and being unemployed increases the chance of having HIV through IDU as the RoT in the NE States.

Recommendation for the Programme

- Unsafe injection drug use practice is the second highest RoT (11.8%) in the NE States of India after heterosexual RoT. In the States of Mizoram (37.4%) and Manipur (19.2%), this route accounts for a very significant proportion of the infections. It is time to intensify the IDU programme activities in the NE States of India especially in the States of Mizoram and Manipur.
- More focus should be given to youth, male, moderately educated, currently unmarried and unemployed persons in the interventions to bring about a reduction in unsafe IDU practice as a RoT.

Thematic area: Treatment

(2)

Technical Efficiency Analysis of Antiretroviral Treatment Centres in India

Analyst – Dr. Lincoln Priyadarshi Choudhury[1]

Mentor – Dr. Manish Bamrotiya[2]

Objectives

The objective of this study was to measure the technical efficiency of centres providing antiretroviral treatment services established under the National AIDS Control Organisation (NACO) of India.

Method

Data envelopment analysis (DEA) approach was used for this research. The study used the output-oriented model, with the aim of understanding the scope of maximizing the output from the given set of inputs. The DEA included the Overall Technical efficiency (OTE), Pure Technical Efficiency (PTE) and Scale Efficiency (SE). OTE is a combined measure of PTE and SE. PTE reflects the managerial performance and SE reflects whether the size of operations is optimal or not.

A constant return to scale (CRS) was applied to calculate OTE. As the institutional capacity was expected to vary across the centres, the researchers applied variable return to scale (VRS) assumptions to decompose the OTE to PTE and SE. The DEAP version 2.1, an open-source software by University of Queensland, was used for the analysis.

Data Source

All monthly reporting indicators from the reporting unit or ART service delivery points (ART centres, ART plus centres, facility integrated ART centres and centres of excellence) form the basic data source of this study.

Key Findings

- The final analysis was carried out on the data from 494 centres which had all the requisite datasets.
- The OTE score was 0.76, with maximum possible score being 1 suggests that there is a considerable inefficiency in the existing resource use. Of the 494 centres, 21 were found to have an overall technical efficiency score of 1.
- Size of ART centres with respect to the workload is indicated by scale efficiency. The average scale efficiency score was 0.93 out of a maximum score of 1 and 194 centres were found to be scale efficient.

[1] Independent Consultant

[2] National AIDS Control Organisation, New Delhi

- Managerial efficiency indicated by average PTE score was 0.78 out of the maximum score of 1. Forty-nine centres, out of the 494 centres scored the maximum possible score of 1 for managerial efficiency.
- The results of OTE 0.76 and PTE 0.78 indicate that nearly 22 percentage points of the 24-percentage point of OTE were due to inappropriate management practices in organizing/utilizing the inputs.

The comprehensive table on results of the analysis by States/UTs is given in the Table 3.2.

Table 3.2: Technical Efficiency of the ART Centres Across the States

State	Total No. of Centres	OTE Centres*	PTE Centres*	SE Centres*
Andhra Pradesh	39	3	5	18
Arunachal Pradesh	1	0	1	0
Assam	4	0	1	1
Bihar	14	2	2	8
Chandigarh	1	0	0	0
Chhattisgarh	3	0	1	0
Delhi	10	1	2	6
Gujarat	30	0	0	20
Haryana	1	0	0	0
Himachal Pradesh	5	0	1	1
J&K	2	0	0	1
Jharkhand	7	1	1	4
Karnataka	64	0	3	23
Kerala	9	0	2	3
Madhya Pradesh	18	1	1	3
Maharashtra	85	6	7	44
Manipur	9	0	1	1
Meghalaya	1	0	0	0
Mizoram	6	1	2	1
Nagaland	4	0	1	0
Odisha	13	0	1	4
Pondicherry	1	0	0	1
Punjab	10	1	2	5
Rajasthan	23	0	2	1
Tamil Nadu	55	1	1	29
Telangana	19	1	1	9
Tripura	1	0	0	0
Uttar Pradesh	37	2	6	8
Uttarakhand	3	0	1	0
West Bengal	19	1	4	3
All	494	21	49	194

***Number of centres having value=1**

Recommendation for the Programme

- Improving patient flow management in the ART centres will further improve the efficiency of its service delivery and provide quality service along with better coverage.
- The overall system performance and efficiency can be compared over a period of time to measure the changes that may occur as a result of the newer modalities of service delivery.
- A comparative study could be conducted between the methods used in this analysis and the national tool/scorecard that seek to evaluate similar outcomes. This will help to inform the optimal strategy to evaluate the efficiency of ART centres.

