



To develop a public private partnership model of disease notification as a part of integrated disease surveillance project (IDSP) for private medical practitioners in Mumbai City, India

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ABSTRACT

Background The main objective of Integrated Disease Surveillance Project (IDSP) was early detection of disease outbreaks. This could be possible only when the public health authorities have a strong and effective surveillance system in collaboration with Private Health Sector.

Objectives 1) To assess knowledge, attitude & practice about notification of diseases amongst Private Medical Practitioners (PMPs). 2) To find out barriers experienced by PMPs in reporting of diseases under surveillance. 3) To assess feasibility of various alternative ways of reporting convenient for PMPs. 4) To develop a Public Private Partnership Model of disease notification based on feasible options obtained in the study.

Materials and Methods This study was a cross-sectional descriptive study conducted in the F South Municipal ward of Mumbai city during April-May 2011. Two stage simple random sampling was used to select 104 PMPs for the study.

Results and Conclusions Nearly 98% PMPs felt importance of notification in health system, but only 46% had practiced it. Most common reason for non-reporting was lack of information about reporting system. The convenient way of reporting for PMPs was to report to the nearest health post personally or to District Surveillance Unit through SMS/phone call and both at weekly interval.

Keywords: notification, surveillance, public private partnership.

INTRODUCTION

Integrated Disease Surveillance Project (IDSP), a decentralized disease surveillance project in India was initiated by the Government of India in November 2004 with funding support from World Bank. It is intended to generate and detect early warning signals of impending outbreaks and help initiate an effective response in a timely manner¹.

Depending on the level of expertise and specificity, disease surveillance in IDSP can be

divided into three types as, syndromic, where diagnosis is made on the basis of symptoms/clinical pattern by paramedical personnel and members of the community; presumptive, in which diagnosis is made on typical history and clinical examination by Medical Officers/qualified doctors and confirmed wherein clinical diagnosis is confirmed by an appropriate laboratory test².

GJMEDPH 2012; Vol 1 issue #6

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An important component in this regard is strengthening hospital based disease surveillance in the country for the priority diseases as identified by the project. The probable surveillance under IDSP is based on the clinicians' assessment of the patient based on signs and symptoms. Timely sharing of this information can help to prevent the spread of outbreaks in the community.

It is intended to generate and detect early warning signals of impending outbreaks and help initiate an effective response in a timely manner to start with. In later years the routine surveillance data and trends over years will be used to predict outbreaks well in advance and initiate preventive /averting actions.

Surveillance Units under the project have been set up at Central, State and District level with the district being the hub of all information. Linkages have been established with all State Head Quarters, District Head Quarters and all Government Medical Colleges on a Satellite Broadband Hybrid Network for enhanced speedy data transfer and video conferencing facilities.

Emphasis is being laid on reporting of surveillance data from major hospitals both in public and private sector and also Infectious Disease hospitals. Paramedical staff and pharmacists can be crucial links in collating the data from hospitals¹.

RATIONALE OF STUDY

Private Medical Practitioners play a crucial role in health system of any area. They serve nearly 70% of the population. Evidence on the distribution of health facilities, manpower, health expenditures and utilization rates shows that private practitioners are significant health care providers in many Asian countries³. Thus it is implied that the surveillance system will work efficiently only when private sector is taken into consideration⁴.

In Mumbai, the surveillance activities are carried out by Public Health Department through an

organized health structure including Health Posts, Dispensaries, Public Health Labs, Municipal Ward Offices and Municipal Hospitals. The surveillance data available with public health officials is thus collected only through these agencies. The private health sector, which plays a key role in public health, is not involved in the notification system actively. Thus, the study was planned to explore the reasons for lack of active involvement of PMPs in disease notification. The results of the study might be helpful to initiate a thought process for strengthening the surveillance system through collaboration with these PMPs.

MATERIALS AND METHODS

The study was a cross-sectional descriptive study conducted in the F South Municipal Ward of Mumbai City for the period of two months during April-May 2011. Two stage simple random sampling was used to select the study sample of 104 Private Medical Practitioners from all the seven Health Posts of the F South Ward.

