



## UTILITY OF SMS BASED REPORTING FOR SUPPLY CHAIN MANAGEMENT AND FAST TRACKING PMTCT INTERVENTION- A PILOT STUDY IN WEST BENGAL

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**ABSTRACT**

**Background:** Under National AIDS Control Program, commodities are procured centrally and supplied to states for further distribution. Facility-level monitoring of commodities and timely replenishment are real challenges to states. For facilitating linkage of all HIV-positive-pregnant women to treatment, real-time information of positive-pregnant women detection is important.

**Methods:** A mobile-sms-based reporting system on stock-management and linkage-mechanism was developed by West Bengal. Mobile-numbers of facility-level focal persons were linked to the system for sending weekly stock-report in single sms syntax. Similarly the details of HIV-positive-pregnant women were sent in specified syntax. Web based monitoring of stock and linkage could be conducted by SACS.

**Results:** The number of facilities reporting stock-out decreased from 10-2% and linkage of HIV-positive-pregnant women to treatment increased from 80-95%, after this implementation.

**Conclusions:** Being offline-reporting, it is easy to implement everywhere. This system is easily replicable model and is cost-effective.

**KEYWORDS :** sms, stock, AIDS**BACKGROUND:**

HIV testing of the targeted population is the backbone of National AIDS Control Program and therefore, equipping all the HIV testing centres (ICTC-Integrated Counselling and Testing Centres) with HIV test kits with adequate amount is the basic pre requisite for successful implementation of the program. The number of HIV testing centres in West Bengal is 314 and taking stock status on regular and frequent interval and replenishing them for impending stock-out situation is one of the biggest challenges in this program.

PMTCT (Prevention of Mother To Child Transmission of HIV infection) program is based on multipronged interventions and there is every chance of linkage loss in every step of this program. Therefore, monitoring of individual positive pregnant woman plays a crucial role in successful implementation of PMTCT program. This monitoring should start at the earliest preferably at the time of detection. Therefore, getting the information of positive pregnancies at the time of detection, helps the supervisor to monitor the positive client simultaneously with ICTC staff and other stakeholders.

It was felt need that facility level stock maintenance and timely replenishment in case of impending stock out for different HIV test kits including Dry Blood Spot (used for Early Infant Diagnosis program) and PMTCT drugs including Nevirapine suspension for HIV exposed babies and TLE (Tenofovir+Lamivudin+Efavirenz) tablets for labour rooms, has been a real challenge to the State AIDS Control Society (SACS) to manage huge number of ICTCs to function smoothly. The challenges are due to

- No available reporting mechanism (Weekly/fortnightly) etc
- Collecting weekly stock over phone from huge number of Stand alone ICTC is time taking

Moreover to facilitate linkage of all positive pregnant women to different cascades of PMTCT program and to supervise it centrally, same day information of detection of positive pregnant women was utmost required at SACS level to minimize linkage loss. The challenges are due to

- PMTCT line-list data used to come to SACS after a month. If real time information comes to SACS regarding positive pregnant women detection, initiative can be taken from SACS level also to track the client.
- Entry in PMTCT line list is often erratic from by facilities due to long format. Sometimes, it does not come regularly. If any intervention was needed early from SACS level, information comes to SACS very late.

**METHOD:**

In order to address the challenges and to provide better service to the community, mobile sms based reporting system on both the issues were developed by West Bengal State AIDS Prevention & Control Society in collaboration with State IT cell, Dept. of Health & Family Welfare, GoWB.

This is a software based application where sms in pre-designed format

will be assembled at software and software will provide compiled data in excel format at administrator level.

This involved no extra cost to SACS. It took only one month to develop this tool and several dummy sms were sent to get the output and it was found to be working as it was planned. Necessary protocol was developed and disseminated widely. The mobile number of identified focal person from each facility was registered into the system and the sender was to send sms to a specific number as per protocol. The modus operandi is as follows

**For positive pregnant women tracking:**

ICTC staff has to send sms to a particular server number when a positive pregnant woman is diagnosed at his/her facility.

