



# “ANALYZE LOCALLY & ACT LOCALLY”- GEOGRAPHICAL PRIORITIZATION OF DISTRICTS/BLOCKS & STRATEGIC APPROACH USING HIV DATA TRIANGULATION IN GUJARAT, INDIA

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#### ABSTRACT

**Introduction:** Apart from expanded surveillance data, National AIDS control Programme had generated lot of program data at district, state and national level. This rich data set can be used for priority action. In this study scoring triangulation methods used to assign priority among district by using programme data.

**Methods:** Three different prioritization tools (scoring triangulation methods) were developed based on the routine programme and survey data. These three tools were used to give scoring to each district of the Gujarat state for assign priorities for programme implementation and expansion of services.

**Results:** All 25 districts of the Gujarat state were categorised using the prioritization tools. As per the weighted seven indicator 12 districts are in high category while as per as Seven Indicators (Uniform) tool and Nine Indicators (Weighted) tool 7 and 5 district were in High category.

**Conclusion:** This scoring triangulation method being a simple tool can be used at district, block level where diversity/multiplicity of HIV is unique. This method can be used to monitor geographical spread and impact of prevention activities in this area.

**Keywords:** Triangulation, HIV epidemic, Prevention, MARP Size Estimate

#### INTRODUCTION

India contributes at third number in a pool of total 33.3 million estimated people living with HIV/AIDS worldwide. As per the HIV estimate of 2008-09, there are an estimated 2.39 million people living with HIV/AIDS in India. The overall goal of National AIDS Control Programme Phase III (2007-2012) is to halt and reverse the epidemic in India over the five year period. The programme hopes to achieve this through a four pronged strategy: Prevent infection through saturation of coverage of high-risk groups with Targeted Interventions, Provide greater care, support and treatment to a larger number of People Living with HIV/AIDS, Strengthening the nationwide Stra-

tegic Information Management System & Strengthening the infrastructure systems and human resources in prevention, care, support and treatment at the district, state and national levels. The facilities for the prevention and treatment of HIV/AIDS were scaled massively in India. (**Annual report of NACO-2010**)

In NACP-III, district has been the unit of intervention under decentralized strategy of NACO. The DAPCU-'District AIDS Prevention & Control Units' were established in 195 category A & B districts of India.

Led by UNAIDS, 'Know your epidemic, know your response' has become a rallying cry for an in-

tensified focus on HIV prevention, spur by the sobering realization that for every person enrolled on antiretroviral treatment, many more become newly infected.<sup>1</sup>

There have been different classifications based on two or three phase strategy like prevalence of HIV and risk behaviour with or without intervention based. In 1977, the World Bank developed a classification system by grouping countries according to the types and general prevalence of documented HIV epidemics. It's described as three general patterns and prevalence of HIV mainly "Nascent", "Concentrated" and "Generalized"<sup>2</sup>. In 1999, UNAIDS published a classification system level similar to the World Bank's, but made some changes. UNAIDS changed "nascent" to "low prevalence". The use of the term "low HIV prevalence" has resulted in an assignment of a lower public health surveillance and prevention programs and the classifications are not sufficiently specific to provide useful guidance for public health surveillance and prevention programs.<sup>3</sup>