Municipal Corporation of Greater Mumbai (MCGM) has divided Mumbai city into 24 Municipal Wards for the administrative & electoral purposes. They are designated alphabetically like A, B, C etc. Each ward has its ward office which serves as nodal centre for civil administration as well as public health activities for that ward. Health Post is the Primary Health Unit for all the public health activities in every ward. Each Health Post caters to around 50,000 populations. Out of the 24 wards, MCGM declared seven wards, as high risk for monsoon related diseases during the year 2010-11 based on the previous surveillance data. These were E, F South, G North, G South, K East, L & P North ward. These wards were considered for the study assuming that they might have vigilant surveillance system owing to their inclusion into high risk category. In the first stage of sampling one ward was selected randomly from these seven wards using lottery method. It happened to be F South ward. The F South ward had seven

Health Posts (names mentioned in table). Health Post wise distribution of PMPs was obtained from F South ward office. In the second stage of sampling, 50% of the PMPs from each Health Post

were selected using lottery method. This gave us the representation from all the health posts and minimized the selection bias.

Table: Health Post wise distribution of Private Medical Practitioners

Sr. No.	Name of Health Post	Total no. of PMPs in Health Post	No. of PMPs selected (50%, randomly)
1	F south ward office	16	8
2	2 nd October	32	16
3	Ram-Laxman Tekadi	44	22
4	Kidwai nagar	28	14
5	Abhudaya Nagar	40	20
6	V. Shantaram	16	8
7	Naigaon	32	16
	Total	208	104

Approval from institutional Committee for Academic Research & Ethics (CARE) at Seth G. S. Medical College & K.E.M. Hospital Mumbai was taken before starting the study.

For the data collection, a semi-structured questionnaire was prepared in accordance with the study objectives. The questionnaire was tested with the help of a pilot study & necessary modifications were made accordingly. Subjects participated in pilot study were excluded from final study. The PMPs who were willing to participate were included in the study. After preliminary self introduction, purpose of the visit was explained to the PMPs. After obtaining written informed consent, validated semi-structured questionnaire was administered to each participant separately. Not a single participant refused to give consent for the study.

The initial part of questionnaire was used to assess the existing knowledge, perceptions and practices of PMPs regarding disease surveillance.

Subsequently the barriers in notification of diseases to public health authority were explored. The PMPs were then asked to provide the convenient framework for disease notification which they would like to get implemented so as to ensure their active participation in surveillance activity.

All responses were tabulated in Microsoft-Excel 2007 Software and analyzed with the help of SPSS version 17.0. Frequency distributions were calculated for all variables.

RESULTS

The total number of study subjects was 104 PMPs from seven health posts. Around 60 (58%) were in the age group of 25 to 45 years. Out of 104 PMPs 76 were male practitioners. Most of the PMPs (87%) were treating around 20 to 60 patients daily in their clinics. Patients visiting their clinics were mostly from nearby area (<2 km) in case of 98% of PMPs. Commonest ailment that PMPs used to

treat was viral fever, followed by Upper Respiratory Tract Illnesses & Malaria with equal frequency. Arthritis was also one of the other common problems. PMPs used to preserve information about patients for further follow up in the manner mentioned in table 1.

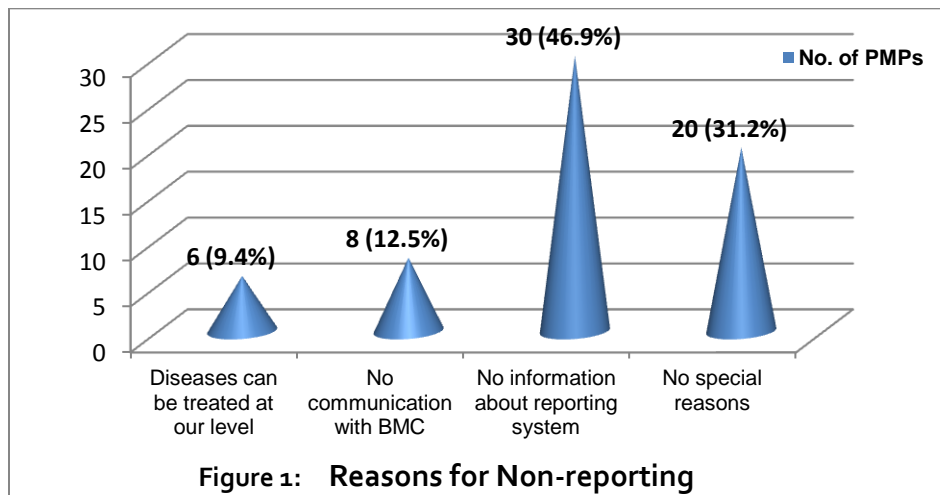
Almost 84 (80%) PMPs were aware about notification of diseases. But only 40 (38%) among them were actually reporting diseases to the public health authority anytime until the time of study, suggesting their knowledge application gap. Out of 40 PMPs who had reported anytime, 36(90%) reported it to Community Health

