CITY HEALTH PLAN FOR PUNE

November 2013

VOLUME - I

Submitted To:

Health of the Urban Poor (HUP)

Population Foundation of India

Submitted By:

Urban Management Centre (UMC)

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Under the program supported by the
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Contact:
Manvita Baradi
Director, UMC
3rd floor, AUDA building,
Usmanpura; Ahmedabad 380014
info@umcasia.org
Phone: 079-27546403
www.umcasia.org

URBAN MANAGEMENT CENTRE
in collaboration with ICMA

The Urban Management Centre (UMC) is a not-for-profit organization based in Ahmedabad, India. It works towards professionalizing urban management in India and worldwide. UMC provides technical assistance to local governments; supports programs that improve quality of life of citizens and builds capacity of governments. UMC specializes in the sectors of urban planning, water and sanitation, service delivery and management, energy, heritage and transportation. UMC is a legacy organisation of ICMA in the region. Contact us at: www.umcasia.org

Project team

Ms. Manvita Baradi, Director
Ms. Meghna Malhotra, Deputy Director
Ms. Vanishree Herlekar, Program Manager
Ms. Poulomee Ghosh, Project Associate
Ms. Krunal Parmar, Project Associate

Acknowledgements

We would like to thank the following institutions and individuals for their guidance and support during the course of the study.

Health Department, Pune Municipal Corporation
Dr. S.T Pardeshi, MOH
Dr. Anjali Sabne, Dy. MOH

Solid Waste Department, Pune Municipal Corporation
Mr. Suresh Jagtap, Joint Commissioner

Urban Community Development Department, Pune Municipal Corporation

ICDS, Women and Child Development Department, Government of Maharashtra
Mr. Rahul More, CDPO, ICDS-Nodal Officer

PlanIndia- HUP
Ms. RashmiShirhatti, City Coordinator

Centre for Environment Education (CEE)
Ms. SanskritiMenon
Mr. AvinashMadhale
Mr. KunaJaiswal

Support

The preparation of the City Health Plan for Pune is supported by Population Foundation of India under the Health for Urban Poor (HUP) program support by the United States Agency for International Development (USAID).

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List of Abbreviations

AMOH	Assistant Medical Officer of Health
ANM	Auxiliary Nurse Midwife
AWH	Anganwadi Helper
AWW	Anganwadi Worker
BPMC	Bombay Provisional Municipal Corporation
CBR	Crude Birth Rate
CDP	City Development Plan
CDPO	Child Development Project Officer
CDR	Crude Death Rate
CEE	Centre for Environment Education
CSP	City Sanitation Plan
DOTS	Directly Observed Treatment (short term)
UFWC	Urban Family Welfare Center
GoI	Government of India
HUP	Health of the Urban Poor
ICDS	Integrated Child Development Services Scheme
ICTC	Integrated Counseling and Testing Center
IDSP	Integrated Disease Surveillance Programme
IEC	Information Education and Communication
IHFWS	Integrated Health and Family Welfare Society

IIHS	Indian Institute of Human Settlements
IMR	Infant Mortality Rate
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KKPKP	Kagad Kach Patra Kashtakari Panchayat
MAS	Mahila Arogya Samiti
MMR	Maternal Mortality Ratio
MO	Medical Officer
MoUD	Ministry of Urban Development
NIUA	National Institute of Urban Affairs
NLEP	National Leprosy Eradication Programme
NRHM	National Rural Health Mission
NSWAI	National Solid Waste Association of India
NUHM	National Urban Health Mission
NUSP	National Urban Sanitation Policy
NVBDCP	National Vector Borne Disease Control Programme
OPD	Out Patient Department
PCPNDT	Pre Natal Diagnostic Techniques
PFI	Population Foundation of India
PHC	Primary Health Center
PMC	Pune Municipal Corporation
RAY	Rajiv Awas Yojna
RNTCP	Revised National Tuberculosis Control Programme
SLB	Service Level Benchmark
STP	Sewage Treatment Plant
SWACH	Solid Waste (Collection and Handling) Cooperative
SWM	Solid Waste Management
UCD	Urban Community Development
UMC	Urban Management Centre
UNICEF	United Nation's Children Fund
UPHC/UHC	Urban Public Health Centre / Urban Health Centre
USAID	United States Agency for International Development
USHA	Urban Social Health Activist
WCD	Women and Child Development
WHO	World Health Organization
WTP	Water Treatment Plan

Background

1. The National Urban Health Mission

India like the rest of the developing world is urbanizing. Towns and cities are seeing rapid expansions as increasing numbers of people are migrating to urban areas in search of economic opportunity. As per Census 2011, urban population in India amounts to 37.7 crore exhibiting a rise of 31% over the last decade. This rapid growth in urban population has outpaced the provision of affordable housing and environmental and health infrastructure. The shortfall in urban housing has led to proliferation of slums and squatter settlements in Indian cities. Crowded living conditions, unhygienic surroundings and lack of basic amenities characterize slums in India. The near total absence of civic amenities coupled with lack of primary health care services in most urban poor settlements has an adverse impact on the health status of its residents.It is understood that the health of the urban poor is significantly worse than the rest of the urban population and is often comparable to the health conditions in rural areas. The 10thfive year plan (2002-2007) observed that unlike the rural health services there have been little efforts to provide well planned primary, secondary and tertiary care services in geographically delineated urban areas. It is observed that the primary health care facilities have not grown in proportion to the explosive growth of population. Ineffective outreach and weak referral systems also limit th9e access of urban poor to health care services.

The 12th five year plan of Government of India seeks to pay systematic attention to urbanization and spearhead the process of inclusive infrastructure development in cities. As part of the plan the government has launched the National Urban Health Mission (NUHM) to address the health concerns of the urban poor through facilitating equitable access to quality health care through a revamped public health system in urban areas. The mission will be launched in 779 cities and towns in India with a population of 50,000 or more. The mission will be implemented in these cities in partnership with the NRHM's efforts so far to ensure that there is no duplication of services. (Ministry of Health and Family Welfare, Government of India, 2012). The NUHM framework for implementation focuses on the following key aspects:

1. Urban Poor Population living in listed and unlisted slums
2. All other vulnerable population such as homeless, rag-pickers, street children, rickshaw pullers, construction and brick and lime kiln workers, sex workers, and other temporary migrants.
3. Public health thrust on sanitation, clean drinking water, vector control, etc.
4. Strengthening public health capacity of urban local bodies.

1.1. Proposed health care delivery model under NUHM

The proposed national urban health service delivery model intends to rationalize and strengthen the existing public health care system in urban areas, promote effective engagement with the non-governmental sector and strengthen the community participation in planning and management of health care service delivery. Urban Primary Health Centre (U-PHC) is central to the proposed health care delivery model. The U-PHC will provide a common platform and availability of all services including RCH services and management and referral of communicable and non-communicable diseases including HIV/AIDS and TB. One UHC will cater to an urban population of 50,000 and will have outreach and referral linkages as illustrated in the diagram below.

While the services provided at U-PHC will be universal in nature, the outreach services will be targeted to the key focus groups (slum dwellers and other vulnerable groups). Outreach services will be provided through Female Health Workers (FHWs) or ANMs. The NUHM framework recommends one ANM per 10,000 urban population. NUHM will also encourage effective participation of the community in planning and management of health care services through promoting an Urban Social Health Activist (ASHA) or Link Worker (LW) in urban poor settlements. One LW will cater to a slum population of 2000. NUHM will also foster creation of community based institutions like Mahila Arogya Samiti for 50-100 slum households.

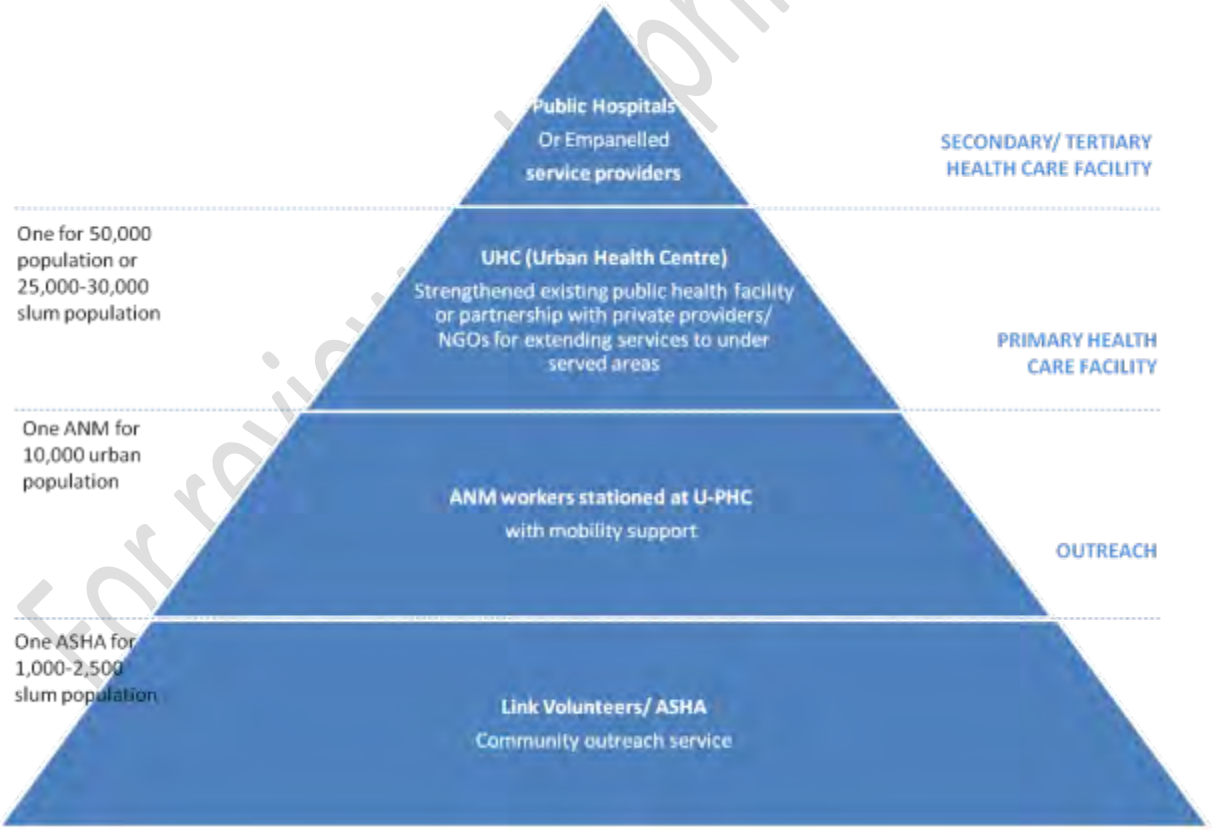


Figure 1Urban health care delivery model, source: NUHM PIP guidelines, 2013-2014

1.2. Convergence with other determinants of health

The World Health Organization's Commission on Social Determinants of Health (CSDH) defines the Social Determinants of Health (SDH) as "the conditions in which people are born, grow, live, work and age, including the health system". The NUHM encourages putting in place institutional arrangements that ensure convergence between health care and these social determinants of health.

1.2.1. Nutrition

Although nutritional deficiencies are lower in urban areas than in rural areas, even in urban areas undernutrition is very widespread. In urban areas, 40 percent of young children are stunted, one-third are underweight, and 17 percent are wasted (NFHSIII).The Integrated Child Development scheme (ICDS), introduced by the Women and Child Development Department in 1975 is one of the key programs to combat child malnutrition in India. The ICDS program provides the following package of services through a network of anganwadis in urban and rural areas.

- Supplementary nutrition,
- Immunization,
- Health check-up,
- Referral services,
- Pre-school non-formal education and
- Nutrition & health education.

As per the official data from the WCD Department, as of 2012 there are urban 104 urban ICDS projects in Maharashtra. The NUHM recommends convergence with the ICDS program through organizing monthly health, sanitation and nutrition day at anganwadis. The NUHM will also encourage community action through LW and MAS for improved nutrition, water & sanitation and other aspects having a bearing on health.

1.2.2. Water and sanitation

Environmental sanitation includes safe management of human excreta, it's safe confinement treatment, disposal and associated hygiene-related practices such as solid waste management and the management of drinking water supply (National Urban Sanitation Policy, 2009). For a long time, sanitation in India has been accorded low priority and there is poor awareness about its inherent link with public health. According to the National Urban /sanitation Policy (NUSP), inadequate discharge of untreated domestic/municipal wastewater has resulted in contamination of 75 per cent of all surface water across India leading to rampant spread of water and vector borne diseases in urban areas. The loss due to diseases caused by poor sanitation for children under 14 years alone in urban areas amounts to Rs.500 Crore at 2001 prices (Planning Commission-United Nations International Children Emergency Fund (UNICEF), 2006). NUHM acknowledges the impact of poor sanitation on human health, especially among the urban poor. The mission recommends key partnerships and linkages with urban local bodies and other national and state institutions for improved water and environmental sanitation and other aspects having a bearing on health.

The Ministry of Urban Development (MoUD) is the nodal agency responsible for formulating national level policies on urban water supply and sanitation. The Ministry's strategic plan (2011-2016) calls for cross departmental synergies with the Ministry of Health and Family Welfare and the Ministry of Housing and Poverty Alleviation to address urban sanitation and hygiene.

Initiatives by MoUD such as JawaharLal Nehru National Urban Renewal Mission (JNNURM) and Urban Infrastructure Development Scheme for Small & Medium towns (UIDSSMT) facilitate creation of basic urban infrastructure relating to water supply sanitation and promote healthier cities. The NUHM framework suggests that these existing schemes can be leveraged to foster creation of health centers in slums.

1.2.3. Education

Over one fifth of our population comprises of children, aged 5-14 i.e., the age group covering primary and secondary education. In urban areas, most of children attending government run primary and secondary schools come from disadvantaged sections. These schools can serve as nodal points for advocating healthy behavioral practices and imparting awareness about preventive and curative health measures. The NUHM proposes to implement this through the school health program wgich will address the following components (Ministry of Health and Family Welfare, Government of India, 2012):

- Health Education (H.E.) Activities, creating awareness about hygiene, prevention of Vector Borne Disease etc.
- Medical examination of primary school children for eye ailment, nutrition, and others
- Treatment of minor ailments such as de-worming, skin diseases at school itself
- Special In-patient care at identified hospitals and referral services
- Control of communicable diseases through Immunization
- Training of teachers for early identification of symptoms

1.2.4. Housing

Poor housing and living conditions in slums is a matter of great concern. Issues such as dilapidated structures, poor quality of construction, overcrowding, non-availability of separate cooking areas, lack of ventilation etc. in slums poses several health challenges among urban poor. There are several national level initiatives to improve the quality of housing in India and mainstream slums into the formal housing markets. Rajiv Awas Yojana (RAY) is the most prominent housing program in the country initiated by the Ministry of Housing and Urban Poverty Alleviation (HUPA). The NUHM framework recommends fostering convergence with RAY by incorporating city health plans into the state plans of action under RAY.

1.2.5. Women's empowerment and skill development

Ministry of Urban Development seeks to provide employment to the urban poor through the Swarna Jayanti Shahari Rojgar Yojana (SJSRY). Under the Urban Self Employment Program (USEP) of the scheme there are provisions for Development of Women and Children in Urban Areas (DWCUA) groups of at least 10 urban poor women and also other Neighborhood Groups (NHGs). NUHM framework recommends federating these existing groups into Mahila Arogya Samitis for promoting health & hygiene and facilitating community risk pooling mechanism in slums.

2. About the city health plan

The United States Agency for International Development (USAID) funded Health of the Urban Poor (HUP) Project-(2009-13) is providing technical assistance to the Ministry of Health and Family Welfare for effective implementation of the NUHM. The project envisages the development of a responsive, functional and sustainable urban health system that provides need-based, affordable and accessible quality healthcare and improved sanitation and hygiene for the urban poor. To access NUHM funds under NUHM, each city will develop its own City Health plan based on the assessment of local needs.

The Ministry of Health and Family Welfare has requested the HUP team to prepare model city health plans detailing out the various steps of health planning and will act as guiding documents for other cities to frame their own health plan and associated Program Implementation Plans (PIPs). The HUP team has prepared such model plans for three cities in the country- Pune, Jaipur and Bhubaneswar. The Urban Management Centre (UMC) has been commissioned to evolve a methodology and prepare City Health Plans for these three cities in 2012-13. UMC has a strong expertise in working with city governments and other parastatal organizations towards data collection, analysis and performance improvement planning in all sectors of urban management including urban health management. UMC has previously prepared detailed project report for Ahmedabad Municipal Corporation (AMC) under the National Urban Health Mission in year 2008-10. UMC has also assisted the AMC in the mapping of slums, health facilities and health data including morbidity and preventive care on a Geographical Information System (GIS) platform. The methodology for the city health plan was developed by UMC in consultation with PFI and HUP teams. UMC also involved local NGOs to assist with data collection and situational analysis.

The Pune City Health Plan has been developed in consultation with the Health Department of Pune Municipal Corporation, and the local HUP team. The plan focuses on strengthening Pune's urban health system by upgradation of existing health facilities, augmenting staff and putting in place effective framework for community mobilization and health outreach services.

The findings and recommendations are presented in three volumes. Volume I is the City Health Plan Document, Volume II presents a detailed facility assessment of all Government Health Facilities in Pune and Volume III is a comparative analysis of governance structures in health in Pune, Bhubaneswar and Jaipur. The City Health Plan (Volume I) is organized in four broad sections: Background, Situation Analysis, Plan and Budget.

2.1. Steps in city health planning

The following methodology was adopted to prepare the Urban Health Plan of Pune:

2.1.1. Slum listing and mapping

NUHM emphasizes rationalization of the existing healthcare infrastructure and manpower based on the location of slums and other vulnerable groups in a city. Listing and mapping of slums and slum like areas like chawls, pavement dwellers etc. thus is crucial to the health planning process. NUHM framework recommends building on existing maps and databases indicating the locations of slums in a city developed by slum improvement departments or under national programs such as JNNURM and RAY. Existing slum databases available with the cities are often not the most current and updated and are limited to slums authorized by the urban local bodies. These existing slums lists do not include unlisted slums and other slum like areas in a city. It is important that for the purposes of extending health services, a more comprehensive database of urban poor population and locations be developed and frequently updated.

For preparing the Pune City Health Plan, the *Pune Slum Atlas, 2009*is used as the primary database for slum related information for the City. The comprehensive document prepared by the Urban Community Development (UCD) department of PMC in collaboration with MASHAL, a city based NGO provides basic information on the city's urban poor settlements including slum location, population and number of households in the slum.PMC is currently undertaking a detailed socio-economic slum survey under the Rajiv Awas Yojana (RAY) also in partnership with MASHAL. However since the RAY survey is at a progressing stage, the data is currently not available for the purpose of this plan. The RAY slum database could be used for updating the plan in the future.

The 2009Pune Slum Atlas provides basic information on the city's urban poor settlements including slum location, population and environmental conditions of the slum. Information sourced from the slum atlas is mapped on a base map with roads, landmarks and administrative boundaries. All existing public health facilities in the city were also marked on the map. All different layers of information including roads, ward boundaries, slums, Anganwadi centers and health facilities were mapped in CAD and then transferred to a GIS platform.

2.1.2. Situational analysis

Review of health indicators and morbidity data

Morbidity profiling is important in the city health planning process as it helps determine key health issues in the city and assess trends in communicable and non-communicable diseases. The sources of morbidity data include OPD data from ULB and state run health facilities, national and state health surveys, district level household surveys and primary baseline survey.

The Integrated Disease Surveillance Program (IDSP) Unit housed in health department of PMC was the key source for key health Indicators including birth and death rate, IMR, MMR and also disease related data.The HUP Baseline Survey for Pune (2011) conducted by HUP team was also used to assess the disease burden among urban poor in Pune. In addition news articles citing evidence of disease incidence in the city were tracked and reviewed to understand the trends of disease outbreaks and health care services.

Assessment of environmental conditions in slums

UMC team visited slums in different parts of the city to document and assess the environmental conditions including housing condition, availability of public infrastructure such as roads, schools and access to water and sanitation. The on-site assessment was supported by review of existing documents and plans including the Water-Sanitation SLB indicators of the MoUD, City Sanitation Plan, City Development Plan, the sanitation ranking undertaken by MoUD under the National Urban Sanitation Policy (NUSP), PMC budget and other project reports. Section 3.5.2 provides results of the environmental assessment.