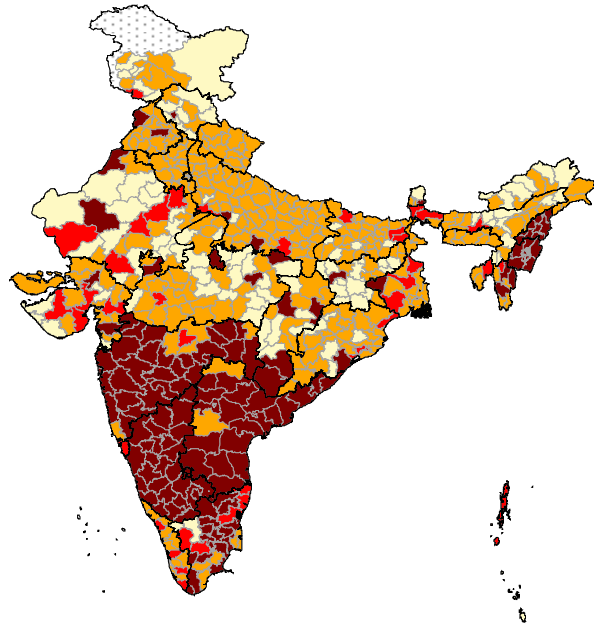
A numerical classification system that divides countries with less than 5% HIV prevalence into several distinct categories and further focuses on prevalence among those sub-populations at greater risk of HIV, i.e., FSWs and their clients, IDUs and MSM. Generalized classification schemes are inherently flawed because they oversimplify complex situations and conditions. HIV epidemics are ultimately local, as are the sexual and/or needle-sharing networks that fuel them. Striking differences have been noted in sexual behaviors and the resulting HIV prevalence levels between communities only a few kilometers apart. For example, in rural Tanzania, HIV prevalence in a trading center was more than double that found in an area surrounding the trading center only 2 km away and three to four times that found in rural villages within 8 km of the trading center.

It should also be noted that for large countries such as China, India and Indonesia a national classification often obscures HIV patterns and prevalence that are present in many individual communities/ blocks/ provinces/states. These local realities are what determine real prevention needs.<sup>4</sup> Transmission pattern vary not only from country to country, but also from community to community with the epidemic clustering among different age groups, communities and geographical areas.<sup>5</sup>

The Commission proposes that Asia's epidemics can be better understood if they are classified according to the predominant risk behaviors and their relative contribution to new infections, rather than according to national HIV prevalence. Such a scheme offers broad guidance that can assist countries and donors in selecting and prioritizing their

HIV interventions more appropriately.<sup>6</sup>

In India the third phase of National AIDS Control Program (NACP-III) started in July 2007. One of the core strategies under NACP-III was decentralization. The DAPCUs were established keeping "District" as a local unit for HIV prevention, control and care, support activities. The criteria used for district categorization / prioritization were based on HIV Sentinel Surveillance data for ANC groups or PPTCT data of districts. There were four categories classified A, B, C and D as shown in figure below for the country.



Source: NACO website <sup>7</sup>

(<http://www.nacoonline.org/upload/NACO%20PDF/District%20Categorisation%20for%20Priority%20Attention.pdf>)

Today rich evidence is available apart from expanded surveillance data. The reach of NACP-III upto PHC & CHC level had generated lot of program data collated at district, state and national level. With the availability of rich data sets and decentralized strategy of NACP-III clicked to develop the new methodology of district/ taluks/ blocks prioritization with the advent of District AIDS Prevention & Control Units (DAPCUs). This methodology has first carried out in Gujarat since 2007-8 and refined. The same methodology was accepted and conceded by National AIDS Control Organization, India in developing annual action plan for states.

## OBJECTIVE

The present study was conducted to develop tool for district or block/ taluka prioritization where the HIV burden is maximum; to identify geographical areas which needs urgent priority for HIV prevention and control measures; to compare

the three different types of methodologies in respect to district prioritization and its validity, to look for the impact of prevention activities by means of geographical spread of HIV through this methodology; and to propose and recommend the concept of scoring triangulation with developing and developed countries.

## METHODOLOGY

We retrieved data on indicators showing current burden of epidemic viz Cumulative PLHIV detected or PLHIV registered at ART centers, HIV positivity of general clients at ICTC, HIV positivity of pregnant mothers at ICTC centers and indicators showing potential vulnerability viz size estimates

of MARPs (FSW, MSM & IDUs) from two different sources namely mapping agency and or as per project proposal for that concerned year were used.

These are seven **core basic indicators** used during this exercise. The PLHIV registered or cumulative detection provides overall burden of cases in the community or area. The PPTCT positivity provides information on low risk (General Population) prevalence. The clients/ attendees at the ICTC were from different strata of risk population as per ICTC guidelines; it is a mix of high risk and bridge population thus making it representation of that population in the district/ taluks.