Volunteers (CHVs) coming from MCGM Health Posts to their clinics to collect the reports. Around 30 (75%) PMPs reported only number of cases of Malaria in their area & that too without their address or contact details. Except malaria no other diseases were reported by these PMPs. On further probing, around 40% of the PMPs explained that CHVs did not visit their clinics regularly to collect the reports. Also most of the times those visits were mainly for collection of Immunization & Family Planning related data and not exclusively for disease surveillance. The reasons for non-reporting of diseases to the public health authority cited by PMPs are depicted in figure 1.

Table 1: Information about patients preserved for further follow up by PMP's*

Information preserved	No. of PMPs	Percentage (%)
Name, age, sex only	82	78.84
Name, age, sex, address & contact no.	24	23.07
Name, age, sex, history & treatment details	68	65.38
No information	20	19.23

(* Events in the table are not mutually exclusive)



No special reasons- on further probing PMPs cited it as,

- 1) Additional burden over them
- 2) Red tapism
- 3) Fear of getting trapped in legal issues

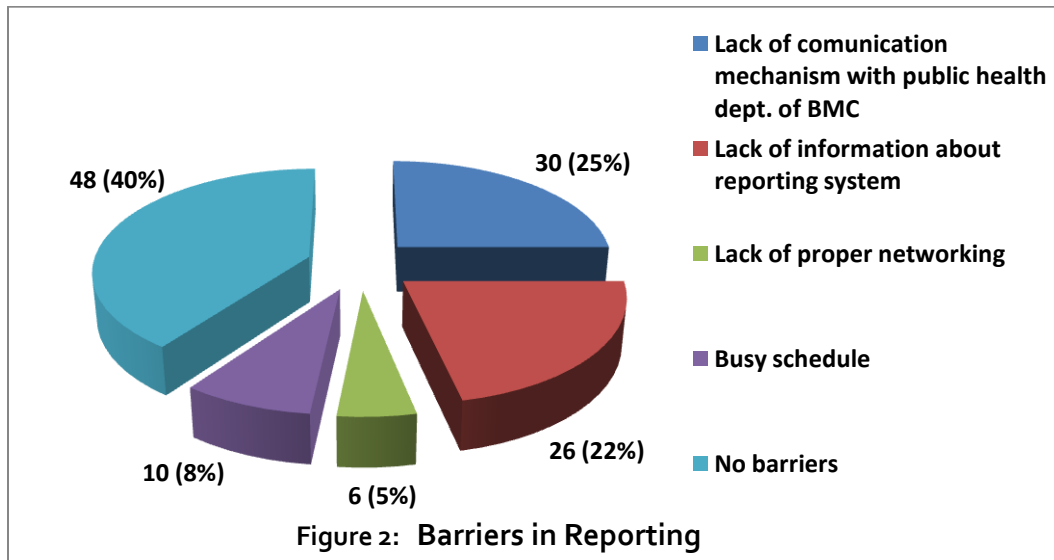
Nearly 90 (94%) of PMPs expressed the importance of notification of diseases. Various views communicated by PMPs in this regard are explained in table 2. When asked about barriers in

reporting, around 46% of the PMPs confessed that there were no barriers in reporting, but it was not reflected in their reporting practices. Other crucial barriers in reporting are illustrated in figure 2.

Table 2: Perception of PMPs regarding importance of disease notification*

Importance	No. of PMPs	Percentage of total (%)
Statistical data generation	22	22.44
Promotes preventive action by BMC (Brihan Mumbai Corporation)	42	42.85
Mapping distribution of diseases	16	16.32
Create public awareness	6	6.12
Others	26	26.53

(*Events in the table are not mutually exclusive)