Assessment of governance structures

An efficient governance structure is critical to the efficient functioning of any system. The planning team conducted a comprehensive review of existing governance including roles and responsibilities of various stakeholders in the health and sanitation sector and institutional structures for health care delivery. The aim of this exercise was to understand the existing city administration structure, process of decision making, flow of funds and finances, sharing of information, current monitoring regime and key linkages between the city and state health departments and other departments and authorities such as the Solid Waste Management Department and Urban Community Development (UCD) Department of PMC, State Women and Child Development Department (WCD) etc.

Assessment of health seeking behavior of slum population

The planning team conducted focus group discussions (FGD) in 25 slums across the city to assess accessibility to health infrastructure and understand the health seeking behavior of slum dwellers. The questionnaire for FGD is provided in Annexure3. The FGDs should ensure a fair representation of both male and female respondents and people from different age groups. The criteria for selection of these slums are listed below:

- Spatial distribution in the city: Slums in different wards of the city were selected to ensure that there is geographical diversity. Similarly slums in core city as well as fringe areas were selected to analyze the differences between urban and peri-urban areas.
- Size of slums: The selection ensured a mix of small (Population less than 100), medium (population between 100 and 1000) and large (population greater than 1000) slums.
- Tenural Status: Both notified and non-notified slums were selected to analyze the impact of tenure on provision of health services (if any).

Photograph 1Focus group discussions in slums

Health Facility Assessment

All government health facilities in Pune including dispensaries, maternity homes and hospitals under the management of PMC were assessed to evaluate the existing facilities in terms of staffing, infrastructure and maintenance. A rapid facility assessment survey questionnaire which captured information on availability of health infrastructure (building, equipment), catchment of patients, availability of required human resources and quality of environment and health services was developed by the planning team. The questionnaire for rapid assessment of health facilities is attached in Annexure 4.

A total of 51 government facilities including were assessed. The results from the assessment have been compiled in a dossier format and were used as inputs for designing of manpower and capacity building plan for Health Department of PMC.

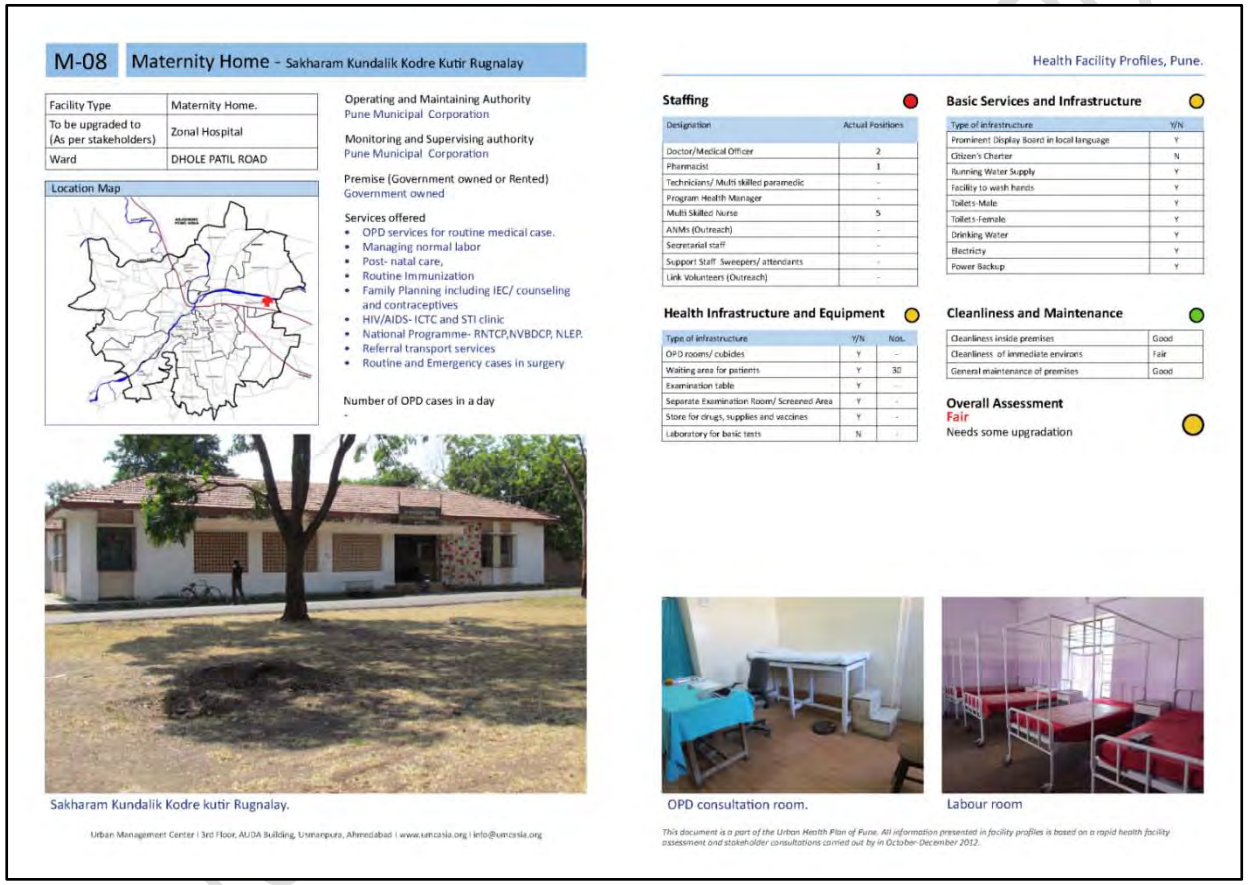


Figure 2 Sample health facility assessment sheet, Pune

2.1.3. Stakeholder consultations

The planning team conducted consultation with various stakeholder groups including staff from the Health Department and the UCD Department, PMC, State ICDS Departmentand local NGOs to understand local health care needs, issues, possible solutions and prioritization of health care needs and health package.Individual as well as group consultations were carried out where the planning team shared its understanding of governance, slum profile, health care services, morbidity profile of the city with the concerned stakeholders and facilitated discussions to identify prioritized areas for preparation of the essential health package.

Photograph 2 Stakeholder consultations

2.1.4. Development of essential health package and associated multiyear budget

The essential health package (EHP) puts forward the services made available at primary, secondary and tertiary health facilities and through outreach. Finalizing the key health sector needs of the city was undertaken in a consultative manner with concerned ULB staff and elected officials. UMC presented the current statistics and situation analysis based on previous data collection and facilitated discussions among stakeholders and to identify prioritized areas for preparation of the EHP. The priorities identified were used to strategize interventions and programs for bridging the gap for optional health coverage. The District NRHM PIP guidelines were used to prepare the multiyear budget template for the city.

The city health plan presents the essential health package for Pune along with the associated budget, recommendations for improving institutional structures, data management systems and fostering convergence among health and other allied departments and programs such as ICDS, RAY, JNNURM, public health engineering etc.

Situational analysis

3. City Profile

3.1. Location and Geography

City Profile	
Total Population(Provisional Population figures 2011 Census)	31,15,431
Area of Municipal Corporation (sq. km)	243.8
Density (People per hectare)	128.0
Slum Population (MASHAL Slum Atlas, 2008-2009)	8,05,505.0
Number of slums	477.0
Area Under Slums (sq. km)	5.3
Percentage of slum Population (MASHAL Slum Atlas, 2008-2009)	30%

Pune with a population of 31 lakhs is the second largest city in Maharashtra after Mumbai and is the ninth largest in the country as per the Census of India 2011. The Pune Region of Maharashtra comprises of five districts of which Pune is the largest. Pune District comprises of 33% of the total population of Maharashtra State and has an urbanization rate of 60.89% (GOI, 2010). The population growth rate in Pune district is 30.34%, which is double the state growth rate of 15.99%.

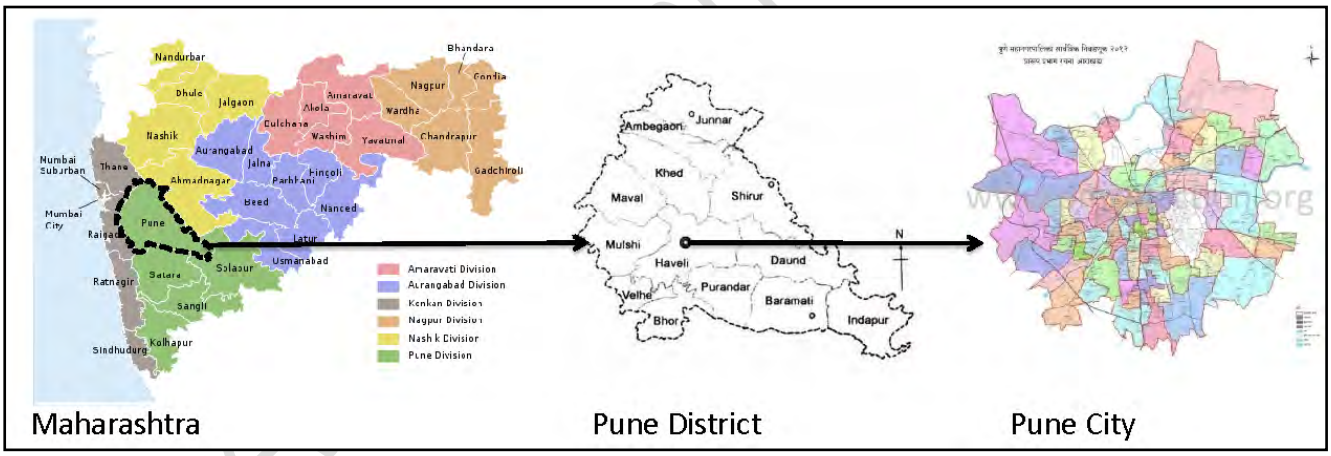


Figure 3 Location map of Pune, source: Wikipedia.org

Pune is located near the western boundaries of the Deccan plateau at the confluence of Mula and Mutha rivers. The origins of Pune can be traced to a small rural agricultural settlement called Punyak in the 8thCentury AD. It gradually developed into a small town called *Kasba-Pune* and became the seat of the Peshwas by mid-18th century.During the Peshwa rule, the city expanded considerably in a regulated manner in incremental wards or “peths”.The Maratha rule came to end in 1818 AD and the city went under British control. Pune became a prime administrative and educational center in the western region during the British period. The Pune Municipality also came into existence during this time.

3.2. Population Growth and urbanization pattern

When Pune came under British control in 18th century, the population of the city was only five lakhs. Since then the city has grown manifold and as per Census 2011, it is the ninth largest city in the country. The following table shows the decadal growth trends of Pune. The key reasons for population growth in Pune include natural growth, migration as well as increase in jurisdiction area. Pune city witnessed the highest decadal growth rate of almost 50% in the decade of 1991. Prior to 1991, the city was growing at an average decadal growth rate of 40%. However, the provisional population figures of Census 2011 shows the growth rate at 22%.

Table 1 Pune population growth, source Census 2011

Year	Population	Number of Households [1]	Decadal Change	Decadal growth Rate	Area (Sq. Km)	Density/ Sq. km	Source of Information
1961	606777	121355	118358		138.94	5204	CDP
1971	856105	171221	249328	41.09	139.79	7154	
1981	1203363	240673	347258	40.56	147.66	9346	
1991	1691430	338286	488067	40.56	166.11	10445	
2001	2538473	507695	847043	50.08	243.84	10410	
2011	3115431	623086	576958	22.73	243.84	12777	Provisional Population figures, Census of India, 2011

Proximity of Pune to the economic capital Mumbai has influenced the economic growth of Pune for decades. The establishment of Industrial area in PimpriChinchwad in 1953 further gave an impetus to this growth. During the1990s, Pune also started emerging as a strong Information Technology (IT) center in the region. Today the city is regarded as one of the most preferred corporate destination for software, technology and business processing companies.As the employment base widened, the city witnessed migration of qualified professionals as well as of laborers and workers from all across India. As the central part of the city is densely populated, the city grew outwards to accommodate the migrant population. High end residential enclaves and townships like Magarpatta sprung up along the fringes and the formation of slums also proliferated. The emergence of IT sectors inWakad and Hinjewadi in the Pimpri Chinchwad municipal limits also influenced spatial growth in Pune and drove development further towards the north-west direction in Balewadi and Baner. Pune is also growing in the southeast and southwest directions along Tilak Road and Karve Road.

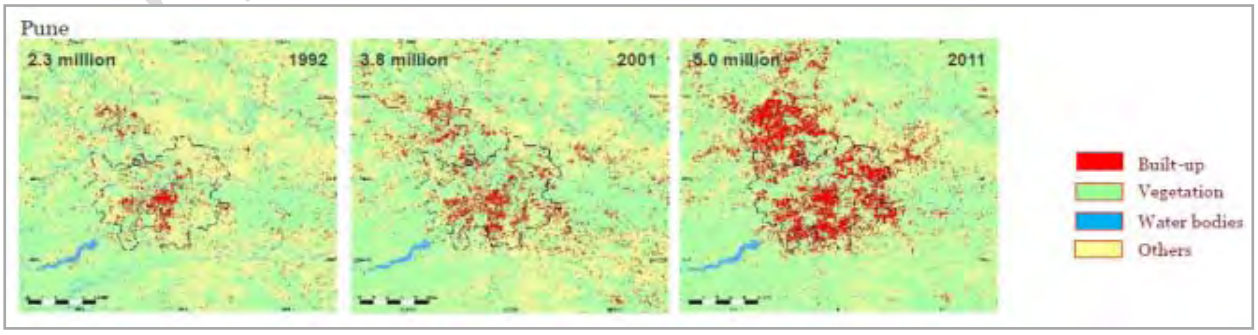


Figure 4 Growth pattern of Pune, *Map source:Urban India 2011 : Evidences, IIHS, 2011*
(IIHS, 2011)

[1] House hold size is assumed as 5.

3.3. Urban local governance

The Pune Municipal Corporation was constituted by the State Government on 15 February 1950 under the Bombay Provincial Municipal Corporation (BPMC) Act, 1949. Under section 63 of this act the Municipal Corporation is mandated to provide 25 basic services like maintenance and development of public streets, collection, treatment and disposal of sewage, solid waste management, fire safety, lighting of public spaces, maintenance of public hospitals, control of diseases and medical relief, public vaccination, registration of births and deaths, primary education, water works etc.Other than these, under section 66 the Corporation may provide 42 other services like provisions of gardens and parks, electrification, shelter for destitute and homeless, provision and maintenance of libraries, provision and maintenance of public transportation, provision and maintenance of ambulance, plantation and maintenance of trees along streets etc. (BPMC Act, 1949). The following table presents the obligatory and discretionary functions of PMC in the realm of health and sanitation.

Table 2 Obligatory and discretionary functions of PMC in realm of health and sanitation, Source: BPMC Act, 1949

	BPMC Act, 1949	
	Obligatory Functions	Discretionary Functions
Public Health and Welfare		
Scavenging and cleaning of public streets and places	✓	
Collection and disposal of solid wastes and sewage	✓	
Construction and maintenance ofpublic toilets	✓	
Reclamation of unhealthy localities	✓	
Registration of births and deaths	✓	
Management of Corporation water works and the construction or acquisition of new works	✓	
Preventive Health		
Public vaccination	✓	
Preventing the spread of infectious disease	✓	
Population Control and Family Welfare		
Provision of milk to expectant or nursing mothers		✓
Maintenance of laboratories for the examination of water, foods, or drugs for the detection of disease		✓
Curative Health		
Construction and maintenance of public health facilities such as hospitals, dispensaries and maternity homes	✓	
The maintenance of an ambulance service		✓
Anti-rabies treatment	✓	
Maintenance of lunatics and lepers	✓	

The Corporation is governed by an elected body of councilors which is headed by the Mayor of the city. The Municipal Commissioner is the administrative head of PMC. PMC is divided into fifteen administrative wards. The wards have been recently increased from 14 to15 and the ward boundaries have been readjusted. Since spatial information and population data was not available for the new wards, this plan is prepared with the available data of 14 wards. Each ward is overseen by an Assistant Municipal Commissioner. The wards are grouped into four zones each led by a Deputy Municipal Commissioner. The zonal governance structure in Pune in line with the 74th Constitutional Amendment and is an important reform that AIDS better city management and service delivery. The following figure illustrates the structure of the administrative wing of PMC. The deliberative wing of the PMC is the General Body, consisting of 152 elected members from seventy six electoral wards and five appointed members. This General body is assisted by various committees, the chief being the Standing Committee consisting of 16 corporatorselected from among them. The functions of the committees are to approve cost of works for wards, incorporate expenses in the budget etc. (NIUA, 2012).