The sms should be written in the following format

wbictc1(space)Name of the Pregnant woman(space)PID No.(space)Date of testing DD(space)MM(space)YY (space)Type of Testing ANC or DIL

**For weekly stock management:**

ICTC staff has to send sms to a particular server number designated for this purpose on Saturday after working hour or on the last working day of the week.

The sms should be written in the following format

wbictc2(space)Closing stock of Kit-1 (in tests)(space)Closing stock of Kit-2 (in tests)(space)Closing stock of Kit-3 (in tests)(space)Closing stock of WBFPT kit (in test)(space)Closing stock of DBS kit (in cards)(space)Closing stock of TLE (in TABS Combining both)(space)Closing stock of Nevirapine suspension (in bottles)

For stock reporting, it is a routine sms that should come every Saturday after duty hours and a push sms system is being developed to intimate every facility via sms not reported stock via sms during a particular week. After sending sms, senders are getting feedback message that their sms has been successfully uploaded.

**RESULT:**

The program was launched during May'15. From then, West Bengal hardly experienced any complete stock out situation at the facility level. Judicious relocation from one centre to other could be done even if state faced shortfall in test kit supply.

Following implementation of sms based reporting of detection of positive pregnant women, early ART linkage has increased substantially (table-1).

**Table-1**

Duration	No. of positive detection	Out of them linked to ART centres within the month of detection	% of linkage
Dec'14-May'15	132	105	79.54
July-Dec'15	126	120	95.23

The data source is PMTCT linelist and it clearly shows that there is rise in early ART linkage by 10% following introduction of sms based reporting.

Since it is an offline reporting, it is very easy to report and feedback sms makes facility level worker sure that their data has been uploaded. The defaulters of weekly stock reporting, are getting warning on every Wednesday morning so that they can send it immediately. Moreover with constant monitoring, the percentage of facilities reporting stock out situation for any consumables has reduced from 10% to 2%.

#### DISCUSSION:

In the era of mobile phone, Use of mobile technologies for HIV prevention and care is no longer a promise, but a reality. This can be effectively utilized for different purposes like HIV/AIDS prevention, awareness generation, behaviour change communication, adherence monitoring, logistic management etc. A review article<sup>(1)</sup> has shown a surge of interest in the use of technology in HIV prevention and care research. Another study<sup>(2)</sup> shows that text-messaging interventions present a novel approach for targeting high-risk men who have sex with men (MSM), who may not respond to or may be difficult to reach for face-to-face or site-based interventions. This sms based approach may also be utilized for time-bound reminder to promote adherence to Anti Retroviral medicines<sup>(3)</sup>. A study on Short Message Service (SMS)-Based Intervention to Improve Treatment Adherence among HIV-Positive Youth in Uganda: Focus Group Findings tried to explore qualitatively programmatic barriers to SMS-based interventions for HIV-positive youth and discussed pathways through which youth perceived them to work<sup>(4)</sup>. Text messages (SMS) were being increasingly integrated into HIV programs across Southern Africa to improve patient adherence, linkage to care and provided psycho-social support. Careful attention need to be paid to the design of SMS-based interventions for clients of HIV-care services to ensure that any potential harm, such as unwanted disclosure of HIV status, could be minimized. This was a study finding in a South Africa based study<sup>(5)</sup>.

There have been evidences of use of sms based technology in other health programs also in mental health<sup>(6)</sup>, home based fortification program to combat child anaemia<sup>(7)</sup> and to promote compliance of the hypertensive patients to medicines<sup>(8)</sup>. In the state of West Bengal, India, sms based reporting is used to get daily updates on clinical screening of children performed by AYUSH doctors under Rashtriya Bal Swasthya karyakram (RBSK) program for varieties of clinical conditions<sup>(9)</sup>. This was introduced following our endeavour proved to be successful model. This sms based technologies are also in use successfully in other programs/ activities not related to Health like Child Protection<sup>(10)</sup>.

In India, in HIV/AIDS control program this sms based interventions were rarely used and this has proved to be an effective tool in logistic management as well as in tracking of positive pregnant women.

#### CONCLUSION :

Since the system runs in offline mode, it is very easy to implement at the remotest part of the state where internet connectivity is poor. Inbuilt central feedback mechanism ensures that the focal person at the facility sends correct data in correct format and also in time. This system could be easily replicated across the country and is cost effective.

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