Technical Brief

Choudhury, Lincoln et. al, 2020, Improving patient management can further enhance efficiency of antiretroviral treatment centres. Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20Efficiency%20of%20ART.pdf

(3)

Access to Health Care and Treatment Outcomes Among Women Living with HIV/AIDS in Bihar, Odisha and Uttar Pradesh

Analyst – Dr. Nilesh Gawde[1]

Mentor – Dr. Shalini Bharat[1]

Objectives

The main objective of this study was to explore the gender differentials in the access to health care, treatment and health outcome among PLHIV in Bihar, Odisha and Uttar Pradesh.

Method

Out of the PLHIV diagnosed during the assessment period, those who were eligible for initiation of ART were considered for analysis. The key outcome variables were linkage with ART centres, initiation of ART, and treatment status (whether alive and on ART at the end of the periods under consideration). Chief independent variable was gender. Given the very low numbers of transgender population in the data, it was decided to exclude their data. Key confounding variables included age group, baseline CD4 count and year of diagnosis.

Data Source

NACP programme data for a period of five years (2012–2017) was used for this study. Data considered included aggregate data on testing services and individual data on treatment services.

Key Findings

- Linkage to ART services was poorer among women (78%) compared to men (92%) during 2012–2017.

Table 3.3: Access to ART and Treatment Status of Individuals Diagnosed with HIV in the Selected States, 2012–2017

States	Proportion of Individuals Registered for Pre-ART Among the Individuals Diagnosed		Proportion of Individuals Initiated on ART Among the Individuals Diagnosed		Proportion of Individuals Alive on ART Among the Individuals Diagnosed	
	Men	Women	Men	Women	Men	Women
Bihar	0.92	0.71	0.74	0.53	0.4	0.35
Odisha	0.79	0.84	0.54	0.59	0.29	0.38
Uttar Pradesh	0.96	0.82	0.77	0.67	0.37	0.4
Total	**0.92**	**0.78**	**0.73**	**0.61**	**0.37**	**0.38**

- Initiation to ART treatment among those who were registered at the ART centre was similar among men (78.9%) and women (78%), however of the total diagnosed persons these figures were 72.6% for the men and 60.9% for the women.

[1] Tata Institute of Social Sciences, Mumbai

- The treatment outcomes (alive and on ART) among those initiated on treatment were significantly better among women (62.5%) than men (50.5%). Though the treatment outcome was better among females, the overall proportion of PLHIV diagnosed and 'alive and on treatment' was more or less similar among both sexes (36.7% among male as compared to 38.1% among females).
- Analysis shows that women were less likely than men to be initiated on ART; model 1 (eligibility of ART for CD4 < 500/mm3) (OR 0.91 (0.88–0.94)) and model 2 (all PLHIV eligible for ART) (OR 0.89 (0.87–0.92).

Recommendation for the Programme

- The linkages to ART services need to be improved, especially in the case of women, in the States of Bihar, Uttar Pradesh and Odisha.
- The associated variables to a favourable treatment outcome (alive and on ART) like the 'lost to follow-up' and 'adherence to treatment' should be improved for better treatment outcomes.
- Inadequate level of linkages to the ART services might be a product of poor understanding of the needs and benefits of ART among women in these States. In this regard it would be fitting to assess the quality of the pretest counselling/information provided at the testing facilities.
- The results indicate a clear gender difference in the access to ART services in the States considered, which may be attributed to the underlying gender inequalities in these States. A robust IEC campaign in these States addressing the root causes of the gender inequities might help to reduce the existing gender gap in accessing the HIV/AIDS treatment centres.

(4)

Profile of Male and Female HIV Sero-discordant Couples in West Bengal, India

Analyst – Dr. Suman Gangulay[1]

Mentor – Dr. Ravi Verma[2]

Objectives

The main objectives of the study were to find out the magnitude of HIV sero-discordance in the State of West Bengal and to determine whether male to female sero-discordance is more common than that of female to male. This study also looked into the association of demographic attributes like age, literacy, occupation, rural-urban habitat and microbiological attribute, i.e., HIV 2 subtype with sero-discordance and to understand the profile of sero-discordant couples.

Method

This retrospective cohort study was conducted by analysing the secondary data from line-list of HIV infected general individuals in West Bengal. Male to female sero-discordance was compared with female to male sero-discordance. Age, literacy and occupation were compared between sero-discordant and sero-concordant arms. Percentage of HIV2 subtype and rural-urban residential address of index cases were analysed between the concordant and discordant arms.