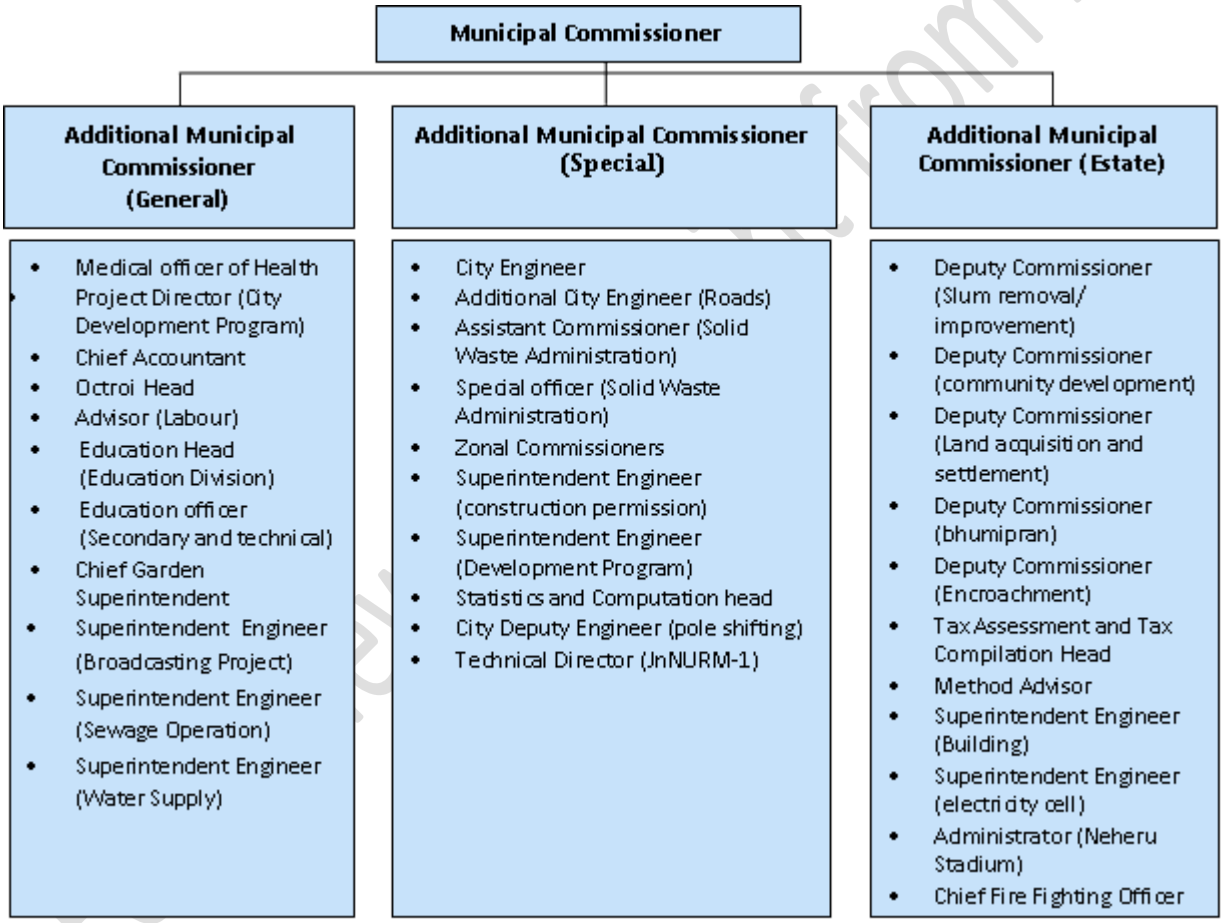
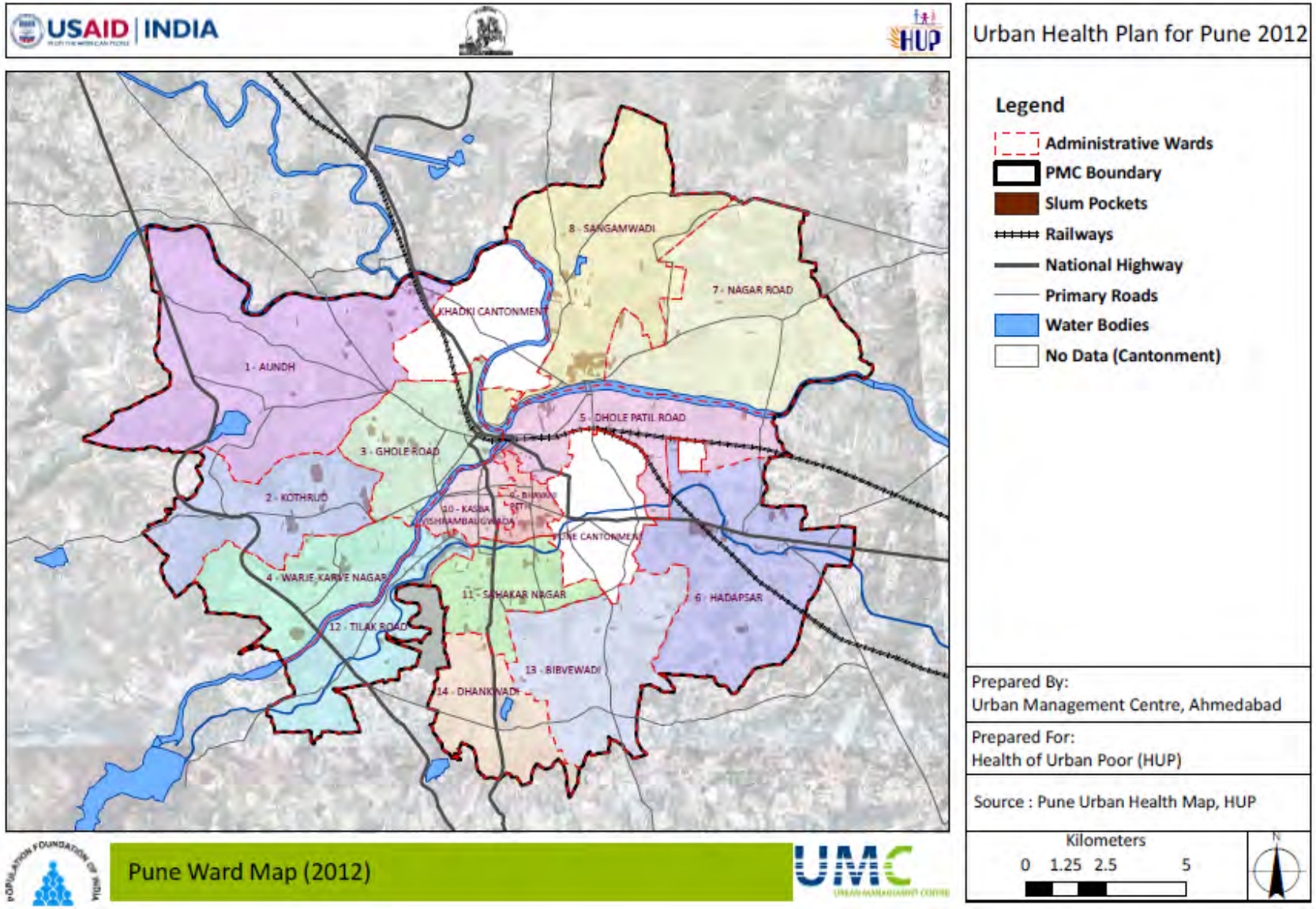


Figure 5 Administrative wing of PMC, source PMC

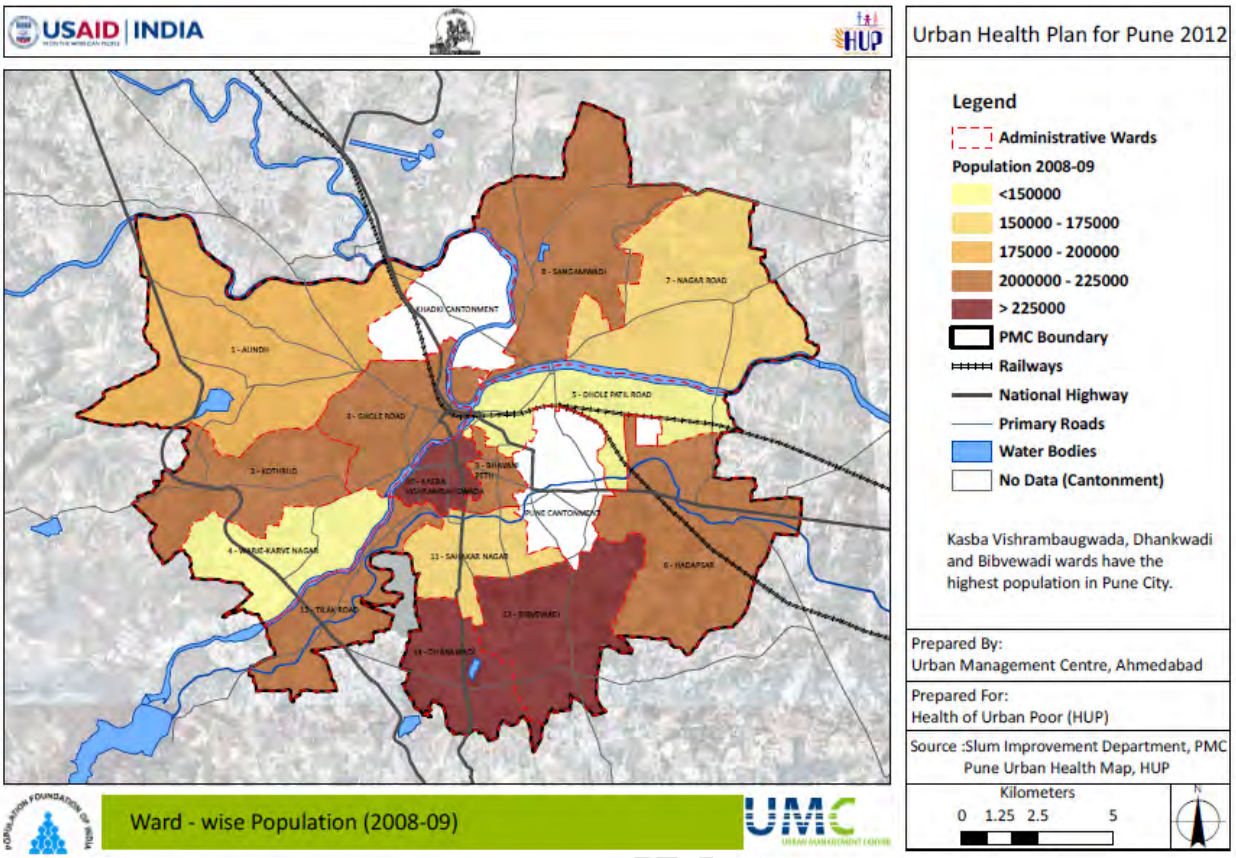
PMC is one of the better established and significantly robust urban local bodies in India and is leading in service delivery and efficiency across several sectors. Some of the leading practices of PMCinclude processing of municipal solid waste recognized by National Solid Waste Association of India (NSWAI, 2009), property tax reforms recognized by NIUA (NIUA, 2010) and empowerment of slum communities recognized by NIUA (NIUA, 2012). With an annual budget of Rs. 3633 Crore (PMC, 2012), the PMC is also among the financially strongest administrative bodies.Table 6 shows zone-wise population and slum population in Pune.The PMC limits, administrative wards, major water bodies, roads and railways are indicated in**Map 1**. **Maps 2 and 3** illustrate ward-wise population distribution and population density.

Table 3 Population distribution in wards and zones, *source: Pune Slum Atlas*

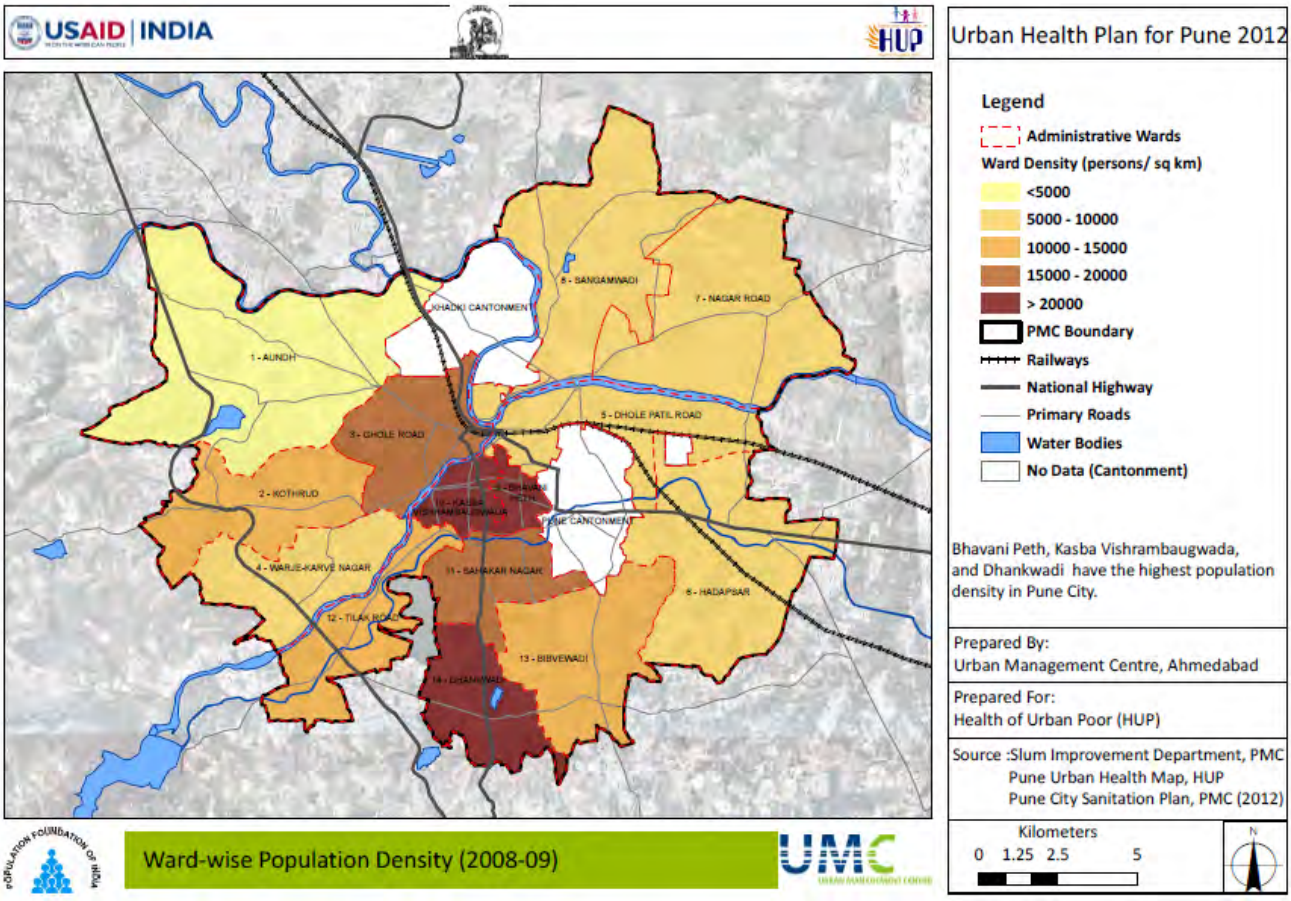
Zone	Ward Name	Area (sq. Km)	Population	No. of slums	Number of Declared Slums	Slum Population	Area Under Slums (Sq. Km)	% population in Slums	% area Under Slums	Ward Density (per/sq. km)	Slum Density (per/sq. km)
Zone 1	Aundh	40.75	179886	34	20	42475	0.27	23.61	0.66	4414	157315
	Kothrud	16.26	204316	23	12	81045	0.48	39.67	2.95	12566	168844
	Ghole Road	12.75	201527	50	31	80995	0.45	40.19	3.53	15806	179989
	Warje - Karve Nagar	15.21	116985	27	11	53345	0.43	45.60	2.83	7691	124058
Zone 2	Dhole Patil Road	14.64	100059	62	25	72040	0.51	72.00	3.48	6835	141255
	Nagar Road	29.10	154425	13	7	29775	0.2	19.28	0.69	5307	148875
	Sangamwadi	29.35	213718	53	19	116390	0.86	54.46	2.93	7282	135337
Zone 3	BhavaniPeth	2.90	218306	62	38	60615	0.29	27.77	10.00	75278	209017
	KasbaVishrambaugwada	5.00	251100	12	3	8880	0.05	3.54	1.00	50220	177600
	Sahakar Nagar	9.20	161665	27	21	70900	0.33	43.86	3.59	17572	214848
	Tilak Road	14.71	211103	42	20	83595	0.54	39.60	3.67	14351	154806
Zone 4	Hadapsar	24.78	205009	56	19	84465	0.72	41.20	2.91	8273	117313
	Bibvewadi	18.35	239532	11	8	15725	0.08	6.56	0.44	13054	196563
	Dhankawadi	10.84	239370	5	4	5260	0.02	2.20	0.18	22082	263000
	Total	**243.8**	**2697001**	**477**	**238**	**805505**	**5.23**	**29.87**	**2.14**	**11061**	**154016**



Map 1 Jurisdiction map of Pune



Map 2 Ward population



Map 3 Ward population density

3.4. Urban poverty in Pune

3.4.1. Slum locations and demographics

The level of absolute poverty in terms of access to daily nutrition and educationin Pune is low as compared to some of the other cities in India.While a large proportion of the city population is developed in terms of income, education and nutrition, availability of affordable, quality housing and access to basic infrastructure are big concerns in the city. Consistent economic growth in the city over the last decade has led to rapid increase in urban population. This population increase has outpaced the provision of affordable housing in Pune and the poor are forced to stay in overcrowded, unauthorized settlements or slums with little access to basic services.

As per PMC slum atlas, 2008 33% of Pune population lives in slums. Other recent sources such as the Census 2011 indicate that this figure could be as high as 50% placing Pune in the third spot among cities with the largest number of slums in India after Mumbai and Meerut (TNN, 2011).The slum residentslargely include skilled and semi-skilled workers, construction workers (*begaris*), vendors and domestic workers.

There are a total of 477 slum pockets in Pune which occupy a little over 2% land in the city. 313 slums out of the 477 slums (66%) are declared slums (MASHAL, 2009). The population density in slums is 14 times higher than rest of the city. The population density of Pune City is 11 persons/ha whereas the population density in slums is 1515 persons/ha. High population density in slums implies poor living conditions and susceptibility of slum residents to various environmental and health hazards.

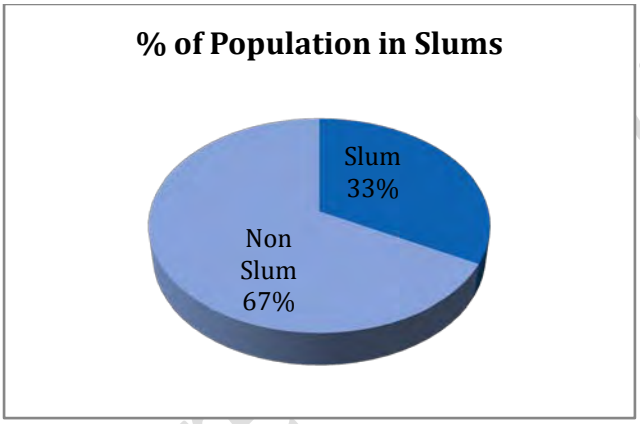
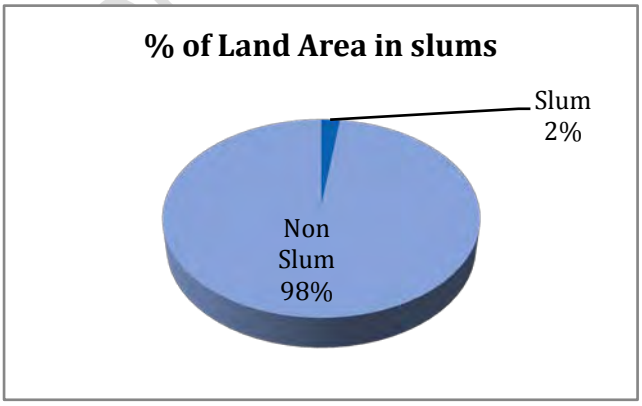


Figure 6 Population in slums



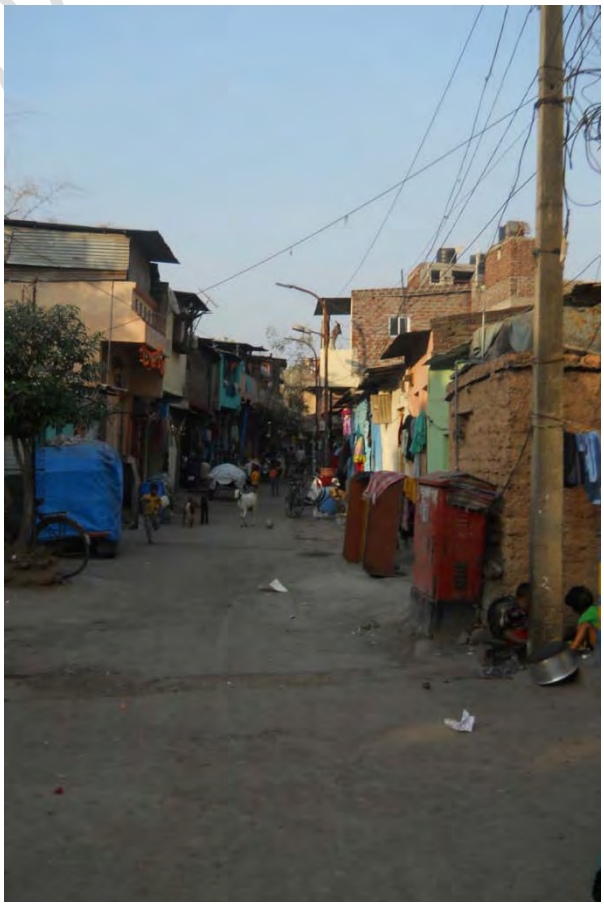


Figure 7 Land Area occupied by slums

Definition of Slums

The ways Slums are defined in the state of Maharashtradiffers from authority to authority:

Slum definition according to Census 2001 and 2011:

All notified areas in a town or city notified as 'Slum' by State, UT Administration or Local Government under any Act including a 'Slum Act' may be considered as Notified slums and assigned code 1;

All areas recognized as 'Slum' by State, UT Administration or Local Government, Housing and Slum Boards, which may have not been formally notified as slum under any act may be considered as Recognized slums and assigned code 2;

A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities. Such areas should be identified personally by the Charge Officer and also inspected by an officer nominated by DCO. This fact must be duly recorded in the charge register. Such areas may be considered as Identified slums and assigned code 3;(GOI, 2010)

Slum Definition as per NSSO

NSSO Definition of Slums (for 65th round of Survey 2008-09): "a compact settlement of at least 20 households with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions".