**Table-1: Prioritization Tool and Scoring System**

Indicator	Cut-offs	Scoring		
		Seven Indicators (Weighted)	Seven Indicators (Uniform)	Nine Indicators (Weighted)
Total PLHA registered in PreART register OR PLHA since 2002 onwards	>=1000	10	4	10
	500-999	8	3	8
	200-499	6	2	6
	<=199	3	1	3
ICTC HIV positivity %	>=10 %	10	4	10
	7 - 9.99 %	8	3	8
	5 - 6.99 %	6	2	6
	<= 4.99%	3	1	3
PPTCT HIV positivity %	>=1 %	10	4	10
	0.7 - 0.99	8	3	8
	0.4 - 0.69	6	2	6
	0 - 0.39	3	1	3
HRGs Estimate (Recent Mapping data) EPOS- FSW	>=1000	20	4	20
	501-999	15	3	15
	201-500	10	2	10
	Upto 200	5	1	5
HRGs Estimate (Recent Mapping data) EPOS-MSM	>=1000	20	4	20
	501-999	15	3	15
	201-500	10	2	10
	Upto 200	5	1	5
HRGs Estimate (as per AAP 2009-10 target)-FSW	>=1000	20	4	20
	501-999	15	3	15
	201-500	10	2	10
	Upto 200	5	1	5
HRGs Estimate (as per AAP 2009-10 target)-MSM	>=1000	20	4	20
	501-999	15	3	15
	201-500	10	2	10
	Upto 200	5	1	5
HIV positivity among MSM 2009-10 (Up to Dec)	>=7 %	NA	NA	30
	6.99 - 5 %	NA	NA	25
	3- 4.99 %	NA	NA	20
	< 2.99 %	NA	NA	10
HIV positivity among FSW 2009-10 (Up to Dec)	>=7 %	NA	NA	30
	6.99 - 5 %	NA	NA	25
	3- 4.99 %	NA	NA	20
	< 2.99 %	NA	NA	10
Minimum Score		29	28	49
Maximum Score		110	7	170
Categorization				
High (A)		>=85	>=22	>130
Medium (B)		57 - 84	15 - '21	87 - 129
Vulnerable (C)		30 - 56	8 - 14	50 - 86
Less Vulnerable (D)		29	7	49

The MARPs as mentioned above represent high risk groups also known as core group in HIV transmission. The volume of these groups provides crucial information in determining the potential of HIV transmission in the geographical region. These indicators were chosen because of their easy availability at district/ taluks level and representativeness of 'high risk', bridge and low risk population.

### Prioritization Tool and Scoring System

Three different prioritization tools were developed: First, Seven Indicators Tool (Weighted score): Three indicators of disease burden were given weightage of ten points each while four indicators of potential vulnerability were given weightage of 20 points each. For each indicator differential score were given based on cut-offs shown in Table No.1.

Second, Seven Indicator Tool (Uniform score): All indicators were given equal weightage. For each indicator differential score were given based on cut-offs shown in Table No.1

Third, Nine Indicator Tool (Weighted Score)- Two additional indicators of MSM positivity and FSW positivity were added in this tool. Weightage of seven indicators was similar to Seven Indicator Tool, additional indicators were given weightage of 30 points each. For each indicator differential score were given based on cut-offs shown in Table No.1

Then total score obtained in each score was divided in four categories viz High Priority (A), Medium Priority (2), Vulnerable (C) and Less Vulnerable (D) by using cut-offs of total possible score.

The program has been expanded rapidly under ICTC, TI, STD and M&E component from district place (urban) to taluks (PHC/CHC-Rural) level in NACP-III. Hence the data sets which were used in this methodology under triangulation will minimize the biases and errors associated with one data set (indicator).

### RESULTS

All 25 districts of the Gujarat state were categorised using the prioritization tools. Table 2 shows number of districts categorized as High, Medium, Vulnerable and Less Vulnerable by all three prioritization tools.

**Table 2: District categorization using three tools**

Category	Seven Indicators (Weighted)	Seven Indicators (Uniform)	Nine Indicators (Weighted)
High (A)	12	7	5
Medium (B)	6	10	15
Vulnerable (C)	6	7	4
Less Vulnerable (D)	1	1	1

### Comparison and Validity of Triangulation Methodology

Table 4 illustrates the comparison of three methods of data triangulation used in 25 districts of Gujarat. The result for category A and B was assessed here being a top priority (high priority) districts.