Data Source

Line-list data from the PLHIV-ART linkage database for West Bengal for the period of April 2017 to January 2018 was used for the analysis.

Key Findings

- Male to female sero-discordance (42.8%) was significantly higher than female to male (12.7%).

Table 3.4: Sero-concordance and Sero-discordance of Couples Based on the Index Cases

Gender of the Index Cases	Number of Index Cases	Sero-concordant Couples	Sero-discordant Couples
Male	993	568	425 (42.8%)
Female	557	486	71 (12.7%)
Total	1,550	1,054	496 (32%)

- HIV sero-discordance among the couple especially male to female sero-discordance was found to be associated with higher age difference. An age difference of 7.41 years among couples when the index case was male and 7.14 years when the index case was a female.
- Age of the index case was significantly associated with HIV sero-discordance irrespective of the fact whether HIV infected index case is male or female.
- Neither education nor the occupation of the index cases plays a significant impact on HIV sero-discordance.

Recommendation for the Programme

- Simple interventions such as couple-based counselling, periodic follow-up counselling and testing, and provision of condoms could be highly beneficial in reducing the rates of HIV transmission among the sero-discordant couples.
- Since male to female sero-discordance is significantly higher than the female to male sero-discordance, special measures need to be taken to find out more male HIV infected persons who are unaware of their HIV status.
- Couple testing during pregnancy for all pregnant women for HIV under the PPTCT programme may be recommended. Special testing measure like HIV self-testing for uninfected partners of sero-discordant couples may be promoted.

Peer-reviewed Journal Article

- Chakraborty D, Ganguly S, Debnath F, Biswas S, Saha MK, Dutta S (2021) Socio- demographic correlates of HIV sero-discordance among couples in West Bengal, India; A cross sectional analysis. Japanese Journal of Infectious Disease. https://doi.org/10.7883/yoken.JJID.2021.330 (Last accessed on 11/01/2022)

[1] West Bengal State AIDS Control Society, Kolkata

[2] International Centre for Research on Women, Delhi

(5)

Is It Possible to Reduce Deaths Among People on Anti-HIV Treatment?

Analyst – Dr. Pramod Deoraj[1]

Mentor – Mr. Haresh Patel,[2] Dr. Manish Bamrotiya[3]

Objectives

The main objective of this study was to identify the factors associated with death among PLHIV accessing anti-HIV treatment in ART centres of Maharashtra, India.

Method

Data on 61,113 PLHIV registered and on anti-HIV treatment in Maharashtra (excluding Mumbai), during the calendar years 2015–2017 was analysed. PLHIV transferred-out and those without the date of ART initiation and PLHIV<15 years of age were not considered for this analysis. The mortality density (per thousand months) was calculated, and factors associated with death were explored. The analysis was carried out for each of the identified regions of the State.

Data Source

ART data from all the 73 centres of the State, excluding Mumbai, for the PLHIV registered during the calendar year 2015–2017 and follow-up data till July 2018 were used for this analysis.

Key Findings

- 18.2%, 13.3%, 9.2% of those newly initiated on ART died during 2015, 2016 and 2017.
- Half of the deaths reported occurred within the first three months of ART initiation.
- Death rate is higher among males as compared to females, elderly patients (more than 45 years) as compared to younger ones (less than 45 years) and those with white blood cell count (CD4) less than 100, during registration.

Table 3.5: Baseline Demographic and Clinical Characteristics of HIV-positive Patients on ART and Number of Deaths, Maharashtra 2015–2017

Background Characteristics		Number of Patients	Number of Deaths	Mortality Density per 1000-Person Months at Risk
Gender	Male	27,456	5,045 (18.4)	7.4
	Female	26,669	2,862 (10.7)	4.5
Age	15 to 25 years	7,289	479 (6.6)	3
	26 to 35 years	18,214	1,906 (10.5)	4.8
	36 to 49 years	25,459	3,438 (13.5)	6.3
	50 and above	11,259	2,088 (18.5)	9.4
Baseline CD4	Less than 100	13,254	3,669 (27.7)	13.9
	101 to 250	18,867	2,443 (12.9)	5.6
	251 to 350	9,564	723 (7.6)	3.1
	351 to 500	9,103	401 (4.4)	2.1
	Above 500	9,562	292 (3.1)	1.7

Recommendations for the Programmes

- Increase attention in the first three months of anti-HIV treatment initiation.
- Provide close follow-up services to male patients.
- Provide additional care for elderly (above 45 years) PLHIV on anti-HIV treatment.
- Provide special attention to patients presenting themselves late with lower CD4 count.
- Statewide strategy may be sufficient as this study could not observe any regional variation.