There are two kinds of slums: notified and non-notified. Areas notified as slums by the respective municipalities, corporations, local bodies or development authorities are treated as notified slums. A slum is considered as a non-notified slum if at least 20 households lived in that area.
(GOI, Ministry of Housing and Urban Poverty Alleviation, 2011)

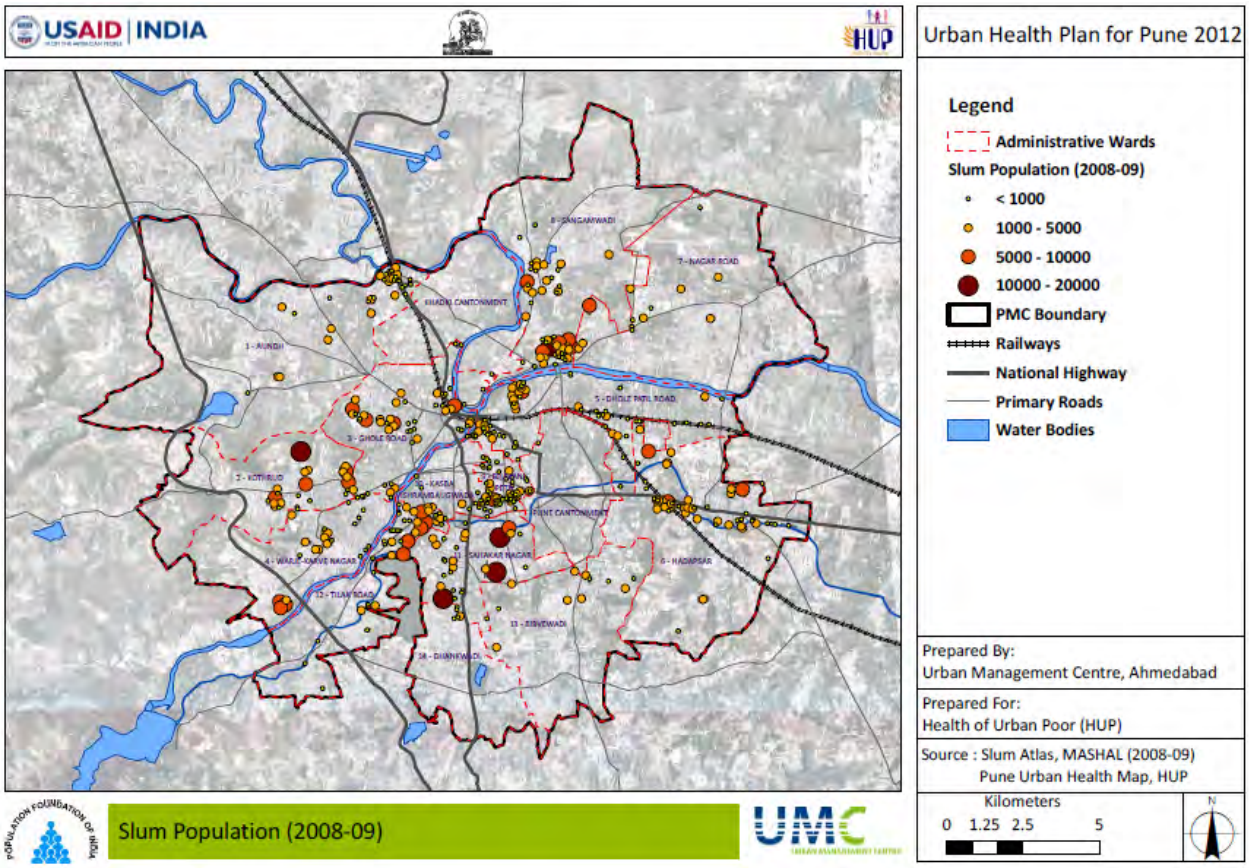
Maharashtra Slum Areas (Improvement,Clearance& Redevelopment) Act, 1971.

Government of Maharashtra in 2005 according to this act has constituted the Pune and Pimpri-Chinchwad Slum Rehabilitation Authority (SRA). The power of notifying or declaring a slum resides with Slum Rehabilitation Authority according to the following definition:

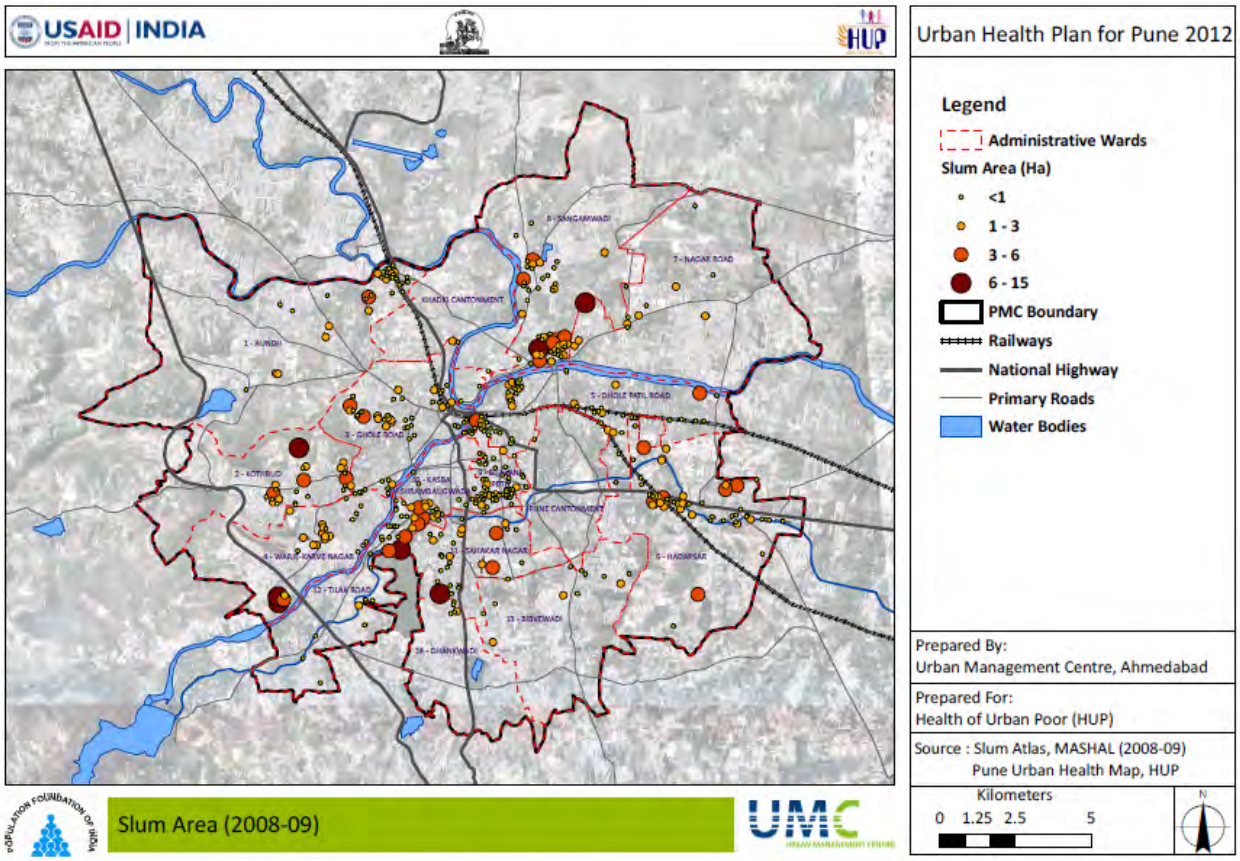
"Where the Competent Authority (SRA) is satisfied that-
(a) any area is or may be a source of danger to the health, safety or convenience of the public of that area or of its neighborhood, by reason of the area having inadequate or no basic amenities, or being in sanitary, squalid, overcrowded or otherwise; or
(b) the buildings in any area, used or intended to be used for human habitation are
(i) In any respect, unfit for human habitation; or
(ii)By reasons of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light or sanitation facilities or any combination of these factors, detrimental to the health, safety or convenience of the public of that area, the Competent Authority may, by notification in the *Official Gazette, declare such area to be a slum area. Such* declaration shall also be published in such other manner (as will give due publicity to the declaration in the area) as may be prescribed."

(Government of Maharashtra, 1971)

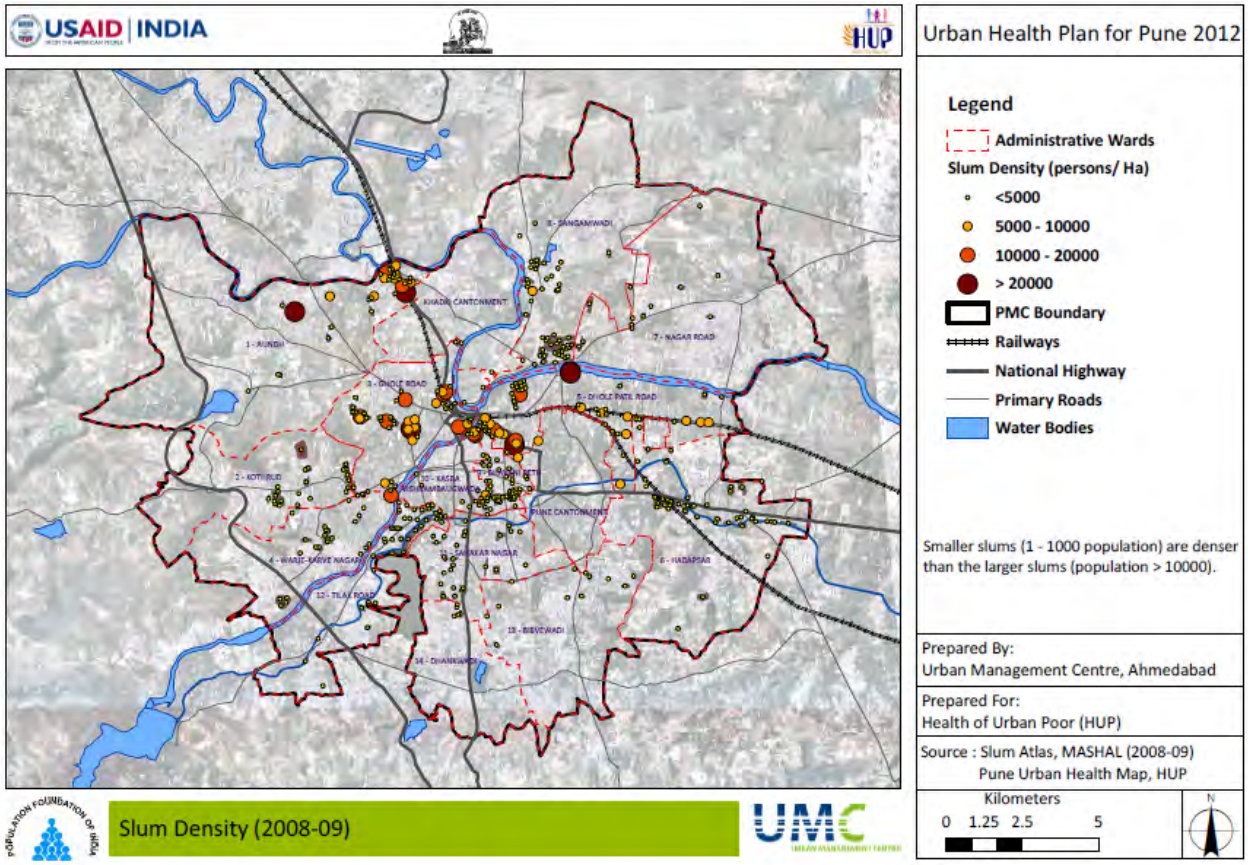
The concentration of slums based onpopulation, land area and density is shown in the subsequent maps using graduated symbols.**Map 4** indicates the location and population of slums. The largest dot represents slums with population above 10,000. **Map 5** indicates land area in slums with the largest dot representing slums spread over larger areas. **Map 6** indicates population density in slums. Here the largest symbol indicates slums with highest population densities.



Map 4 Slum population and locations



Map 5 Land area in slums



Map 6 Population density in slums

Out of the 477 slums, 73% of the slums are located on private land and only 28% of the slums (132) are located on government land. Most of the slums are clustered around the central part of the city (KasbaPeth and Dhole Patil Road) along the Mula-Mutha River and other natural drainage lines. These slums are characterized by very high population densities (more than 6000 persons/ha). Slums with large population (more than 10,000) are located slightly away from the center and are located on relatively large pieces of land. These slums are not as congested as those along the Mula-Mutha River and have slightly better living conditions.

Photograph 3Above: Slum in central Pune, Below: Slum in Dhanakawadi. Slums in central part of the city are denser than the ones located closer to the fringes

In addition, slums are also present in newer developing areas ofKondwa, upper Bibvewadi in Dhanakawadi and Bibwewadi wards, Sayyad Nagar and Handewadi in Hadapsar ward, Vadgaon Sheri and Kharadi in Nagar Road Ward etc.However, discussions with Anganwadi supervisors of ICDS revealed that these settlements have not yet been identified and listed in any of the Government records. There are several *gaonthans*or urban villages within the Corporation limits which are also quite dense with poor living conditions. These are also not included in the official slum list of PMC. The following table shows ward wise slum population.

Table 4 Ward wise distribution of population and slums

Ward Name	Ward No.	Ward Population (2008-09)	Ward Area (Ha)	No. of Slum Pockets	Slum Population (2008-09)	Slum Area (Ha)	% of Slum Population	% of Slum Area
Dhole Patil Road	5	100059	1464	62	72040	51	72.00	3.48
Sangamwadi	8	213718	2935	53	116390	86	54.46	2.93
Warje - Karve Nagar	4	116985	1521	27	53345	43	45.60	2.83
Sahakar Nagar	11	161665	920	27	70900	33	43.86	3.59
Hadapsar	6	205009	2478	56	84465	72	41.20	2.91
Ghole Road	3	201527	1275	50	80995	45	40.19	3.53
Kothrud	2	204316	1626	23	81045	48	39.67	2.95
Tilak Road	12	211103	1471	42	83595	54	39.60	3.67
BhavaniPeth	9	218306	290	62	60615	29	27.77	10.00
Aundh	1	179886	4075	34	42475	27	23.61	0.66
Nagar Road	7	154425	2910	13	29775	20	19.28	0.69
Bibvewadi	13	239532	1835	11	15725	8	6.56	0.44
KasabaVishrambaugwada	10	251100	500	12	8880	5	3.54	1.00
Dhanakawadi	14	239370	1084	5	5260	2	2.20	0.18
Total		2697001	24384	280	805505	523	29.87	2.14

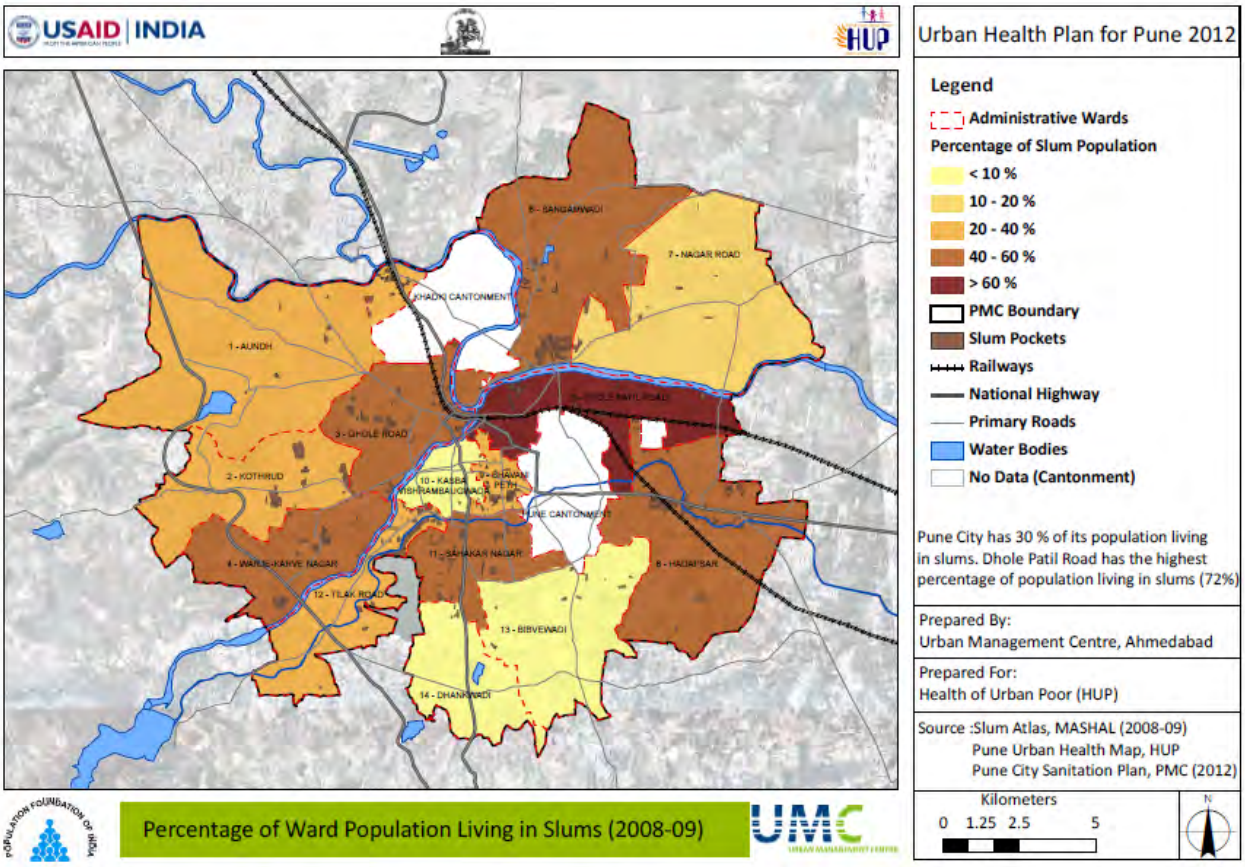
Ward with highest slum population:
Sangamwadi Ward (1,16,390)

Ward with highest % of slum population in slums:
Dhole Patil Road (72%)

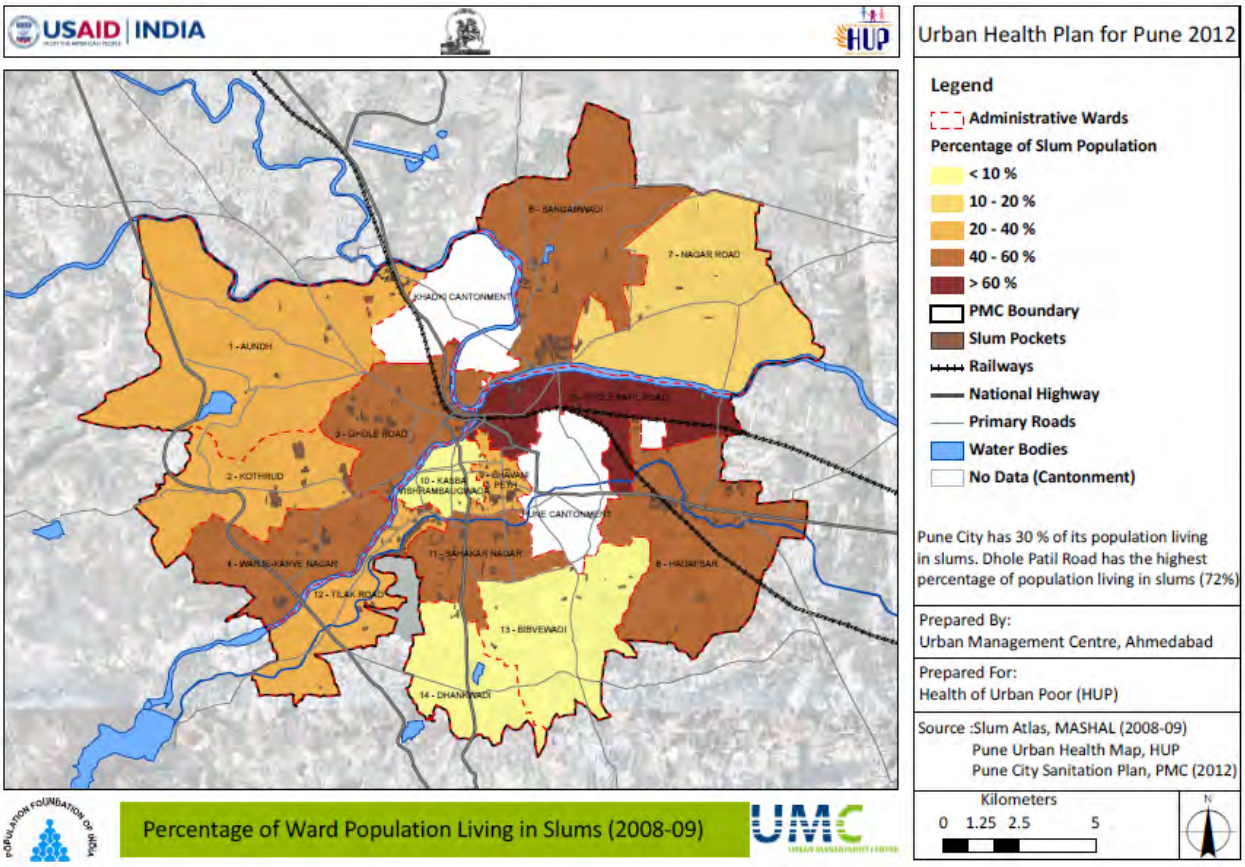
Ward with highest percentage of land area under slums:
BhavaniPeth (10%)

The variation of total population living in slums, percentage of ward population living in slums and the area under slums in different wards is indicated in the following maps.