The above table-IV is a comparative statement of various triangulation methods and its outcome. Validity and Credibility of this methodology is done by comparing districts with top priority with the other currently available good quality data from ART centers of those districts. Three different triangulation methods districts variation is just one or two districts. Method-1 stands out with minimal variation with two other methods as well with three methods combined districts comparison. The range for each epidemiological indicator given was decided keeping in view the risk of HIV transmission and scored accordingly. However it was also been verified that with ordinal scale the category 'A & B' doesn't make any difference while 'C & D' category shows mild variation but overall variation seems less than 1 % in districts. Even taluks/ block level triangulation done showed less than 1% variation by author.

### Usage of this scoring triangulation method

This concept of methodology may be adopted worldwide by concerned government and non government organizations responsible for prevention and control of HIV/AIDS epidemic. Being a simple tool which is user- friendly and can be used at district, block level where diversity/ multiplicity of HIV is unique. The top priority districts identified based on scoring provides inputs to policy, programme decision makers to initiative promptly HIV prevention and control activities to contain HIV epidemic. This method may be repeated annually to monitor or track geographical spread and impact of prevention activities in this area. This method has proven successful in the state of Gujarat where even at taluks level the prevention facilities have been provided.



**Table 3: Data of each indicator and total score by all methods for individual district**

Districts	PLHA*	ICTC# HIV %	PPTCT@ HIV %	FSW EPOS**	MSM EPOS**	FSW AAP##	MSM AAP##	HIV in MSM@@	HIV in FSW\$	Tool I	Tool II	Tool III
Ahmedabad	19382	4.07	0.38	5667	6526	4920	4149	0.61	1.54	96	22	116
Amreli	736	1.91	0.08	482	241	486	648	0.45	0.73	59	14	79
Anand	1124	2.49	0.32	672	654	581	439	3.32	5.01	71	17	116
Banaskantha	1971	2.31	0.27	1553	1063	1090	940	1.86	0.93	91	21	111
Bharuch	663	4.45	0.16	272	110	425	300	4.17	5.71	49	12	94
Bhavnagar	2828	2.44	0.22	3547	5086	3426	4488	0.83	0.35	96	22	116
Dahod	703	1.38	0.07	466	81	750	125	16.67	0.18	49	12	89
Dang	77	0.55	0.00	20	5					39	7	49
Gandhinagar	767	2.06	0.19	367	1279	375	1135	0.50	0.00	74	17	84
Jamnagar	2495	2.69	0.19	1078	1303	2267	1973	0.90	0.19	96	22	116
Junagadh	1798	2.10	0.11	1673	533	1146	778	2.45	0.00	86	20	96
Kachchh	1538	4.15	0.20	1223	1063	1320	1550	2.09	1.05	96	22	116
Kheda	1104	2.42	0.24	1657	647	990	1511	0.59	0.81	86	20	106
Mehsana	1789	3.61	0.18	952	694	676	935	2.84	0.74	76	18	96
Narmada	131	2.27	0.21	445	327	200	250	0.00	0.00	44	10	64
Navsari	1291	1.75	0.18	1171	164	464	140	2.56	6.73	56	14	91
Panchmahal	512	1.62	0.20	331	263	300	250	2.63	6.25	54	13	89
Patan	1152	3.02	0.32	952	713	1039	1316	1.48	0.71	86	20	106
Porbandar	461	1.40	0.07	255	291	300	350	2.17	0.00	52	12	62
Rajkot	5686	4.91	0.21	2596	2428	3032	4531	1.12	1.57	96	22	116
Sabarkantha	1750	2.70	0.25	896	505	1017	513	3.10	1.20	81	19	111
Surat	14057	4.10	0.37	4063	3757	6734	8756	0.81	0.64	96	22	116
Surendranagar	1035	2.27	0.16	2000	1944	897	853	0.80	0.13	86	20	106
Vadodara	4717	4.57	0.26	2874	3071	2730	4283	1.14	2.13	96	22	116
Valsad	1171	2.52	0.26	422	532	850	1000	1.68	0.83	76	18	96
<b>State</b>	<b>68938</b>	<b>3.14</b>	<b>0.25</b>	<b>35634</b>	<b>33280</b>	<b>36015</b>	<b>41213</b>	<b>1.11</b>	<b>0.92</b>			