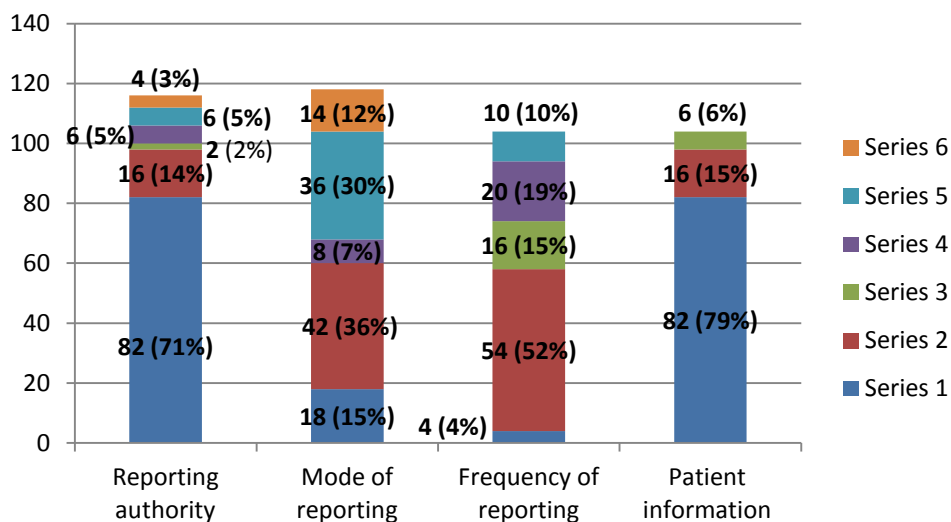


Bridging the communication gap & creating awareness about disease surveillance were the most important expectations of 24(23%) PMPs from the Public Health Department. Nearly 22% urged that MCGM should collect report from

their clinics regularly. Around 20% mentioned need for provision of reporting protocols & formats.

The PMPs were asked to give a framework for notification of diseases convenient for them to follow in the long run. It was based on the key points like reporting authority, mode of reporting, frequency of reporting and which information

about patients need to be reported. The consolidated responses given by PMPs are illustrated in the figure 3. Each bar in the figure corresponds to each of the key points mentioned above. Further details of each bar are explained in the table given below figure 3.



Series	Reporting authority	Mode of reporting	Frequency of reporting	Patient information for reporting
1	Health post	Telephonically	Daily	Only quantitative data
2	Ward office	Standard SMS	Weekly	Only qualitative data
3	Authorised doctor	Standard Fax	Fortnightly	Both
4	IDSP Unit at Tertiary hospital	Standard e-mail	Monthly	-
5	District Surveillance Unit	Personally in prescribed format	Others	-
6	Others	Letter head	-	-

Figure 3: consolidated response for disease notification mechanism preferred by PMPs

Table 3: Assessment of knowledge, attitude and practice about notification among PMPs

PMPs attitude towards reporting	Importance of notification appreciated		Total
	Yes	No	
Active reporting done	38 (46.34%)	2 (100%)	40 (47.62%)
Active reporting not done	44 (53.66%)	0	44 (52.38%)

Total	82 (100%)	2 (100%)	84 (100%)
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PMPs perspectives about the diseases to be included under surveillance revealed nearly a uniform picture. Malaria got the top priority for notification followed by tuberculosis & dengue. Hepatitis, enteric fever & acute gastroenteritis were less favored diseases for notification. Assessment of knowledge, attitude and practice about notification among PMPs has been explained in table 3. When asked about the views regarding disciplinary action for non-compliance with reporting system, PMPs responded defensively that notification should neither be made compulsory nor any action should be taken against erring practitioners as it might demotivate them (Table 4).

DISCUSSION

The current study revealed the important barrier in reporting system was the lack of regular communication between public health department and PMPs. Similar kind of barriers were observed in the study by Doyle TJ et al (2002), like lack of awareness of the legal requirement to report, a lack of knowledge of which diseases are reportable, a lack of understanding of how or to whom to report, an assumption that someone else will report the case, intentional failure to report to protect patient privacy, and insufficient reward for reporting or penalty for not reporting⁵.

Existing surveillance system had very little active involvement of private sector. Private Medical Practitioners could play a crucial role in disease surveillance and lead to early & timely response to impending epidemic. They could also help to generate the incidence rates for various diseases as they were the first contact point for majority of the populations. Similar findings were obtained from a study conducted in South Africa by de Villiers & Geffen⁶. They found that a network of

Table 4: Views regarding disciplinary action for non-compliance

Views	No. of PMPs	Percentage (%)
No compulsion & no action	78	75
Compulsion should be made	18	17.3
Monetary fine should be imposed	2	1.9
Withdraw rights to issue Death certificate	2	1.9
Indeterminate	4	3.8
Total	104	100.0

sentinel family practitioners that had been established in South Africa provided incidence rates for both diseases and interventions through a simple and cheap surveillance system using simple mailed postcards. Current study also revealed the utility of personal reporting to nearest health post using prescribed formats as simple and cheap method of notification.