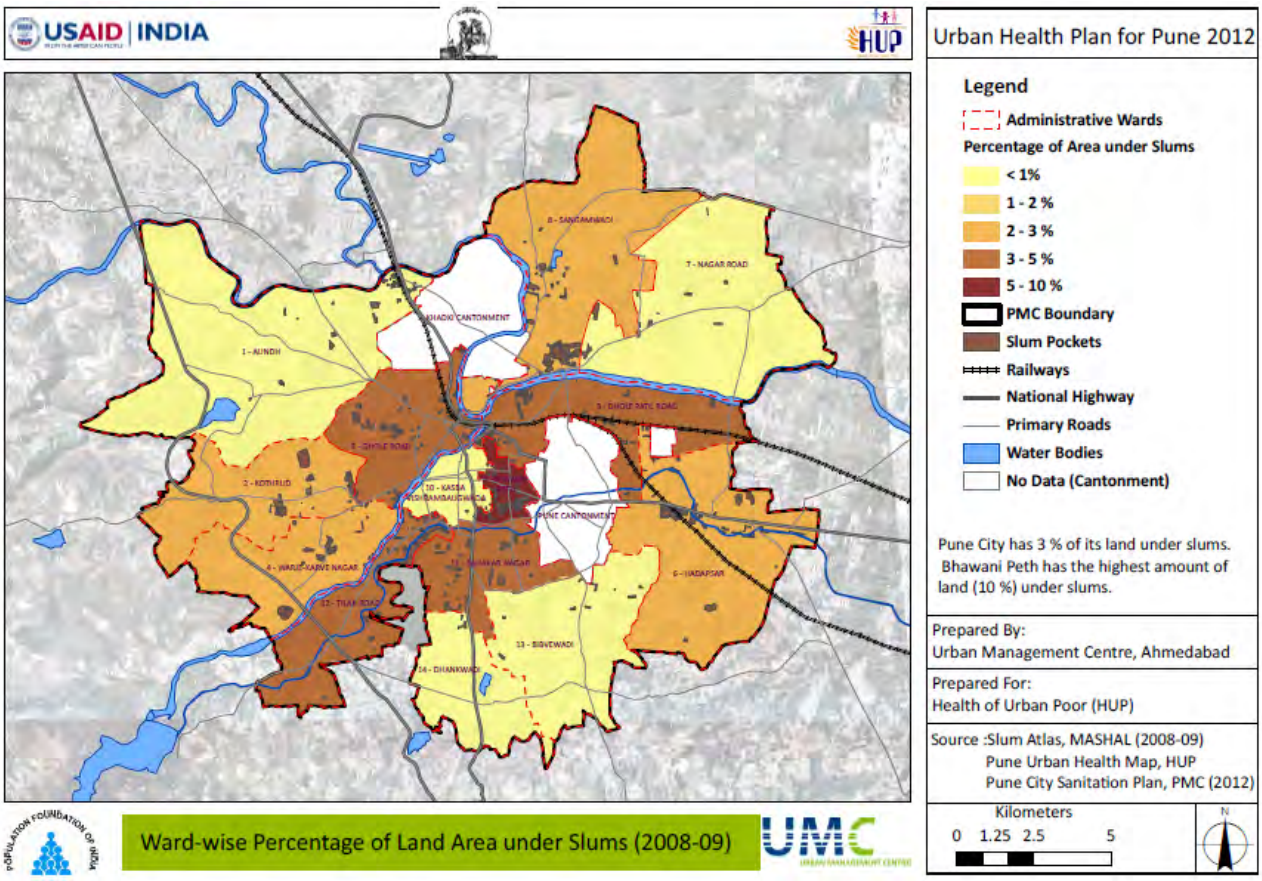
Map 7 presents the absolute population living in slums in different wards. **Map 8** shows the percentage of population living in slums by wards. The darkest colour ward indicates more than 60% slum population. **Map 9** indicates the percentage of land area in slums in each ward. Bhavani Peth ward has the highest percentage of land area (10%) under slums.



Map 7 Population living in slums



Map 8 Percentage of ward population living in slums



Map 9 Percentage of land area of wards under slums

3.4.2. Authorities and programs for slum improvement

The government departments and projects involved inimprovement and development of Pune slumsare:

Slum Rehabilitation Authority (State Constituted Body)

The Government of Maharashtra has enacted The Maharashtra Slum Areas (Improvement, Clearance & Redevelopment) Act, 1971. The Pune and Pimpri-Chinchwad Slum Rehabilitation Authority (SRA)was constituted under this act in 2005. The power of notifying or declaring a slum resides with Slum Rehabilitation Authority. SRA provides the slum dwellers a shelter by utilizing the slum land as an asset and by providing incentive to private developers for redevelopment work. SRA uplifts slum dwellers and upgrade their standard of living by providing self-contained tenement to the protected slum dwellers on ownership which is free of cost. The definition of slums by which SRA abides is discussed earlier in section 3.4.1(Slum Rehabilitation Authority).

Slum Improvement Department (PMC)

The slum control department (*galichh vasti nirmulan khate*) was formed in PMC in the 1970s with the prime purpose of slum eviction. In the 1980s there was a paradigm shift in the way slums are viewed and planned for. The policy focus of the slum improvement department shifted from eviction towards slum improvement. The slum improvement department currently monitors the provision of basic infrastructure facilities including water supply and sewerage in slums. Nationally funded programs such as BSUP-JNNURM and RAY are being implemented in Pune in accordance with the procedure of slum improvement department. The Slum Improvement Department is also responsible for construction and maintenance of community toilets in slums.

Basic Services for Urban Poor (BSUP – JNNURM)

The JNNURM envisages a series of reforms at the State and ULB levels to address key urban issues such as affordable housing, transport and infrastructure. The Basic Services for Urban Poor (BSUP) and Integrated Housing & Slum Development Program (IHSDP) under JNNURM aim at integrated provision of basic amenities and services to the urban poor which include security of tenure, improved housing, water supply, education, health and social security especially slum dwellers (Centre for Good Governance, 2010). The PMC was sanctioned a budget ofRs. 300 Crore to implement BSUP in the city.Earlier PMCs approach was to shift slum dwellers into newly constructedmid to high-rise apartments away from the city with a carpet area of 25 sq.m.This approach was not very successful as slum dwellers insisted on staying closer to the original slum location. PMC then got an additional funding of Rs 120 Crore for in-situ construction on slum land owned by the state government. Under this program each beneficiary is responsible for contributing 10 – 12% of the cost of construction and findingintermediate accommodation.

RajivAwasYojna (RAY)

RAY is a central government scheme run by the Ministry of Housing and Poverty Alleviation (MoHUPA). RAY focuses on bringing existing slums within the formal system and enabling them to avail the same level of basic amenities as the rest of the city. Under RAY, MoHUPA provides central support to ULBs for slum redevelopment and construction of affordable housing. The government of Maharashtra has nominated the SRA as the nodal authority to create a road map for slum free cities under RAY. Rs. 1.5 Crore have been sanctioned to involve experts and lead NGOs to help SRA formulate this policy. The identified NGOs are MASHAL, Shelter Associates and SEWA (slum atlas).

Urban Community Development Department

The Urban Community Development (UCD) project was undertaken by PMC in 1983-84 with the assistance of UNICEF. The UCD department was formally established in PMC on 21st February 1986 to look at the social improvement related issues of urban poor.

UCD's objective is to improve the social and economic status of the slum dwellers in PMC by striving for their upliftment, enabling them to resolve their social issues, provision of basic services, awareness of health and hygiene and community mobilization. UCD also acts an interface between the slum community and government and various non-government organizations working in Pune slums.UCD's major slum activities are creating business groups, school and pre-school nutritional meal program, tailoring classes for women in the community, co-operative of the SHG's at the city level, weekly bazaar stall, self-employment, awareness and application for various government schemes etc.

The organizational structure of UCD department is shown in the following chart:

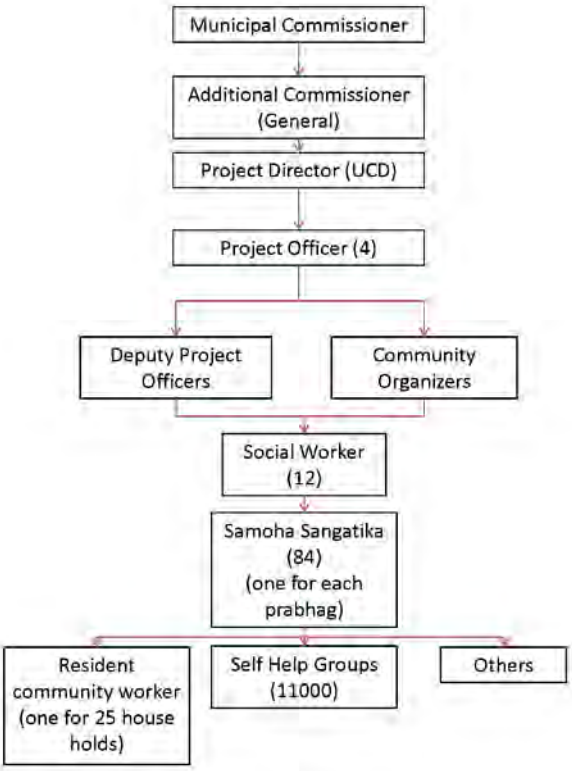


Figure 8 Organizational structure of UCD Department

The Samoha Sangatikas work in each electoral ward with the community, especially with the slum dwellers. They are full time volunteers and receive lump-sum amount for their work. With their efforts, self-help groups and thrift societies have been linked with other micro-credit societies and business groups. It is their responsibility to provide information on application procedure for various schemes. Through the UCD structure, various works are carried out by the community groups, for example, the preparation of mid-day meal is outsourced to the SHGs formed under UCD.

3.5. Water and sanitation (WASH) profile

There is an inherent link between environmental health services (Wat-San) and health. It has been often reiterated that not only is sanitation critical for dignity and health, it is important from the perspective of ensuring effective treatment of sewage, fecal sludge management, drinking water treatment process. The Joint Monitoring program on Water Supply and Sanitation of the WHO and UNICEF reports that globally, diarrhea is the leading cause of illness and death, and 88 per cent of diarrheal deaths are due to a lack of access to sanitation facilities, together with inadequate availability of water for hygiene and unsafe drinking water.

The Water Supply and Sanitation Collaborative Council further reports that all across the world, almost 2.5 billion people, including almost one billion children, live without even basic sanitation. Every 20 seconds, a child dies as a result of poor sanitation. Since these deaths are poor sanitation, almost 1.5 million deaths could be prevented by provision of access to sanitation. Additionally, an estimated 50% of cases of malnutrition are associated with repeated diarrhea and intestinal infections as a result of unsafe water, inadequate sanitation or insufficient hygiene. (World Water Development Report, 2012)

The City Health Plan report for Pune hence emphasizes the equitable provision of environmental health services to achieve healthy Pune. The City Sanitation (CSP) for Pune was prepared in 2012 in line with the requirements of the National Urban Sanitation Policy (NUSP) of Government of India. The time horizon of the plan is 5 years. Salient observations in water-sanitation from the CSP as well as the CDP are described below:

3.5.1. Access to clean water

Pune city is built around the rivers Mula, Mutha and Pavna. Khadakwasla, Panshet, Warasgaon, Temghar are the dams on these rivers that are the main water sources for the city. Other than these, there are 399 dug wells and 4,820 bore well from where water is extracted and added to supply system. There are 58 storage reservoirs in the city having a total capacity of 463 ML. The water extracted from the surface and subsurface sources like intake wells, infiltration wells and bore wells is treated in the Water Treatment Plants (WTPs). Presently, there are 9 Water Treatment Plants under the Pune Municipal Corporation (PMC). The current treatment capacity available in PMC is 1,318 MLD and water purified in these plants is 1,123 MLD. At water distribution stations, the water is further treated through chlorination (Draft CDP, IL&FS, 2013).

Photograph 4 PMC provides piped water supply to 94% households in the city including slum households

The CSP, 2012 notes that more than 95% slum households in Pune have individual piped water supply connections. According to PMC officials, water supply lines are laid in majority of the slums in Pune. Shelter Associates, a Pune based NGO conducted a survey of declared slums in Pune in 2011 which revealed that more than 58% of slum households have individual water connections. The remaining households are dependent on community stand posts which are installed by the PMC.

Photograph 5 while most households in declared slums have individual water connections, residents of some undeclared slums such as Ambedkar Nagar, ChandanVasahatare dependent on public stand posts for clean water.

The following table presents the percentage of individual water connections in slum households as well as the whole city.

Table 5 Water supply connections in Pune, source CSP, 2012

Description	Numbers	Percentage
Properties served through water connections	937938	94.19
Total properties without connection	57793	5.81
Properties served through tankers	6900	0.69
HH in undeclared slums without water connections	24153	2.43
HH in declared slums without water connections	26740	2.68

FGDs conducted in 25 slums across the city as part of this plan supported this finding. 20 out of 25 slums had more than 80% households with individual water connections with water being supplied for 3 to 4 hours daily. Discussions with slum residents in 3 undeclared slums however revealed that none of the households have individual water connections but piped water supply is provided in the slum via stand posts. The quality of water received at the user end is reported to be good although there is contamination in some parts because of pipe breakage/ damage etc. The findings from the FGDs related to water supply are attached as Annexure 4A.

Pune city fares good in all service level benchmarks related to water supply as indicated in table 7. 94% of the households in Pune city have an individual piped water-supply connection. Pune households receive ample water supply of 194 LPCD. This is quite high than the standard of 135 LPCD. The coverage of water supply in the city is excellent and the per capita supply of water exceeds the set target for the city. As per PMC data, almost 99% of the samples tested for water quality supply pass the required drinking water standards.

Table 6 Service level benchmark for water supply

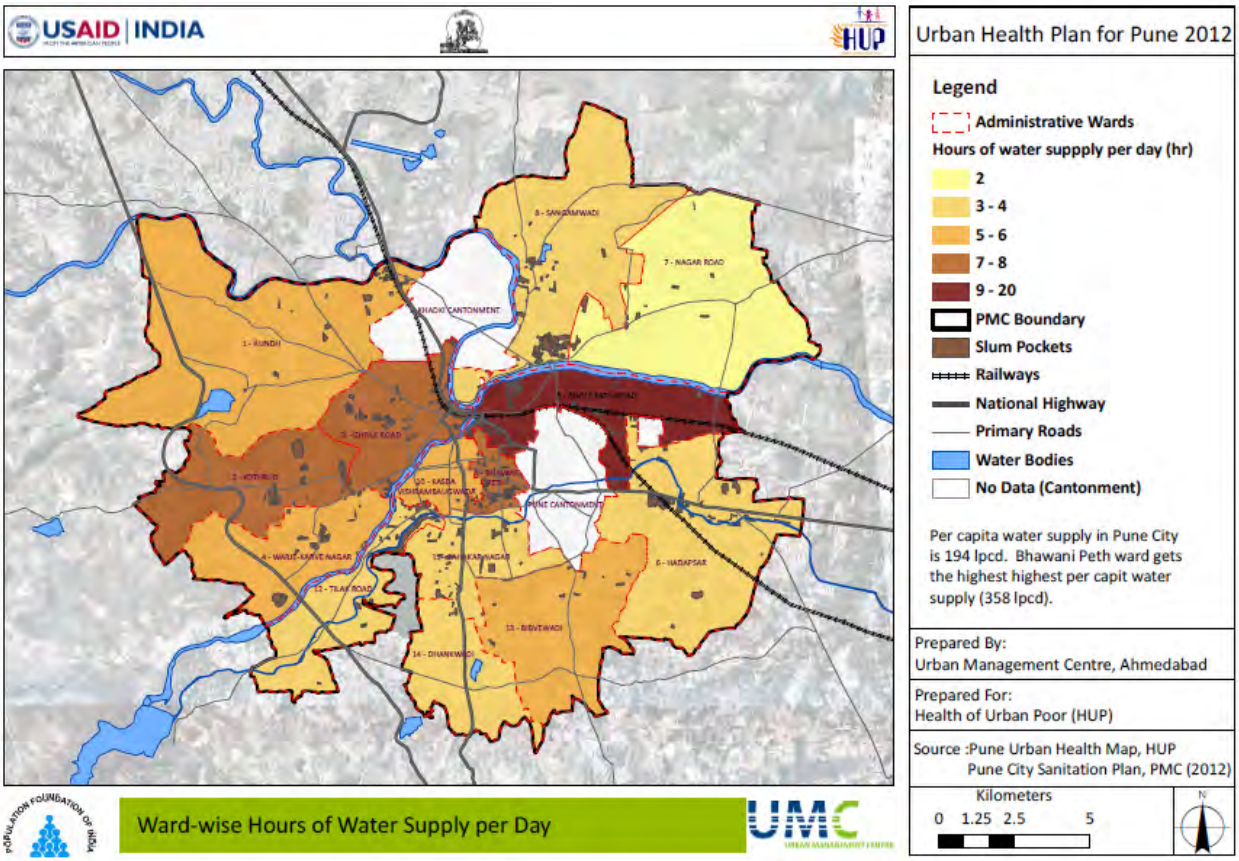
Coverage of water supply	Expected Efficiency	100 %
	Current Efficiency (11-12)	94 %
	Target till March 2013	95 %
Per capita supply of water	Expected Efficiency	135 lpcd
	Current Efficiency (11-12)	194 lpcd
	Target till March 2013	190 lpcd
Extent of metering of water	Expected Efficiency	100 %
	Current Efficiency (11-12)	30.6 %
	Target till March 2013	35 %
Extent of non-revenue water (NRW)	Expected Efficiency	20 %
	Current Efficiency (11-12)	30 %
	Target till March 2013	25 %
Continuity of water supply	Expected Efficiency	24 hr./day
	Current Efficiency (11-12)	5 hr./day
	Target till March 2013	7 hr./day
Quality of water supplied	Expected Efficiency	100 %
	Current Efficiency (11-12)	99 %
	Target till March 2013	100 %
Efficiency in redressal of customer complaints	Expected Efficiency	80 %
	Current Efficiency (11-12)	99 %
	Target till March 2013	99 %
Cost recovery in water supply	Expected Efficiency	100 %
	Current Efficiency (11-12)	89 %
	Target till March 2013	90 %
Efficiency in collection of water supply related charges	Expected Efficiency	90 %
	Current Efficiency (11-12)	86 %
	Target till March 2013	92 %

(GOI, 2011-12)

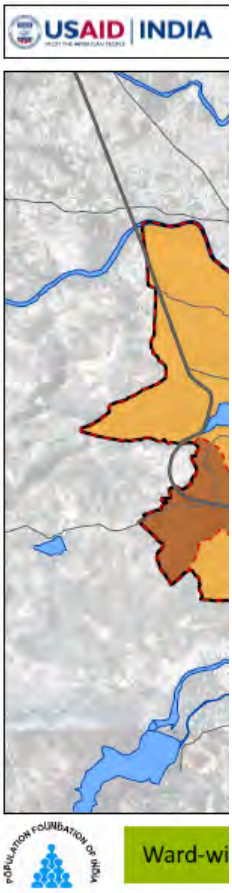
The subsequent maps present the attributes of piped water supply in the city.

Map 10 shows the duration of water supplied in different wards with the darkest colour representing the longest duration.

Map 11 shows the quantity of water supplied in different wards with the darkest colour representing the highest quantity.