Technical Brief

Mundhe, Tukaram et.al, 2020, Is it possible to reduce the deaths among people on Anti-HIV treatment? Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20reducing%20deaths%20among%20PLHIV.pdf

[1] Maharashtra State AIDS Control Society, Mumbai`

[2] WHO-India

[3] National AIDS Control Organisation, New Delhi

Thematic area: Strategic Information

(6)

Triangulation of Data for Categorization and Prioritization of Districts in Maharashtra

Analyst – Dr. Shrikala Acharya,[1] Dr. Manindar Sethia[1], Mr. Amol Palkar[1]

Mentor – Dr. D.C.S. Reddy[2]

Objectives

The main objectives of this study were to categorize the districts as per the multidimensional framework into low, moderate and high priority districts, and to identify the programmatic gaps across the districts in context of burden of epidemic and programmatic performance.

Method

All districts of the State of Maharashtra, except Mumbai, were considered for this research. This study classified the districts based on a multidimensional indicator. The indicator was based on two groups of parameters which were as follows: 1) categorization of the district based on the six composite parameters, three burden parameters [HIV prevalence in antenatal clinics, HIV prevalence in ICTCs and individuals on ART] and three vulnerability parameters [proportion of key population, proportion of STI cases and proportion of male out-migrants]). (2) Categorization based on trends of HIV prevalence and programme coverage in key population (FSWs and MSM). Tertiles were generated for each indicator. The districts were given an ordered score based on the tertile for each indicator (1 for low, 2 for moderate and 3 for high). A cumulative score was calculated for each district based on the six selected indicators. These cumulative scores were classified into tertiles. The districts in the highest tertile were classified as high priority, those in the middle tertile as moderate priority, and those in the lowest tertile were classified as low priority. Triangulation of data was carried out with ANC positivity data from HIV Sentinel Surveillance (HSS) and these three categories of districts for concordance of epidemic trends.

Data Source

Sources of data for research included Population Census data for the State of Maharashtra, ANC data from HSS from 2002 onwards, ICTC data (2013–2017), key population mapping data 2008, TI data (2013-14 to 2017-18), ART data for each of the districts, STI data for each of the districts (2017-18) and district-wise outmigration data.

Key Findings

- The ANC positivity (in the HIV programme) reduced from 0.10% in 2013-14 to 0.04% in 2017-18. The HIV positivity in the adult population (recorded in ICTC centres) reduced from 1.03% in 2013-14 to 0.44% in 2017-18. In general, the HIV positivity reduced in two key populations (FSW and male migrants). Though, there was a reduction in the HIV prevalence in MSM from 2013-14 to 2015-16, it increased in the subsequent two years.

- The coverage of MSM population under the programme though very stable in the State, was less than 90% of the estimated population even in 2017-18. The coverage in FSW was inadequate and reduced over the five-year period. The lowest coverage was for the single male migrant population: it decreased from 54.5% in 2013-14 to 37.9% in 2017-18.
- Of these 33 districts, nine were categorized as high priority districts, 13 as moderate priority districts, and 11 were classified as low priority.

Table 3.6: Categorization of Districts of Maharashtra

Classification	Category of Districts			Total
	High	Moderate	Low	
NACO Classification Based on HSS 2004–2006 Data	30	0	3	33
Proposed Classification	11	14	8	33

- The HIV prevalence among ANC women as reported under HSS, showed an increase in most of the high priority and moderate priority district during the observed period. Proportion of increase in HIV prevalence among ANC women was highest in the high priority districts compared with moderate or low priority districts (22% versus 15% versus 0%).

Recommendation for the Programme

- Prioritizing district with the help of the available information is a logical step for the way forward for the HIV programme in the country.
- Being a country with concentrated epidemic in the key populations, it is prudent to reach a saturation level of coverage of the estimated key populations at the earliest to check and reduce the rate of new HIV infections in the country.
- The indicators included in the framework of this study may be modified based on the State-specificities. For example, Injecting Drug Users (IDU) could be included and MSM excluded (if required).
- The categorization may be applied every two years to reclassify the districts in each State, as the HIV epidemic evolves and is brought under control.