\* Total PLHA registered in PreART register OR PLHA since 2002 onwards (Cumulative Apr 2002 till Dec 2009);

#ICTC HIV positivity rate in 2009-10; @ PPTCT HIV positivity rate in 2009-10;

\*\*HRGs Estimate (Recent Mapping data) EPOS; ##HRGs Estimate (as per AAP 2009-10 target)

@@ HIV positivity among MSM( Data for districts may be used as per location of NGO, if > than 2 NGOs should be combined) 2009-10 (Up to Dec); \$HIV positivity among FSW( Data for districts may be used as per location of NGO, if > than 2 NGOs should be combined) 2009-10 (Up to Dec)

Tool I = Tool Seven Indicators (Weighted) Total score of district;

Tool II = Tool Seven Indicators (Uniform) Total score of district

Tool III = Tool Nine Indicators (Weighted) Total score of district

### Major advantages of this scoring triangulation method

Minimum seven core indicators like ICTC, PPTCT, and two size estimates of MARPs (MSM & FSW) and cumulative no of PLHIV at ART or ICTC required which is easily available at district or even taluks/ block level. There is flexibility in the period used for each indicator. Even the priority geographical area like taluks / blocks can be identified by this methodology. The impact of intervention by means of increase or decrease in geographical spread as well intensity of epidemic in the community can be accessed through repeat of scoring system. Since this method is not dependent upon modeling, or any statistical calculations, or use of any software but simple excel worksheet which can be used at district and even at block or taluka level by field staff working with HIV program.

### Limitations of this scoring triangulation method:

Basic core indicators required at district or Taluks/ Block level may not be possible in all state or county. This method should be used once in year or 2

years since its less likely the priority district/ taluka will change in such short time. The behaviour related indicator of MARP or general population is not used. Data availability & quality are major limitations.

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**Table 4: Comparative statement of various triangulation methods**

Districts prioritization based on different triangulation methods in A & B category					Validity of districts with data from ART centres	
Method of Triangulation	II	I	III	Top priority Dist	ART patients	Criteria adopted
District Name	Change of Score without weightage	Basic method with 7 indicators	Triangulation with additional indicators like HIV Positivity in MARPs (ICTC or HSS )	Priority districts falling in all 3 methods	No of patients on ART at the end of Mar '09	More than Median value (192) as cut off for top priority districts
Ahmedabad	Y	Y	Y	Ahmedabad	1265	A
Amreli		Y			233	A
Anand	Y	Y	Y	Anand	172	Anand
Banaskantha	Y	Y	Y	Banaskantha	301	A
Bharuch			Y		172	
Bhavnagar	Y	Y	Y	Bhavnagar	535	A
Dahod			Y		77	
Dang					6	
Gandhinagar	Y	Y			161	
Jamnagar	Y	Y	Y	Jamnagar	184	Jamnagar
Junagadh	Y	Y	Y	Junagadh	372	A
Kachchh	Y	Y	Y	Kachchh	220	A
Kheda	Y	Y	Y	Kheda	122	Kheda
Mehsana	Y	Y	Y	Mehsana	300	A
Narmada					17	
Navsari			Y		188	
Panchmahal			Y		125	
Patan	Y	Y	Y	Patan	192	A
Porbandar					108	
Rajkot	Y	Y	Y	Rajkot	793	A
Sabarkantha	Y	Y	Y	Sabarkantha	231	A
Surat	Y	Y	Y	Surat	2341	A
Surendranagar	Y	Y	Y	Surendranagar	201	A
Vadodara	Y	Y	Y	Vadodara	471	A
Valsad	Y	Y	Y	Valsad	189	
Total districts	17	18	20	16	8976#	13

#Median no 192

Dark cell denotes different finding when compared with other methods of Triangulation