Map 10 Ward - wise hours of water supply



Map 11Ward - wise quantity of water supplied

3.5.2. Toilet coverage and sewerage system

Slums in Pune are very dense and very few households have individual toilets. Most slum residents use community toilets.Community toilets in slums are provided by the Slum Improvement Department of PMC. The following table indicates the number of community toilets in slums. Since 2009-10 PMC has taken initiatives to provide toilet blocks and urinals for females. The figures indicate that there are less than 2 community toilet blocks per slum and hence several slum residents especially children practice open defecation. An estimated 103 open defecation spots have been identified, which are used by approximately 8500 to 9000 people on a daily basis. A total of 24,153 properties do not have access to toilets within walking distance (CSP, PMC, 2012).

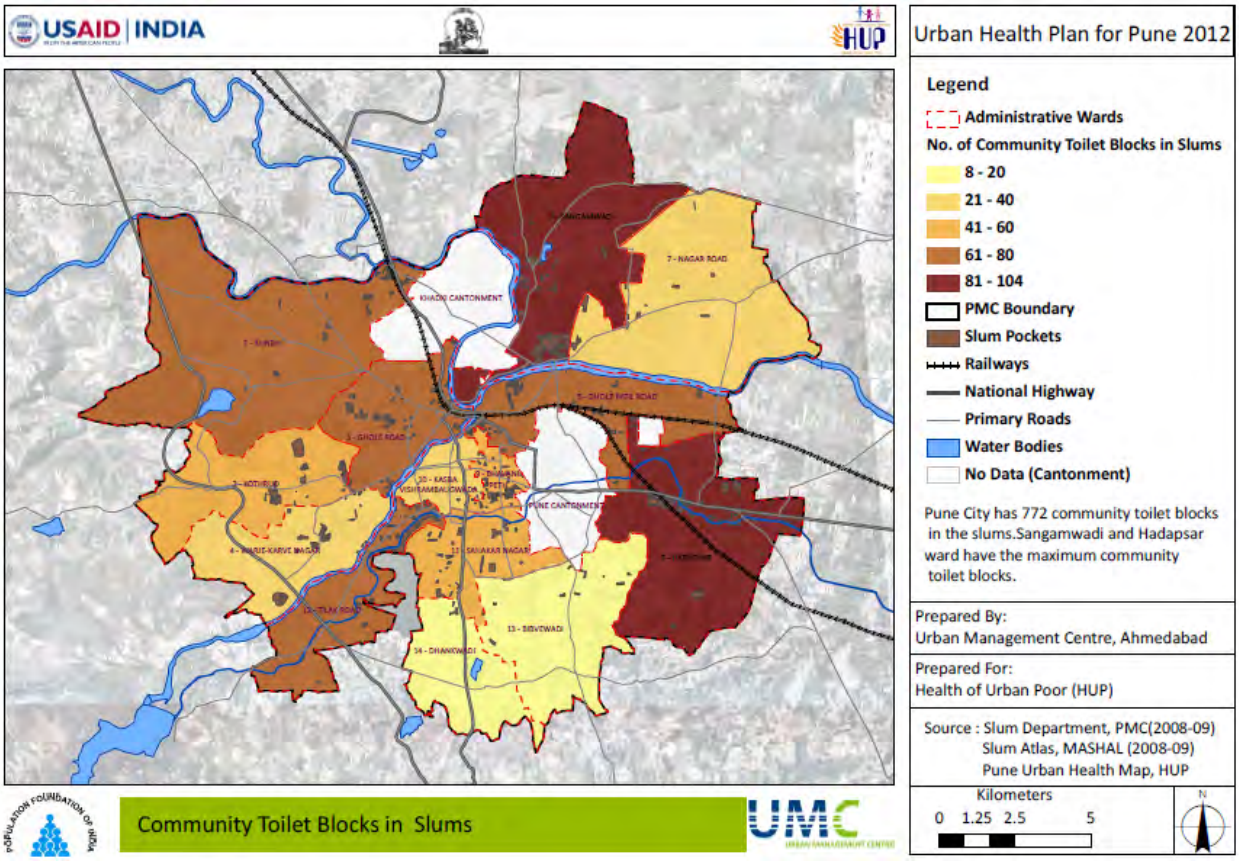
Table 7 Ward-wise community toilet blocks

	Ward Name	Institutional Community Toilets (2008-09)	Corporation Community Toilets (2008-09)	Total Community Toilets (2008-09)	Number of Community toilet seats (2008-09)		Number of Pay and Use toilets (2011-12)	Number of Individual Toilet (2011-12)
					Men	*Women*		
1	Aundh	44	24	68	711	689	63	60959
2	Kothrud	36	6	42	374	369	43	57741
3	Ghole Road	46	19	65	551	541	59	40630
4	Warje - Karve Nagar	26	3	29	296	290	31	79329
5	Dhole Patil Road	60	19	79	196	192	74	33167
6	Hadapsar	28	75	103	590	625	107	62245
7	Nagar Road	6	34	40	277	263	31	56427
8	Sangamwadi	56	48	104	815	817	109	54631
9	BhavaniPeth	28	31	59	608	588	68	52445
10	KasbaVishrambaug wada	25	10	35	181	151	29	54729
11	Sahakar Nagar	31	27	58	460	429	58	53087
12	Tilak Road	20	42	62	397	389	69	62610
13	Bibvewadi	12	8	20	213	179	18	68664
14	Dhankawadi	0	8	8	62	66	11	52349
	Total	**418**	**354**	**772**	**5731**	**5588**	**770**	**789013**

(Slum Improvement Department, PMC, 2012)

FGDs conducted in slums also revealed that majority of slum residents use community toilets which are maintained by the Pune Municipal Corporation or by local user groups. Each household pays Rs. 20-30 per month as maintenance charges. There are few bathing facilities available to slum dwellers. The household utility areas situated outside the house are used as bathing areas in most of the slums. It was evident from the FGDs that provision of individual or community toilets was clearly lacking across all slums- irrespective of the tenure status of the slums.

The availability of community toilets in different wards in Pune is indicated in **map 12**. The wards with darker shades indicate availability of more number of toilet blocks.



Map 12 Community toilet blocks in slums

On an average there is one toilet seat per 100 persons which is much lower than the required standard (1 toilet seat per 25 persons). With such high usage, the toilets are often ill maintained and not kept clean.

All public toilets in slums are reported to be very unclean and filthy. Several toilets don't have electricity and water connection in the toilets which makes it unsafe for women to use specially in the night. Using unclean and unhygienic toilets can lead to urinary tract infections and other diseases especially among women which is a big health concern in the slums.

Photograph 6 Community toilets in most slums are kept unclean

Pune has a robust underground sewerage network and 98% households in the city are connected to underground sewerage services (SLB, 2011-2012). Most slum households in Pune are also connected to the underground sewerage network. However Choked sewer lines/ overflowing drains were observed in several slums. At some locations the drainage line and water supply are laid too close and not maintained regularly potentially causing contamination of drinking water.

Photograph 7 Most slums in Pune are connected to underground sewerage network

The total sewage generated in Pune city is estimated to be 744 MLD.Sewage is collected and pumped through nine pumping stations located at different places and treated in 9 sewage treatment plants of total capacity 527 MLD (CSP, PMC, 2012). Three more pumping stations are under construction and more are proposed under JNNURM phase II.

Currently 30% of the sewage is directly disposed in the river which pollutes the river and leads to unhygienic conditions in surrounding areas. The CDP notes that the reuse of treated waste water is very low in Pune and recommends that treated waste water should be used to water gardens and in the maintenance of public spaces.

The following table shows the service level benchmarks for sewerage in Pune

Table 8 Service level benchmark for sewerage

Coverage of sewage network services	Expected Efficiency	100%
	Current Efficiency (11-12)	98%
	Target till March 2013	99%
Collection efficiency of the sewage network	Expected Efficiency	100%
	Current Efficiency (11-12)	70%
	Target till March 2013	80%
Adequacy of sewage treatment capacity	Expected Efficiency	100%
	Current Efficiency (11-12)	67%
	Target till March 2013	80%
Quality of sewage treatment	Expected Efficiency	100%
	Current Efficiency (11-12)	100%
	Target till March 2013	100%
Extent of reuse and recycling of sewage	Expected Efficiency	20%
	Current Efficiency (11-12)	5%
	Target till March 2013	8%
Efficiency in redressal of customer complaints	Expected Efficiency	80%
	Current Efficiency (11-12)	100%
	Target till March 2013	100%
Extent of cost recovery in sewage management	Expected Efficiency	100%
	Current Efficiency (11-12)	76%
	Target till March 2013	90%
Efficiency in collection of sewage charges	Expected Efficiency	90%
	Current Efficiency (11-12)	69%
	Target till March 2013	80%

(GOI, 2011-12)

3.5.3. Solid waste management

Improper disposal of solid waste and poor waste management practices often result in poor sanitary conditions in neighbourhoods. Solid waste and plastic thrown in water channels and nallahs choke these drains constructed for the flow of storm water. The stagnant water in these drains in turn becomes a breeding ground for mosquitoes and other vectors spreading diseases such as malaria. Safe and effective solid waste management is key to the health of a city.

PMC is responsible for solid waste management including waste disposal, waste minimization, public awareness, resource management and prohibition of littering in the city. The total waste generated is in the range of 1300 to 1400 metric tonnes (MT) per day (per capita of 400 grams per day). 53% of the waste is collected by door to door collection. Rest is collected from community bins and containers. The coverage of door-to-door collection is further low in slums of Pune. Slum households are largely dependent on community containers for garbage disposal. These containers are not emptied and cleaned regularly leading to overflowing of garbage onto roads. Scattered solid waste near slums encourages rodents and stray animals which cause nuisance and unhygienic conditions.

In some slums garbage is dumped along roads, open plots and in storm water drains and nallahs, causing clogging of the drains and causing several disease outbreaks. Annexure 4D presents findings from the FGDs conducted in slums.

Photograph 8 Garbage containers placed in slums are not regularly emptied. Garbage overflows on the roads causing unhygienic conditions around.

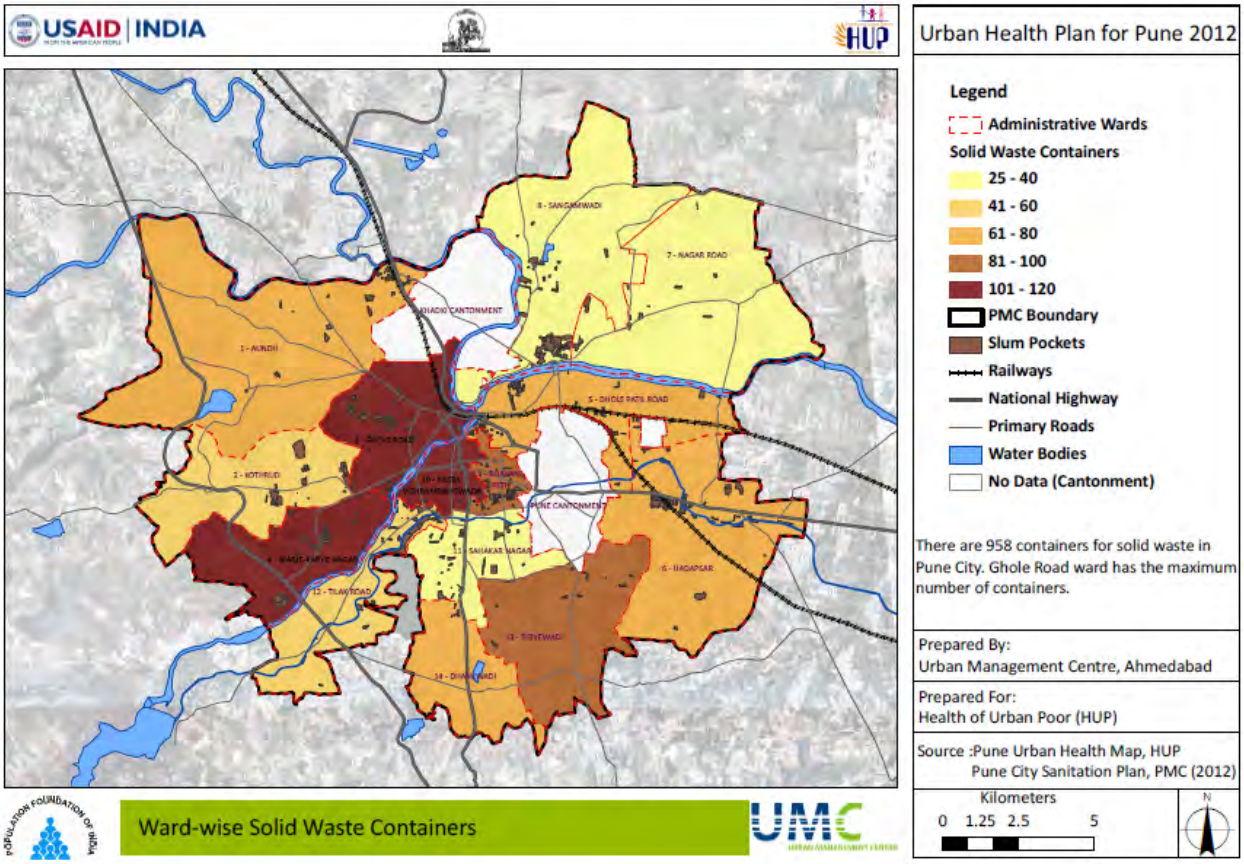
The door to door collection is done in partnership with waste picker's association called Solid Waste (Collection and Handling) Cooperative (SWACH), a registered society of rag pickers with a total strength of 5,500 members. Out of these 1,963 members are involved in door-to-door collection of waste.Recyclable waste is fed into sorting sets and resold as scrape. There are a total of 40 sorting sets in Pune city. Organic and other waste is handed over to *Ghanta* trucks or containers. PMC has adopted the decentralized system of waste processing. These processing methods predominantly include both Vermi-culture and Biogas generation practices. After 2010, Pune Municipal Corporation developed aBio-tech Plant having a capacity of 1000 TPD which is located at Urli at a distance of 20 kms from the City. This Bio tech plant is capable ofprocessingmixed garbage. Apart from this, 3 composting plants and 12 bio gas plants are located in different parts of the city (Draft CDP, IL&FS, 2013). The level of waste segregation in the city is also low at 28%, indicating possible dumping of plastics and other non-decomposable waste into landfills. The following table indicates the service level benchmarks for Pune for solid waste management.

Table 9 Service level benchmark indicators of SWM

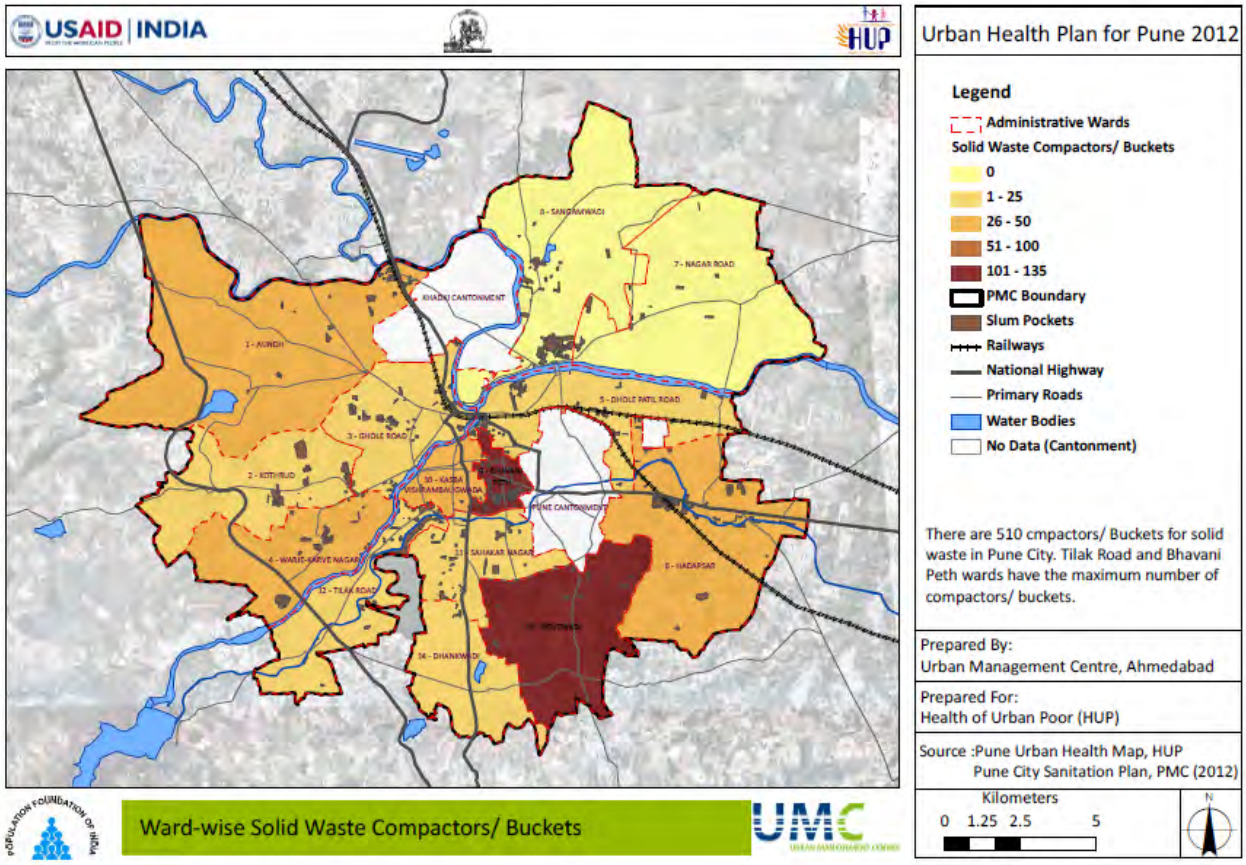
HH level coverage of SWM services	Expected Efficiency	100%
	Current Efficiency (11-12)	53%
	Target till March 2013	60%
Efficiency of collection of municipal solid waste	Expected Efficiency	100%
	Current Efficiency (11-12)	100%
	Target till March 2013	100%
Extent of segregation of municipal solid waste	Expected Efficiency	100%
	Current Efficiency (11-12)	28%
	Target till March 2013	50%
Extent of municipal solid waste recovered	Expected Efficiency	80%
	Current Efficiency (11-12)	85%
	Target till March 2013	85%
Extent of scientific disposal of municipal solid waste	Expected Efficiency	100%
	Current Efficiency (11-12)	100%
	Target till March 2013	100%
Efficiency in redressal of customer complaints	Expected Efficiency	80%
	Current Efficiency (11-12)	85%
	Target till March 2013	90%
Extent of cost recovery in SWM	Expected Efficiency	100%
	Current Efficiency (11-12)	61%
	Target till March 2013	70%
Efficiency in collection of SWM charges	Expected Efficiency	90%
	Current Efficiency (11-12)	67%
	Target till March 2013	75%

(GOI, 2011-12)

The availability of solid waste containers and compactors in various administrative wards is indicated in the subsequent maps. **Map 13** indicates the number of solid waste containers by ward with the darkest colour indicating maximum number of containers. Similarly **map 14** indicates the number of solid waste compactors by ward.



Map 13Solid waste containers in wards of Pune



Map 14 Solid waste compactors in wards of Pune

3.5.4. Storm water drainage

Underground Storm water lines are absent in most of the slums. The nallahs or the natural drainage channels for storm water are choked by plastic and other solid waste. Hence water logging during monsoon season is common in most slums with high prevalence of vector borne diseases like malaria, dengue and chikungunya. Annex 4C presents findings from the FGDs conducted in slums.

3.5.5. Overall living conditions

Though most slums in Pune have access to basic services including water supply and sewerage, the overall living conditions in the slums still need improvement. The slums in the city especially those along the Mula-Mutha River are very dense resulting in overcrowding and cramped up living conditions. The access streets and passages between houses are very tight and most houses have no access to sunlight. The slums are located on hill slopes or low-lying areas along railway lines, rivers, water bodies and transport corridors making them susceptible to water logging. The drains and water channels are polluted and choked with plastic and other solid waste. Improper disposal of waste in slums is a big concern. The condition of houses in several slums is also is poor. Most slum houses are *kuccha* or semi-permanent built of *patras* and other harmful construction material.