Technical Brief

Acharya, Srikala et.al, 2020 Strategic framework for categorization of districts for HIV programmes. Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20Strategic%20Framework.pdf

Peer-reviewed Journal Article

Acharya, S., Setia, M.S., Palkar, A., Chandra Sekar Reddy, D., Keskar, P., Deoraj, P., Ramien Parthasarthy, M., Narayan, P., Rajan, S. and Saxena, A. (2021), Development of a composite indicator to prioritize districts for implementation of human immunodeficiency virus programmes in Maharashtra, India. The International Journal of Health Planning and Management, 36: 71-82. https://doi.org/10.1002/hpm.3066

[1] Mumbai District AIDS Control Society, Mumbai

[2] Former HoD, Dept. of PSM, IMS-BHU, Varanasi

(7)

Assessment of Levels and Trends of HIV Infections Among Different Subgroup Population of Gujarat State

Analyst – Dr. Suchit V Kamble[1]

Mentor – Dr. D.C.S. Reddy[2]

Objectives

The main objective of this study was to examine the level and trend of HIV positivity among pregnant women and high-risk populations across the different districts of the State of Gujarat and to examine the possible determinants of HIV epidemic in districts in the State of Gujarat.

Method

Datasets under National AIDS Control Programme related to pregnant women HIV testing, HIV testing of voluntary blood units, and HIV testing among different high-risk population were cleaned and analysed for five years from 2012 to 2017 to study the proportions and trends in HIV infection.

Data Source

Data sources for this research included ICTC data, blood bank data, TI data on testing, HRG mapping data and census data.

Key Findings

- The districts with HIV positivity rate among pregnant women more than 0.19% in 2016-17 were considered as high HIV prevalent districts. Among the 33 districts, eight districts had HIV positivity above 0.19% for three out of five years and three districts, Kheda, Mehsana and Sabarkantha had HIV positivity >0.19% over the five years period (2012-13 to 2016-17) among pregnant women.

Table 3.7: HIV Positivity Among Pregnant Women for the Selected Districts of Gujarat, 2012–2017

Districts	HIV Positivity Among Pregnant Women During Different Years				
	2012-13	2013-14	2014-15	2015-16	2016-17
Kheda	0.31	0.38	0.26	0.23	0.21
Mehsana	0.21	0.61	0.59	0.32	0.48
Sabarkantha	0.59	0.3	0.2	0.24	0.25

- Declining trend of HIV infection was observed in the district of Kheda after 2013-14 among ANC mothers, general ICTC clients and among MSM. But the trend among FSWs was fluctuating and it was increasing among blood donors in the five years under consideration.
- In Mehsana district, HIV positivity among ANC mothers and among voluntary blood donors was fluctuating. HIV positivity was observed to be declining among MSM and general ICTC client.
- In Sabarkantha district, among the pregnant women HIV prevalence was fluctuating. The declining trend of HIV positivity was seen in general ICTC clients but it was fluctuating among MSM.

Recommendation for the Programme

- Kheda, Mehsana and Sabarkantha are the priority districts for HIV programme intervention in Gujarat State.
- Epidemiological mapping of these districts should be done to understand the drivers of HIV epidemic and to design various programme interventions.
- Relevant census information on occupation, industrialization, etc. should also be taken into consideration for designing programme policies.

[1] National AIDS research Institute (ICMR), Pune

[2] Former HoD, Dept. of PSM, IMS-BHU, Varanasi

(8)

New HIV Infection Estimation from Programme Data of Key Populations

Analyst – Richard L Chawngthu[1]

Mentor – Rajesh Kumar[2]

Objectives

The main objectives of this study were to directly estimate new HIV infection rate among key populations enrolled in targeted HIV interventions using programme data, and to describe the characteristics of persons who were detected to have new HIV infections.

Method

The new HIV infection rate among IDU and FSW were calculated using NACP data for Aizawl district, in Mizoram State.

$$\text{New HIV infection rate} = \frac{\text{The number of people tested HIV-positive in a particular year among those who were negative in the previous HIV test excluding those who are registered in the same year}}{\text{Active/validated population (number enrolled minus drop-outs) who are HIV-negative in the TI programme for that particular year}}$$

The trends of new HIV infection rate were depicted every year and statistical significance was tested using Cuzick's test with ranks. The characteristics of the new HIV infected people were examined using the positive line-list of TI.

Data Source

The data sources used for the study were Master Line-list (Form E) and Positive Line-list from the IDU and FSW targeted intervention projects in Aizawl district of Mizoram, from 2010–2019.