In the framework given by PMPs for notification, nearly 58% PMPs had shown willingness to use mobile phones for reporting of diseases to public health authority. Most of them preferred to send a SMS to a toll free number. Singh et al (2011)⁷ had shown that use of mobile phone technology has the potential to enhance the overall efficiency and effectiveness of the IDSP in study done in Andhra Pradesh, India." Similar study in Tamil Nadu by Ganesanan et al (2011)⁸ stated that the major advantage of the mobile phone patient data collection method was the improved timeliness for real-time detection of any disease outbreak. It proved a friendly, efficient, and cost effective tool of data collection.

A study by Brissette et al (2006)⁹ titled as "The Effect of Message Type on Physician Compliance with Disease Reporting Requirements" proved that sending alert message in the form of legal obligation, public health benefits & both have made private practitioners to report to public health authority. Physicians receiving correspondence describing the legal obligation to report were more likely to report patients than those receiving only the benefit message, while those receiving correspondence describing the public health benefits of reporting submitted more complete reports than those receiving only the obligation message. Thus to maximize physician reporting, it is important for public health agencies to emphasize both the legal and public health basis for reporting conditions in correspondence to physicians. Similar pattern can be reciprocated as our study also revealed usefulness of the SMS system.

The another study done by Gelberg KH et al (2011) proved the usefulness of multimedia campaign in improving reporting to Occupational Lung Disease Registry in New York by physicians¹⁰. The current study also revealed need for creating awareness regarding surveillance system amongst PMPs.

Nearly 35% of PMPs provided option of e-mails for reporting directly to district surveillance unit. This would enhance the speed of reporting as well as produce real time picture of disease outbreaks in the particular area. Such importance of electronic media in disease surveillance was evaluated in the study titled "State wide System of Electronic Notifiable Disease Reporting from Clinical Laboratories Comparing Automated Reporting with Conventional Methods" by Effler et al (1999)¹¹. In this evaluation, electronic reporting was doubled than the total number of laboratory-based reports received. On average, the electronic reports were timelier and more complete, suggesting that electronic reporting may ultimately facilitate more rapid and comprehensive institution of disease control measures.

Electronic medical record (EMR) systems have rich potential to improve integration between primary care and the public health system at the point of care. EMRs make it possible for clinicians to contribute timely, clinically detailed surveillance data to public health practitioners without changing their existing workflows or incurring extra work. This was the finding obtained in the study "Integrating Clinical Practice and Public Health Surveillance Using Electronic Medical Record Systems" by Klompas et al (2012)¹². In another study by Turbelin C and Boëlle P Y (2010) mentioned need of automated, electronic laboratory-based reporting system¹³. Updated guidelines for evaluating public health surveillance systems (2001) also mentioned the need for the integration of surveillance and health information systems, the establishment of data standards and the electronic exchange of health data¹⁴. Similar views were expressed by PMPs in our study to report via e-mail & other electronic media.

In this study the small sample size has restricted the generalization of the results for whole Mumbai city. But still the sample was representative of all the health posts in the ward, this study may be considered as a pilot project based on which research for entire Mumbai can be planned.