Photograph 9 Poor environmental conditions in Krishna Nagar slum in Pune

All citizens have a fundamental right to environmental health and basic living conditions. Improving living conditions in slums either through upgradation or relocation is a very important step towards improving the health of urban poor. In addition economic, social and community services should also be made available to slum dwellers to foster their inclusion in the society.

4. City HealthStatus

The constitution of the World Health Organization (WHO) defines health as 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.' The Millennium Declaration (MD) adopted by the General Assembly of the United Nations in its fifty-fifth session during September 2000 reaffirmed this by viewing health in the overall perspective of social and sustainable development. The Millennium Declaration adopted 8 development goals to be achieved by 2015 and intended for the member countries to take efforts in the fight against poverty, illiteracy, hunger, lack of education, gender inequality, infant and maternal mortality.

Maharashtra is one of the most affluent states in the country with the highest per capita income. At the same time the state has high poverty levels and visible intra-state differences and inequities which are reflected in the health indicators. Several parts of the state rank high in malnutrition deaths, child mortality and maternal mortality levels and require concerted efforts to improve the extant situation (Ravi Duggal, 2005)

The Mumbai-Pune region is the best developed in Maharashtra and enjoys a relatively good health status. Pune district ranks high on infrastructure development and is also one of the most developed districts in terms of social indicators (Ravi Duggal, 2005).

4.1. Key Health Indicators for Pune

Table 10 Key health indicators of Pune

Indicator	Pune City	Pune District	Maharashtra	India
Population (Census 2011)	3115431	9,426,959	112,372,972	1,210,193,422
Sex ratio (Census 2011)	**945**	**910**	**925**	**940**
Crude Birth Rate (CBR) (2008/09)	**16**	**17.3**	**17.9**	**22.5**
Crude Death Rate (CDR) (2008/09)	**7.5**	**6.5**	**6.6**	**7.3**
Infant Mortality Rate (IMR) (2008/09)	**25**	**25**	**33**	**53**
Maternal Mortality Ratio (MMR) (2008/09)	**32**	No Data	**130**	**254**
Under 5 Mortality Rate (U5MR) (2008/09)	No Data	No Data	**36**	**64**
Total Fertility Rate (2008/09)	No Data	**1.95**	**2**	**2.6**
Life Expectancy (2008/09)	No Data	**69.6**	**67.2**	**63.5**

(PMC, 2012)
(SHSRC , 2009)
(Ministry of Health and Family Welfare, 2010)
(Planning Commission of India, 2011)

The Crude Death Rate (CDR) in Pune in 2009 was 7.5 – higher than the state average of 6.6.

The Infant mortality rate (IMR) and MMR in Pune are significantly better than that of Maharashtra state and the national averageindicating better access to immunization and motherchild care services. The following table shows the trend of Crude birth rate, crude death rate and IMR and MMR in the city.

Table 11 Birth and death trends in Pune

Year	Population	Birth			CBR	Death			CDR	Still Birth Rate	IMR	MMR
		Male	Female	Total		Male	Female	Total				
2001	2538473	23837	20439	44276	17	12444	8065	20509	8.1	29	32	29
2002	2607011	24123	20293	44416	17	12116	8116	20232	7.8	28	27	81
2003	2677400	23114	19939	43053	16	12800	8389	21189	7.9	30	36	26
2004	2749689	24647	21318	45965	17	12837	8790	21627	7.9	25	32	52
2005	2823930	24669	21178	45847	16	12852	8868	21720	7.7	23	28	57
2006	2900177	25529	22085	47614	16	13378	9171	22549	7.8	23	25	53
2007	2978482	25980	22635	48615	16	13769	9349	23118	7.8	23	24	39
2008	3058899	26383	23124	49507	16	13982	9294	23276	7.6	24	22	44
2009	3141489	26372	23372	49744	16	14007	9637	23644	7.5	22	25	32
2010	3226309	26560	23357	49917	15	15326	10430	25756	8.0	22	25	66
2011	3313419	27589	24396	51985	16	14744	10305	25049	7.6	23	22	33

(PMC, 2012)

Photograph 10 Infant care is a priority for PMC

The Crude Birth Rate has slightly reduced over the years in Pune City, which could be attributed to the success to family planning awareness. Infant Mortality Rates as well as number of stillbirths in the city have also come down considerably in the past ten years. However, according to news sources, preventable diseases such as pneumonia, diarrhea and jaundice continue to cause infantdeaths in Pune. The leading cause of infant death based on data from news reports is low birth weight. The other leading causes found are prematurity, pneumonia, septicemia and birth asphyxia. PMC has recently constituted a child death audit committee headed by the Medical Officer of Health. Other members of the committee include nodal officer (RCH), pediatrician and superintendent of the civic-run Kamla Nehru hospital and the child development project officer of the integrated child development scheme (Isalkar, 2013). Based on this data available, it seems that the ULB needs to take steps for considerable improvements in pre-natal care of expectant mothers, provision of fortified food and supplementary nutrition to them.

There is not a visible improvement in MMR which indicates the need to further strengthen ante natal care and improve access to emergency obstetric care for high risk pregnancy cases.Amaternal death review committee was constituted by PMC in 2012 to investigate the reasons behind every maternal death.

4.2. Morbidity Profile

Morbidity Profile indicates the relative incidence of a particular disease in a specific city or a region.The findings are based on thedata received from the Integrated Disease Surveillance Program (IDSP) cell of the PMC health department.

4.2.1. Communicable Diseases

Vector borne diseases such as Malaria and Dengue are major public health concerns in Pune.Cases of malaria are higher between May and August, the early monsoon season. The cases of malaria in Pune have reduced over the years but the reduction has been gradual, indicating need of action to move towards eradication. There was an outbreak of Dengue casesbetween September and December 2012 leading to 12 deaths. Treatment of dengue requires timely detection and hence identification of suspected cases is a must. Preventive actions like fogging and spraying in the areas where there is outbreak arealso crucial. Increasing cases of Chikungunya have also been reported in Pune. This trend is reflected all across India. Also caused by mosquito bites, chikungunya if not detected and treated in time can cause lifelong problems in bones. Thus, quick detection and treatment is required. The number of dengue cases has risen sharply in 2012 as against 2010 and 2011.

Table 12Reported cases of Malaria and Dengue

Sr.No.	Month	2010		2011		2012	
		Total	Deaths	Total	Deaths	Total	Deaths
Malaria							
1	January	10	0	5	0	4	0
2	February	6	0	7	0	5	0
3	March	5	0	6	0	4	0
4	April	8	0	0	0	0	0
5	May	19	0	11	0	2	0
6	June	15	0	15	0	10	0
7	July	26	1	13	0	17	0
8	August	13	0	12	0	16	0
9	September	8	0	5	0	10	0
10	October	8	0	9	0	8	0
11	November	9	0	2	0	2	0
12	December	10	0	4	0	0	0
	Total	137	1	94	0	78	0
Dengue							
1	January	5	0	2	0	1	0
2	February	4	0	2	0	3	0
3	March	6	0	4	0	2	0
4	April	4	0	3	0	4	0
5	May	5	0	3	0	2	0
6	June	17	0	6	0	5	0
7	July	18	1	7	0	4	0
8	August	39	0	7	0	6	0
9	September	17	0	7	0	20	0
10	October	21	0	6	0	236	5
11	November	28	0	4	0	337	1
12	December	13	0	5	0	127	0
	Total	177	1	56	0	747	6
As received on 26.12.2012 from (Malaria Department, PMC, 2012)							

Table 13Reported cases of Chikungunya

Chikungunya							
Sr.No.	Month	2010		2011		2012	
		Cases	Deaths	Cases	Deaths	Cases	Deaths
1	January	_	_	3		1	0
2	February	_	_	8		2	0
3	March	_	_	6		2	0
4	April	_	_	4		2	0
5	May	_	_	5		2	0
6	June	6		5		3	0
7	July	13		5		3	0
8	August	3		3		4	0
9	September	29		3		3	0
10	October	17		2		1	0
11	November	38		2		3	0
12	December	16		2		12	0
	Total	122	0	48	0	38	0
As received on 26.12.2012 from (Malaria Department, PMC, 2012)							

The Pune Municipal Corporation (PMC) has initiated micro-planning to curb vector borne diseases, such as dengue, malaria and Chikungunya, in view of the increasing number of cases of such diseases in the last few months (Isalkar, 2013). The system includes micro planning at ward level under medical ward officers and setting up of new laboratories for blood testing. The insect control department is planned to be decentralized to keep in check the mosquito breeding places like water logged areas, construction sites etc. For this purposes PMC health department is planning to recruit 163 new staff including field officers, surveillance inspectors, health workers and lab technicians.

In the recent years, Pune has also seen an increase in the number of water-borne diseases such as Gastroenteritis and Diarrhea caused due to consumption of contaminated food or water.However, no deaths have been reported as a result of these diseases. The increase in the number of cases can be partially attributed to improved reporting and monitoring of diseases in the recent years.Pune also experienced a severe Swine Flu outbreak in 2009 caused by the H1N1 virus.

The following table indicates the number of registered cases and reporteddeaths due to water borne diseases.

Table 14 Cases and incidents of deaths due to water borne diseases

Year	Gastroenteritis		Cholera		Jaundice		Typhoid		Diarrhea		Dysentery	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
2001	1057	0	15	0	64	2	0	0	29	1	124	0
2002	951	0	7	0	56	1	0	0	6	0	174	0
2003	851	0	6	0	42	0	0	0	3	0	49	0
2004	831	0	8	0	44	0	8	0	1	0	21	0
2005	868	0	5	0	35	0	0	0	20	0	0	0
2006	1286	0	14	0	226	0	439	0	393	0	434	0
2007	3400	0	146	0	441	0	679	0	789	0	771	0
2008	2676	0	91	0	252	0	393	0	1056	0	415	0
2009	3447	0	31	0	240	2	298	0	921	0	967	0
2010	2623	0	51	0	300	0	286	0	492	0	1128	0
2011	3857	0	238	0	387	2	259	0	276	0	1006	0
Jan-Aug2012	1085	0	15	0	14	0	32	0	2874	0	491	0

(IDSP, PMC, 2012)

The following table and graph present the disease occurrences in Pune in 2012.

Table 15 Monthly disease incidences (2012)

	Diseases	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	Actual Diarrheal Disease	61	48	46	84	118	3145	2325	537	11	0	0	0	6375
2	Acute Encephalitis Syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Acute Flaccid Paralysis	0	0	0	0	0	0	1	0	0	0	0	0	1
4	Acute Respiratory Infection (ARI)	0	0	0	0	0	6359	4859	3122	1	0	0	0	14341
5	Adult tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Bacillary Dysentery	4	6	3	4	6	7	264	90	0	0	0	0	384
7	Chicken pox	4	2	1	4	2	1	1	2	0	1	0	0	18
8	Chikungunya	0	0	0	0	0	1	0	1	4	1	9	14	30
9	Cholera	0	0	0	0	2	0	2	10	9	1	1	1	26
10	Dengue/ DHF	1	0	0	1	4	12	13	31	137	270	441	175	1085
11	Diphtheria	0	0	0	0	0	0	0	1	0	0	1	0	2
12	Dog bite	1164	1033	1257	1159	1142	1150	1056	297	2	0	0	0	8260
13	Enteric Fever	4	0	0	1	0	2	4	2	19	7	14	26	79
14	Fever of unknown origin	0	0	0	0	0	0	0	0	9	0	0	0	9
15	InfluenzaH1N1	0	0	229	130	6	1	18	78	130	106	27	5	730
16	Leptospirosis	0	0	0	0	0	0	0	4	1	1	1	2	9
17	Malaria	5	6	4	0	5	12	28	24	22	14	17	4	141
18	Measles	0	0	0	0	0	0	0	1	0	0	3	1	5
19	Meningitis	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Neonatal Tetanus	0	0	0	0	0	0	0	1	0	0	0	0	1
21	Pertussis	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Pneumonia	0	0	0	0	0	4	0	0	1	0	0	0	5
23	Snake Bite	0	0	0	0	0	0	0	0	0	0	1	0	1
24	Viral Hepatitis	0	0	0	0	0	4	2	10	14	0	23	17	70
(IDSP, PMC, 2013)														

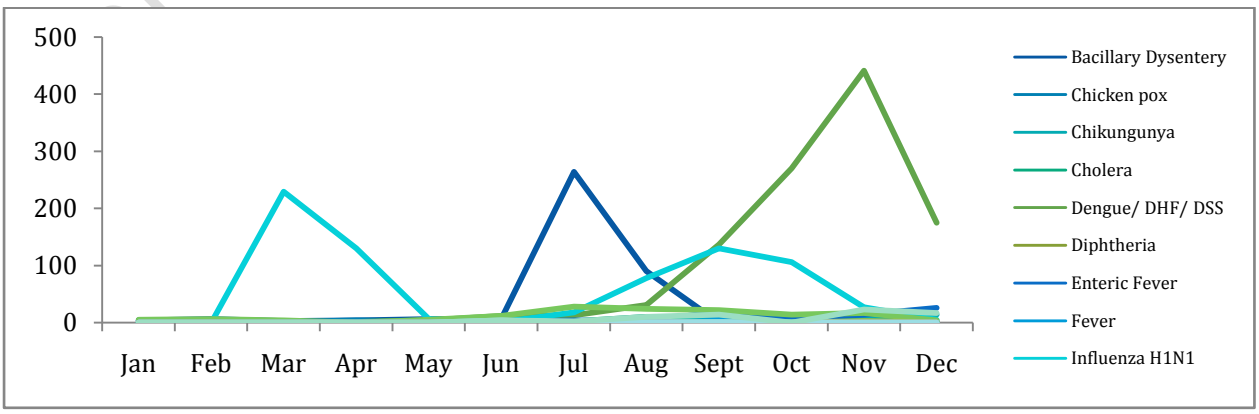


Figure 9 Trends of disease as per IDSP data

4.2.2. Non-communicable diseases

Non-communicable diseases, especially those related to lifestyle such as like diabetes, hypertension and cardiovascular disorders are on a rise in India and the trend is also reflected in Pune. According to a study on disease burden supported by Population Foundation of India, Health of the Urban Poor (HUP) project Cardiovascular disorders which include heart attack, hypertension and other congenital and heart disorders account for majority of the cases of hospitalization among non-slum households. In Pune, these diseases are a major cause of hospitalization, even in slum areas of the city.Among the slum households in Pune, the number of hospitalizations due to injury is higher than due to cardiovascular diseases.

4.2.3. Causes of death in Pune

The following graph illustrates the major causes of death in the city. The mortality data has been acquiredfrom the PMC health department. Causes of several deaths are not recorded properly or are ambiguous. Such cases are recorded under the 'other causes' category.

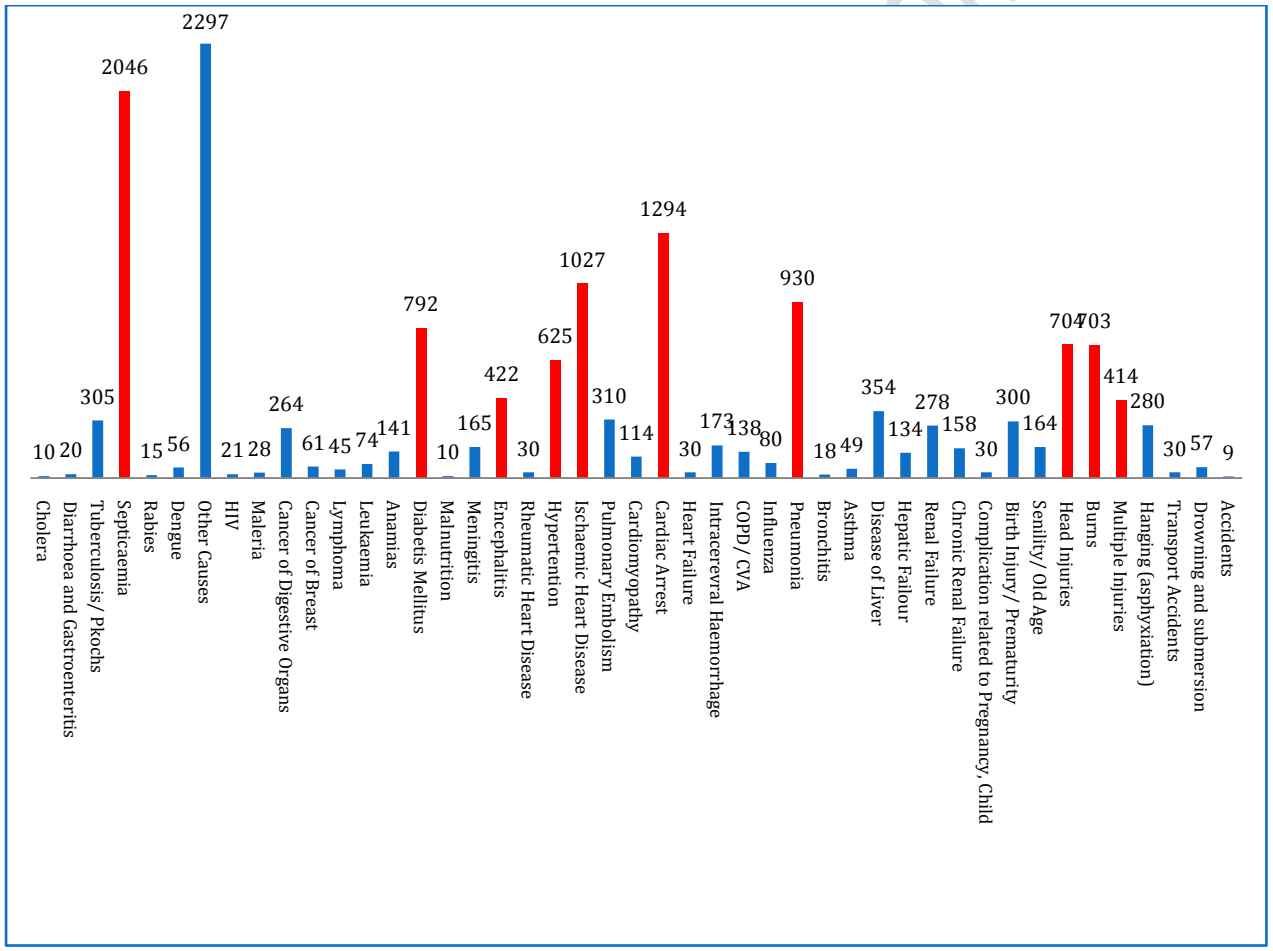


Figure 10 Causes of death in Pune, 2010

The principal cause of deaths in the city is Septicemia, especially among the elderly and young children. Other leading causes includedCardiac arrest, heart diseases, diabetes and hypertension indicating the growing threats of chronic and lifestyle diseases in the city.

4.3. Disease burden among urban poor

It is understood that the urban poor residing in slums suffer from poor health status as compared to the non-slum population. Poor environmental conditions and lack of sanitation in slums makes slum dwellers more vulnerable to water borne and vector borne diseases such gastro enteritis, malaria and dengue. The incidence of lung diseases like Asthma and Tuberculosis (TB) is also higher among the urban poor population. Incidence of childhood diseases in slums is also higher as compared to thenon-slum areas. As per NFHs III, the Mortality Rate (U5MR) among the urban poor in India at 72.7 is significantly higher than the urban average of 51.9 and more than 50% of urban poor children are underweight.

A disease burden study was commissioned by HUP in 2012 to analyze the differences in slum and non-slum population in the city. The key points that came out of the study are discussed below:

- 1508 households were surveyed out of which 1061 respondents were from non-slum area and 447 from slum area.
- 33% of the slum respondents were found to be poor.
- Malaria and Dengue are reported to be most prevalent in the city in slum as well as non-slum areas.
- Infectious diseases are more prevalent in slum areas and life-style and chronic disease are more prevalent in non-slum areas.
- Heart disease and arthritis are high both in slum and non-slum areas.
- Cardiovascular diseases, respiratory diseases, gastrointestinal, anemia and cancer are also the major causes of death in slum areas.