Key Findings

- The new HIV infection rate among IDUs enrolled in TIs of Aizawl was 6.73 per 100 HIV negative IDUs in 2019. There was rapid increase from 2016 to 2019.
- The new infection rate among FSW in 2019 was 1.94. The overall trend among FSW shows gradual increase.
- Among the new HIV infections, IDUs had average age of 27.6 years at the time of HIV detection, and 60% of them were 25 years old or more at the time of their HIV detection. Most of them did not wander beyond their districts.
- The average sexual activities in a month among newly infected IDUs were 2.2 times per month while more than one fourth of them did not use condom in the last month. Their average injection episodes in a month were around 18, however, almost all of them reported that they did not share syringe/needles.

Year	Injecting Drug Users (IDUs)			Female Sex Workers (FSWs)		
	HIV Negative	New HIV-Positive	New HIV Infections (%)	HIV Negative	New HIV-Positive	New HIV Infections (%)
2010	1,924	13	0.68	335	2	0.6
2011	2,677	16	0.6	392	2	0.51

Year	Injecting Drug Users (IDUs)			Female Sex Workers (FSWs)		
2012	2,532	7	0.28	367	2	0.54
2013	2,599	10	0.38	413	2	0.48
2014	2,702	23	0.85	390	3	0.77
2015	2,791	40	1.43	387	5	1.29
2016	3,014	116	3.85	303	7	2.31
2017	3,346	186	5.56	296	5	1.69
2018	3,307	199	6.02	287	5	1.74
2019	3,091	208	6.73	309	6	1.94

Table 3.8: New HIV Infection Rate per 100 IDUs and FSWs, Aizawl, Mizoram

- Only 31.7% of them had linkage with Opioid Substitution Therapy (OST) services, but majority of them (82.3%) had linkage with Antiretroviral Therapy (ART).
- Alcohol use was higher in them (91.2%) compared to the whole IDU population (71.6%).
- The comparative analysis of the characteristics of newly infected with rest of the key population can be used for taking appropriate preventive actions at the local level.

Recommendations for the Programme

- This analysis may be undertaken at regular intervals for all the TIs under NACO to directly estimate new HIV infection rates and to understand the characteristics of newly HIV infected KPs.
- This estimation process is simple, and it does not require additional resources except brief training or instructions to SACS and field staff.
- These results can be compared with the IBBS results using the age of onset of risky sexual or injecting practices and the age when diagnosed HIV-positive as a proxy for incident new infections among the KPs studied (TI and Non-TI).

Technical Brief

Chongthu, Richard et al., 2020, Direct estimation of New Infections among Key populations using program data. Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20Estimating%20New%20Infections.pdf

Peer-reviewed Journal Article

Chawngthu RL, Chakrapani V, Narayan P, Verma V, Rajan S, Kumar R. (2021) New HIV Infection Estimation from Program Data of Key Populations. Indian Journal of Community Health,33(2):415-417. https://doi.org/10.47203/IJCH.2021.v33i02.032

[1] Mizoram State AIDS Control Society, Aizawl

[2] Postgraduate Institute of Medical Education and Research, Chandigarh

04 The Way Forward

National Data Analysis Plan materialized at NACO is first of its kind in many respects. NDAP was able to develop the skills of the programme managers at NACO and SACS through various technical sessions at the workshops and thorough continuous mentoring by senior public health experts. In addition, NDAP has also created a pool of analysts from various respected institutions across the country. The competence in data analysis and scientific writing that has been built though NDAP. NDAP has provided inspiration for institutions at the regional and State level to undertake the in-depth programme analysis focusing on the regional, State or district levels. The respective SACS could (is expected to) take a lead in this regard thus decentralizing the process of programme data analysis.

NDAP was envisaged as an activity that would eventually fit in as a routine activity within the SI Division of NACO and SACS. By institutionalizing the in-depth programme data analysis, NACP can ensure a continuing thrust on maintenance of data quality and a scientific approach towards data and publication of reports and articles.

Limitations/Challenges

- Conversion of all the selected priority areas into a publishable document could not be achieved in this round owing to various reasons.
- Translation of the experience in assessment and maintenance of data quality into an operational mechanism to maintain data quality various levels of data capture remains a challenge.