CONCLUSION

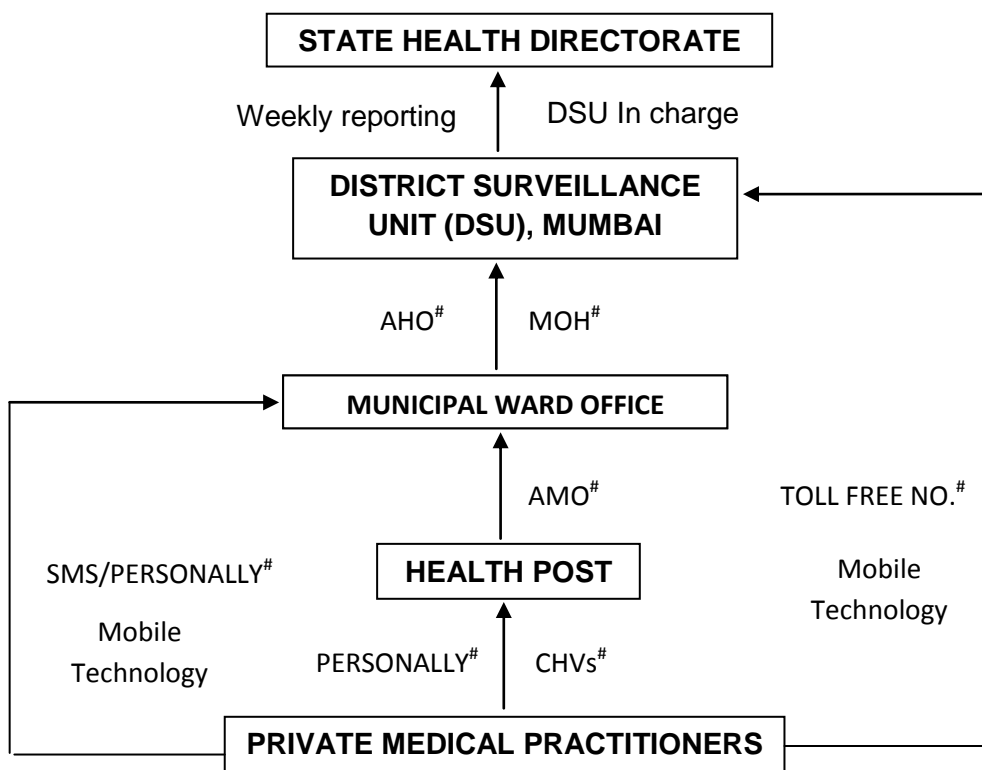
The disease notification act should be implemented for all registered PMPs & as a part of this process they should be oriented to note down details of the patients especially suspected & probable cases designated under IDSP. The PMPs should be trained to report the presumptive as well as confirmed cases of diseases under surveillance. The Health Post in the area should be made as coordinator and Assistant Medical Officer of Health Post as Nodal Officer in data collection under IDSP. Appropriate software should be made for paperless communication in reporting from PMPs to Medical Officer of Health at ward office level through Health Post. Alternative model based on Mobile technology¹⁵ can be established

at ward level and District Surveillance Unit that will help to convert voice message reported by PMPs to text message. All PMPs should be encouraged to report using prescribed standard formats provided to them periodically. Periodic telephonic communication and alert messages regarding notification should be sent to PMPs. The

regularity of PMPs in disease notification should be considered for additional credit points.

RECOMMENDATIONS

“PUBLIC PRIVATE PARTNERSHIP MODEL FOR DISEASE NOTIFICATION”



DAILY REPORTING

CHV- Community Health Volunteer (grass root health worker)

AMO- Assistant Medical Officer (in charge of each health post)

MOH- Medical Officer of Health (in charge of public health activities at ward level)

AHO- Assistant Health Officer (next in rank to MOH at ward level)

Mobile technology- it is used in context with mHealth or mobile health which is a term used for the practice of medicine and public health, supported by mobile devices. The term is most commonly used in reference to using mobile communication devices, such as mobile phones,

tablet computers and PDAs, for health services and information.

With reference to above model, the PMPs can utilize three options for reporting of diseases to public health authority. In the first place they can give required data to concerned Health Post in their area personally, in IDSP format provided to them or can report to CHVs visiting their clinic daily for surveillance. PMPs can also report directly to ward office either personally (if easily accessible); or through a standard SMS to toll free number or using mobile technology wherein the voice message from PMPs to a toll free number will be translated to text message at ward office database. Similarly this mobile technology can be

ACKNOWLEDGMENTS

We acknowledge the participation of PMPs in our study.

We would also like to acknowledge the Institutional Ethics Committee (CARE) for giving approval for this study.

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utilized to report directly to District Surveillance Unit by PMPs. The PMPs are supposed to report daily to any of these authorities. The nodal officer for surveillance i.e. AMO, will forward the compiled report from all PMPs in the concerned Health Post to ward office daily through an e-mail & weekly in the IDSP format personally. The compiled data from all the Health Posts will be forwarded to District Surveillance Unit daily from ward office under the guidance of MOH (or AHO if needed) via e-mail. The weekly reporting will be done in the standard IDSP format from ward office to DSU duly endorsed by MOH (or AHO if needed). DSU In charge will be responsible for reporting the compiled data of Mumbai to State Health Directorate

CONFLICTS OF INTEREST

None to be declared.

SOURCE OF FUNDING

Non-funded study.

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