Annexure II

List of Selected Areas for In-Depth Analysis

Sl no	Topics
1	Levels and trends of clinically tested STIs from NACP
2	Self-reported routes of transmissions in India: risk profiling analysis; its impact and correlates
3	Identification of proxy indicator to new HIV infection: Chandigarh and Mizoram
4	Programme gap analysis & prioritization of Districts/States
5	Trends and profile of male and female sero-discordant couples ICTC and PPTCT in the Emerging Epidemic States
6	HIV-TB data analysis (rate of TB among people newly enrolled in HIV care and or among those initiating ART)
7	Early warning indicators & quality of care indicators
8	HIV co-infections with Hep C
9	HIV co infection with Visceral Leishmaniasis & Post Kala Azar Dermal Leishmaniasis
10	HIV co-infections with Hep B
11	Analysis of HIV among young people: 15–24 years: Meghalaya
12	Profiling of women PLHIVs in India: Odisha, Bihar and Uttar Pradesh
13	PLHIV in Punjab
14	Systematic review of data on AIDS-related deaths in India
15	Systematic review of data on AIDS-related deaths in high prevalence States in India
16	Technical efficiency analysis of ART programme with respect to global commitments
17	Evolving epidemic in north-eastern States
18	Evolving epidemic in Punjab, Haryana and Chandigarh
19	Evolving epidemic in Delhi
20	Evolving epidemic in Tamil Nadu, Andhra Pradesh and Telangana
21	Evolving epidemic in Gujarat and Maharashtra
22	Evolving epidemic in Bihar, Jharkhand and Orissa
23	Evolving epidemic in Uttar Pradesh

Annexure III

List of Analysts and Institutes

Sl No	Analysts	Institutions
1	Mr. Utpal Das	National AIDS Control Organisation
2	Ms. Vinita Verma	National AIDS Control Organisation
3	Mr. Padum Narayan	National AIDS Control Organisation
4	Mr. Tejas Mulik	National AIDS Control Organisation
5	Dr. P. Sujith	National AIDS Control Organisation
6	Mr. Archit Sinha	National AIDS Control Organisation
7	Dr. Deepak Bala Subramaniam	NACO, WHO Consultant (HIB/TB)
8	Dr. P. S. Sarvanamurthy	Consultant, NACO
9	Dr. Suman Gangulay	West Bengal SACS
10	Dr. Richard Chongthu	Mizoram SACS
11	Dr. Pramod Deoraj	Maharashtra SACS
12	Dr. Amitav Das	Odisha SACS
13	Dr. Shrikala Acharya	Mumbai DACS
14	Dr. Maninder Sethia	Consultant, Mumbai DACS
15	Dr. Amol Palekar	Consultant, MDACS
16	Dr. Praveen Kumar	Delhi SACS
17	Dr. Suchit Kamble	National AIDS Research Institute (ICMR), Pune
18	Dr. Shanta Kumar	National Institute of Epidemiology (ICMR), Chennai
19	Dr. Saritha Nair	National Institute of Medical Statistics (ICMR), New Delhi
20	Dr. Rajesh Pandey	Consultant, NVBDCP, Patna
21	Dr. Rajendra Gadhavi	BJ Medical College, Ahmedabad.
22	Dr. Lincoln Choudhury	Independent Consultant
23	Dr. Saradiya Mukherjee	Population Council, New Delhi
24	Dr. Nilesh Gawde	TATA Institute of Social Sciences, Mumbai
25	Mr. A. Vishwanathan	Alliance India, New Delhi

Annexure III

List of Mentors and Institutes

Sl no	Mentor	Institutions
1	Dr. D. C. S. Reddy	Former HoD, Dept. of PSM, IMS-BHU, Varanasi
2	Dr. Arvind Pandey	National Institute of Medical Statistics (ICMR), New Delhi
3	Dr. R. R. Gangakhedkar	National AIDS Research Institute, Pune
4	Dr. K. S. Sachdeva	Deputy Director General, NACO, MoHFW, GoI
5	Dr. Sheela Godbole	National AIDS Research Institute, Pune
6	Dr. Asha Hegde	National AIDS Control Organisation
7	Dr. Manish Bamrotiya	National AIDS Control Organisation
8	Dr. Manisha Ghate	National AIDS Research Institute, Pune
9	Dr. Krishna Pandey	Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna
10	Dr. Samiran Panda	National Institute of Cholera and Enteric Diseases, Kolkata
11	Dr. Damodar Sahu	National Institute of Medical Statistics (ICMR), New Delhi
12	Dr. Rajesh Kumar	Post Graduate Institute of Medical Research, Chandigarh
13	Dr. Niranjan Saggurti	Population Council, New Delhi
14	Dr. Bidhubhusan Mahapatra	Population Council, New Delhi
15	Mr. Haresh Patel	WHO-India
16	Dr. Nicole Seguy	WHO-India
17	Dr. B. B. Rewari	WHO-SEARO
18	Dr. Vimlesh Purohit	WHO-India
19	Dr. Pamela Ching	Centers for Disease Control and Prevention, New Delhi
20	Mrs. Deepika S Joshi	Centers for Disease Control and Prevention, New Delhi
21	Dr. Upma Sharma	Centers for Disease Control and Prevention, New Delhi
22	Dr. Bitra George	FHI360, New Delhi
23	Dr. Ravi Verma	International Centre for Research on Women, Delhi
24	Dr. Shalini Bharat	Tata Institute for Social Sciences

Annexure IV

NDAP Team

NDAP Secretariat at NACO

Dr. K. S. Sachdeva, Former DDG, NACO
Dr. Shobini Rajan CMO (SAG), NACO
Mr. Padum Narayan – Former Programme Officer (SI-Data Analysis & Use), NACO
Mr. Sonoo Jha, Programme Officer (SI- Data Analysis & Use), NACO
Mr. Prashant Kumar Patra – Former Consultant (NDAP)
Mr. Ganesh Kumar S. - Consultant (NDAP)

Partner Organizations

Centers for Disease Control and Prevention (CDC)
WHO-India
Joint United Nations Programme on HIV/AIDS (UNAIDS)
Population Council

Annexure V

Undertaking for Data Confidentiality (Analyst)

I/We, ……......………..………………………………………………………………………….. (Name), working as ………………………………………………………………….… (Designation) in.…………………………… ………………………………………………… ……………………………………………………………… ……………………………...... (Complete Name and Address of Institution/ Organization), am/are involved in the study/analysis titled "………………………………………………………………….…. …..…………… …………………………………………………………………………………………" from …………………….. to ………………………..(time period).

I hereby declare that the data that I am provided access to, under the above-mentioned study/ analysis will be used only for the purpose of the work mentioned hereinabove and only in the manner that National AIDS Control Organisation (NACO) authorizes and permits. I expressly acknowledge and agree that without prejudice to all the available legal remedies, I am also liable to administrative action in case the data is used for any purpose beyond the scope of this study. I will not share the data with any one, or publish the research data without prior written consent/permission from NACO and shall maintain the confidentiality of all Confidential Information. I shall submit a copy of all the data files, analysis papers and reports generated as a part of this analysis work to NACO at the end of the study/analysis. Any publication out of this analysis will have prior NACO approval. Any publication, document, and/or paper arising out of this analysis will be jointly owned.

…………………………………………………………………………………………

(Signature)

Date: ……………………………………. Place: …………………………………………………

Contact Details:

Mobile & Telephone:……………………………………………………………………

Email:………………………………………………………………………………..

(Signature of the Head of Institution/Organization)

…………...………………………………………………… Official Seal:

Name of the Head of Institution/Organization:

Date: ………………………… Place: ……………………………

Annexure VI

List of Publications

Published in Peer-reviewed Journals

Chakraborty D, Ganguly S, Debnath F, Biswas S, Saha MK, Dutta S (2021) Socio-demographic correlates of HIV sero-discordance among couples in West Bengal, India; A cross sectional analysis. Japanese Journal of Infectious Disease. https://doi.org/10.7883/yoken.JJID.2021.330 (Last accessed on 11/01/2022)

Acharya, S., Setia, M.S., Palkar, A., Chandra Sekar Reddy, D., Keskar, P., Deoraj, P., Ramien Parthasarthy, M., Narayan, P., Rajan, S. and Saxena, A. (2021), Development of a composite indicator to prioritize districts for implementation of human immunodeficiency virus programmes in Maharashtra, India. The International Journal of Health Planning and Management, 36: 71-82. https://doi.org/10.1002/hpm.3066

Chawngthu RL, Chakrapani V, Narayan P, Verma V, Rajan S, Kumar R. (2021) New HIV Infection Estimation from Program Data of Key Populations. Indian Journal of Community Health,33(2):415-417. https://doi.org/10.47203/IJCH.2021.v33i02.032

Published Reports/ Technical Brief

Choudhury, Lincoln et al., 2020, Improving patient management can further enhance efficiency of antiretroviral treatment centres. Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20Efficiency%20of%20ART.pdf

Mundhe, Tukaram et.al, 2020, Is it possible to reduce the deaths among people on Anti-HIV treatment? Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20reducing%20deaths%20among%20PLHIV.pdf

Acharya, Srikala et.al, 2020 Strategic framework for categorization of districts for HIV programmes. Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20Strategic%20Framework.pdf

Chongthu, Richard et al., 2020, Direct estimation of New Infections among Key populations using program data. Technical brief. NACO http://www.naco.gov.in/sites/default/files/Technical%20Brief%20on%20Estimating%20New%20Infections.pdf

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