A baseline surveywas also commissioned under HUP in 2011 to understand the constructs of health risks and vulnerability among urban poor. The survey was conducted by IIPS and local HUP teams.The results of the survey are compared with NFHS and DLHS surveys. The key findings of the surveys are discussed below:

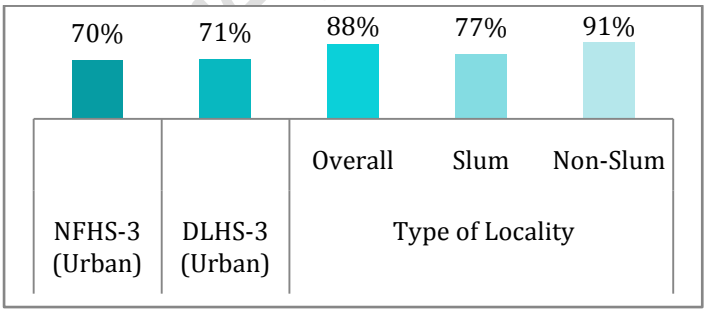


Figure 11 Mothers who had ANC in the first trimester when pregnant for the last birth (%)

More than 75% of pregnant women residing in slums had ANC checkups in the first trimester. This is higher than the NFHS and DLHS figures. The results indicate the need to further strengthen RCH outreach in slums.

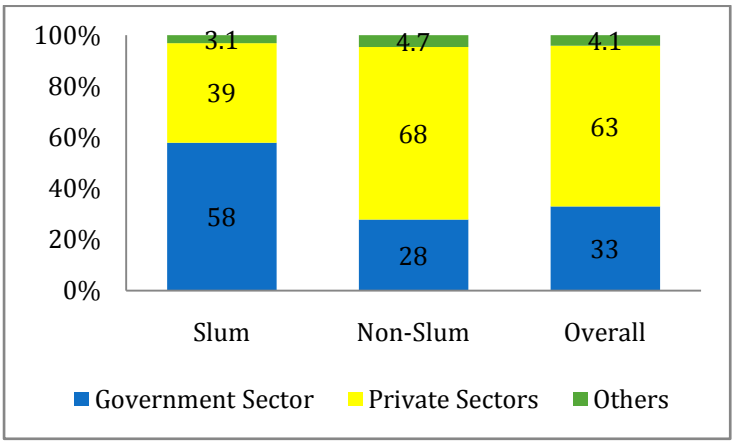


Figure 12 Institutional deliveries by facility (%)

More than 98% of deliveries in slum areas are institutional deliveries. The figure is at par with non-slum areas. It is also seen that women from slums used government facilities for deliveries. Whereas 50% of deliveries in slums happened in government facilities as compared to 28% in non-slum areas.

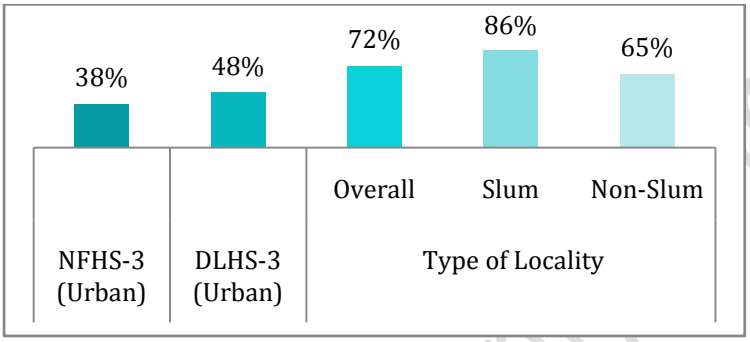


Figure 13Children with diarrhea in the last two weeks who received ORS (%)

Child care indicators in Pune slums indicate a high level of awareness regarding child health and nutrition. Almost 72% of children with diarrhea received ORS as compared to 48% children in the Pune District. This was again higher in the slums as compared to non-slums.

The key messages and recommendations of the baseline survey include:

- There is evidence of domestic violence in slums. Currently the supervisors and Anganwadi workers are responsible for reporting such cases and providing basic counseling services. Targeted efforts should be made to minimize violence against women in any form.
- There is a higher prevalence of tobacco and alcohol use in slums. Funds should be allocated for targeted outreach in slums under the cancer control program.
- There is a need to enhance nutritional awareness and importance of taking IFA among all pregnant women
- ICDS services should be strengthened in order to provide supplementary nutrition to all pregnant and lactating mothers,

Slum areas also have a higher burden of water borne and vector borne diseases. In the FGDs conducted in 25 slums in Pune, the most prevalent diseasesreported by the participants are listed in the following

Table 16Common disease occurrences in Pune slums

Common Disease Occurrences in Slums where FGDs were carried out			
Sr. No.	**Slum Code**	**Name of Slum**	**Name of Diseases**
1	AU34	Indira Vasahat	Malaria, Dengue, Vomiting
2	BH42	Lohiya Nagar	Dengue, Malaria, Chikungunya
3	DHA3	Shankar MaharajVasahat	Dengue, Malaria, Chikungunya
4	GH14	JanotaVasahatJanwadi	Dengue, Malaria, Chikungunya, many diseases
5	HA47	KalubaiVasahat	Dengue, Malaria, Chikungunya
6	KO15	Krishna Nagar	Dengue, Malaria, Chikungunya, many diseases
7	NA13	NapurChowl	there is no major disease
8	SA40(a)	Laxmi Nagar Vasahat	Dengue, Communicable diseases, Athletics
9	SA40(b)	SamtaMitraMandal	Dengue, Malaria, Chikungunya
10	SAH4	Indira Nagar AudyogikVasahat	Malaria, Dengue, Chikungunya
11	WA14	GosaviWasti	Dengue &Chikungunya
12	AU17	Samrat Nagar	Malaria, Chikungunya, Dengue
13	BH7	BhawanipethVasti	Dengue, Malaria, Chikungunya
14	BIB3	Rammandir	Dengue, Malaria, Chikungunya
15	DO12(a)	DushkalVasahat	Dengue, Malaria, Chikungunya
16	DO12(b)	LoksevaVasahat	there is no major disease
17	GH20	KenjaleVasahat	there is no major disease
18	HA9	Ramtekadi	Chikungunya
19	KAV3	BeldarGalli	Dengue & Malaria
20	KO3	More ShramikVasahat	Dengue, Malaria
21	NA9	AmbedkarWasti	there is no major disease
22	SA4	Bhimnagar	Dengue, Malaria, Chikungunya
23	SAH18(a)	Bheep Deep Vasahat	Dengue, Malaria, Chikungunya, many diseases
24	SAH18(b)	KumbharVasahat	Dengue, Malaria, Chikungunya
25	TI42	Tukai Nagar	there is no major disease
26	WA23	Warje Ram Nagar, GosaviVasti	Dengue, Malaria, Chikungunya
27	TI6	Janata Vasahat, 3	Dengue, Malaria, Chikungunya

Source: Focus Group Discussions conducted by UMC team

5. Review of existing health system

Health can be ensured to citizens through the delivery of three sets of services namely environmental health, preventive health and curative health (Monica Das Gupta, 2010).

Environmental Health Service

Environmental health is defined by the World Health Organization as: "Those aspects of the human health and disease that are determined by factors in the environment."Environmental health services include access to safe sanitation and sewage disposal, hygiene, safe disposal of solid waste, sufficient portable water, clean air, food availability etc. Monitoring of ground situation of potential health threats, disease outbreaks etc.is also included as a part of environmental health.

Preventive Health Service

Preventive health services include the prevention of disease by measures such as immunization, breastfeeding, daily exercise and nutritional care. Family planning, vaccination and health awareness are key preventive health servicesprovided by medical professionals.

Curative Health Service

Medical services to treat an individual for injury, disease and syndromes are part of curative health. Safe deliveries are also included in this.Curative health services are important to provide timely and accurate treatment in order to reduce mortality and suffering because of sickness. Effective and timely curative service is needed to improve the general health status.

Preventive and curative health services in Pune are provided by the health department of PMC. Environmental health Services in the city are provided by the engineering and solid waste department. The Environmental health services in Pune are described earlier in chapter 3.In addition to PMC,other state and district level bodies also involved in health service delivery in Pune.The following table represents various government departments responsible for urban health in Pune:

Table 17 Government departments responsible for urban health in Pune

Curative Health Services	
Providehealth care and operate health facilities including outreach	Health Department, Pune Municipal Corporation
Maintenance of an ambulance service	Health Department, Pune Municipal Corporation
Preventive Health Services	
Public vaccination	Health Department, Pune Municipal Corporation
Preventing the spread of infectious diseases	Health Department, Pune Municipal Corporation
Population control and family welfare	Health Department, Pune Municipal Corporation Public Health Department, Government of Maharashtra
Women and child development services	ICDS, Commissionerate of Women and Child Development
Environmental Health Services	
Registration of births and deaths	Health Department, Pune Municipal Corporation
Water Supply	Water Supply and Engineering, Pune Municipal Corporation
Sewerage	Sewage &Water Supply Department, Pune Municipal Corporation
Construction, maintenance of public toilets	Slum Improvement Department, Pune Municipal Corporation
Solid waste management	Solid Waste Department, Pune Municipal Corporation
Slum improvement and upgradation	Slum Improvement Department, Pune Municipal Corporation
Community development in slums	UCD Department, Pune Municipal Corporation
Environment	Environment Department, Pune Municipal Corporation

5.1. Institutional structures in health care delivery

Maharashtra has been in the forefront of healthcare development in the country and has a decentralized system of primary healthcare service delivery in ULBs as well as ZilaParishads.The Pune Municipal Corporation (PMC) manages all health care services in Pune within the municipal limits. The Medical Officer of Health (MOH) is the key administrative officer in charge of all health facilities and programs in the city.There are two posts of deputy MOH reporting to the MOH, one of which is currently vacant. There are three assistant medical officers under the MOH each in charge of Births and Deaths, National Disease Control Programs and the Medical department. The assistant MO, medical is in charge of all health facilities in the city.

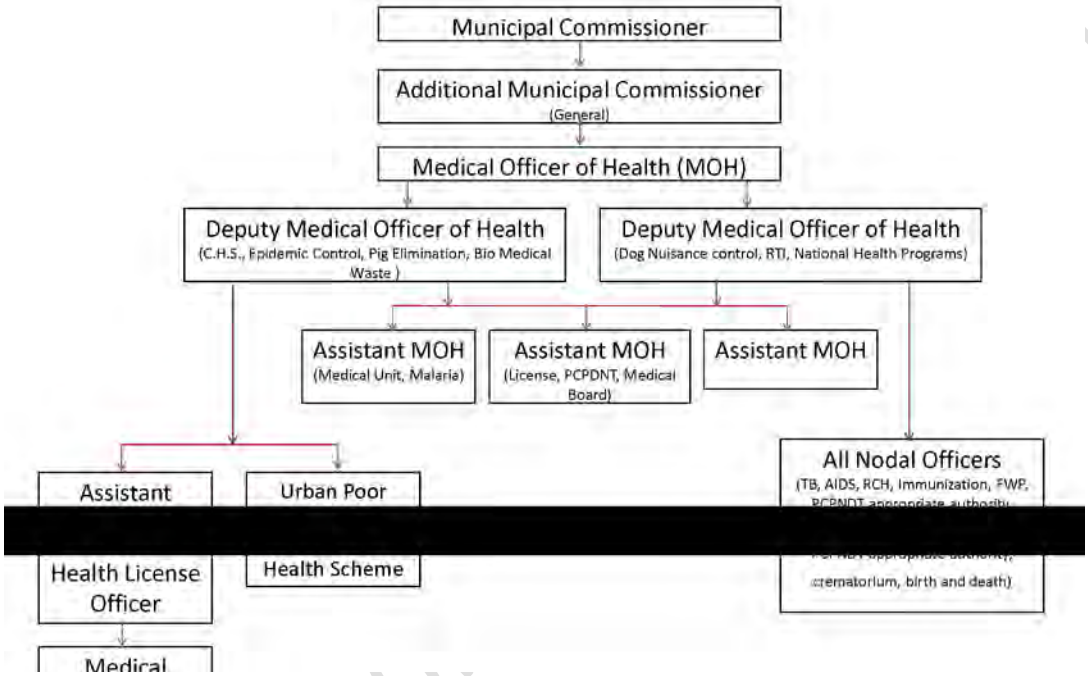


Figure 14 Organizational structure of PMC Health Department

There are 34 dispensaries, 14 maternity homes, 1 general hospital and 1 hospital for infectious diseaseswithin the municipal limits and under the management of PMC. There is also 1 General Hospital (Sasoon Hospital) and some specialty hospitals in Pune managed by the Maharashtra Health and Family Welfare Department through its district setup. In addition there are 29 Family Welfare Centers (FWC) started under the national program in 1976. 21 FWCs are managed by PMC, 2 are managed by the State Department of Health and Family Welfare and 6 are managed by NGOs on a PPP basis under the supervising authority of the State Health and Family Welfare Department. All outreach activities in slums are also managed by the PMC health department through its network of ANMs and link volunteers.

Pune also has a decentralized zonal governance structure for health. There are total 4 zones in the city each with 3-4 administrative wards. There is a Deputy Commissioner in charge of each zone. There are four Medical Officers (all qualified doctors) assigned to each zone. Two MOs are in charge of SWM and two for Medical Services. The Zonal medical officers in charge of medical services monitor all dispensaries and health programs within their zone. They keep tab of equipment, facilities and specific health needs in their zone. The malaria units are also managed at ward level. The following figure illustrates the organizational setup in Pune:

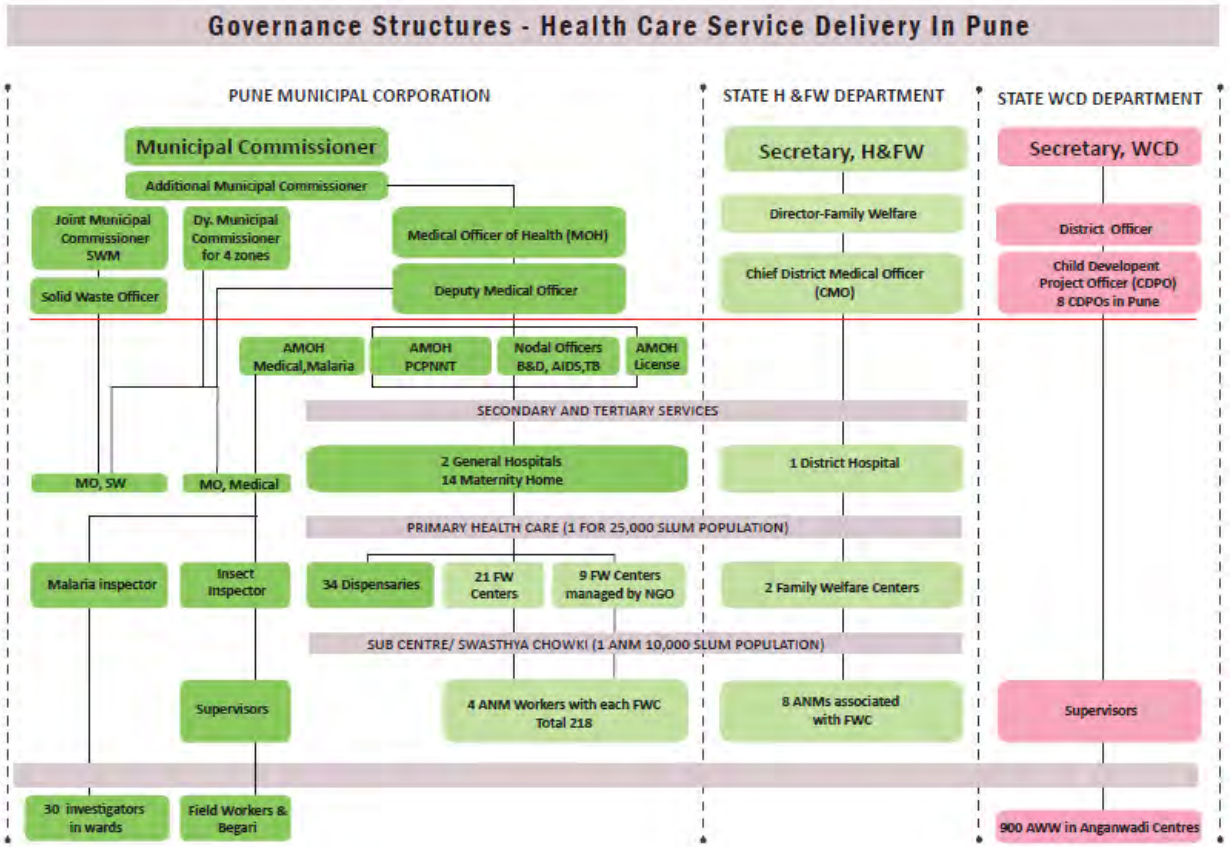


Figure 15 Organizational setup for health delivery in Pune

2.2. Summary of PMC owned and managed health facilities

2.2.1. Primary health facilities

Table 18 Primary health facilities in Pune

Name	Address
K. Yashwant Vishnu Tharkude Clinic	Nal Stop Circle,NearPadale Palace, Karve Road
BaiBhikajiPestonjiBammanji Clinic	In front of Bharat Theatre, BhawaniPeth
K. AnandibaiNarharGadgil Clinic	Near Mhatre Bridge, Dattawadi
K. BalajiRakhmajiGaikwad Clinic	Timber Market, Ganjpeth
K. VijayabaiShirke Health Centre	Nr. HingneWomens' Education Organization, Karvenagar
Lions Club Clinic	In front of MitraMandal Auditorium, Parvati
K. DadasahebGaikwad Clinic	Near SinchanBhavan, Barne Road, MangalwarPeth
K. KalavatibaiMavale Clinic	283, Near ModiGanapati Temple, Narayan Peth
K. MamasahebBaddeyClinc	558,Behind Nana Peth Mutton Market, Laxmi Road
HutatmaBabu Genu Clinic	429 RaviwarPeth, Sonia Maruti Circle, Laxmi Road
Siddharth Clinic	In front of Vishrantwadi Police Chowki, Alandi Road,
K. ShivshankarPote Clinic	Near Padmavati Pumping Station, Sahakarnagar
K. MukundraoLele Clinic	166, Near Shaniwarwada, ShaniwarPeth
K. JungleraoKondibaAmrale Clinic	565, Shivajinagar, Near Income Tax office Building
K. BaburaoGenbaChewale Clinic	47, Aundh Road, Khadki
K. RohidasKirad Clinic	Burudi Bridge, Bak Lane, Ganesh Peth
K. DamodarRaojiGalandePatil Clinic	Kalyaninagar, Near Don Bosco School, Yerwada
Khri Rock Edward Paul Clinic	Near Burmasale, Indiranagar Slum, Lohegaon
G. B. IndumatiManilal Khanna Clinic	Near SantNamdeo School, Maharishinagar, Gultekdi
RajashriShahuMaharaj Clinic	Near Ciporex Company, Bhimnagar, GhorpadeGaon
K. SunderabaiGanpatRaut Clinic	Behind BharatiVidyapeeth, Kelewadi, Paud Road
K. LokshahirAnnabhauSathe Clinic	Behind Neeta Park, Gandhinagar, Yerwada
Dr. Kotnis Health Centre	Gadikhana, Near Mandai, ShukrawarPeth
K. BapusahebGenujiKawadepatil Clinic	Near Demco Colony, Koregaon Park
Kalas Clinic	Laxmi Township, Phase II, JadhavVasti, Kalas
Bharat Ratna Dr. BabasahebAmbedkar Clinic	Survey Number 98, Dias Plot
K. DashrathBaliramBhangire Clinic	Mohammadwadi
ChatrapatiSahuMaharaj Clinic	Sr. No. 35 K. Darinagar, wanwadi
K. BinduMadhavThakre Clinic	Near Pinak Memory Society, GosaviVasti, Kothrud
K. Bartakke Clinic	Atul Nagar, VarjeMalwadi
Pune MahanagarPalika Clinic	Near Gulmohar Society, Kharadi
Pune MahanagarPalika Clinic	VadgaonDhairy
Pune MahanagarPalika Clinic	BibwewadiPrabhag 72
Janta Clinic	JantaVasahat

Table 19 Comparison of existing primary health centres with NUHM guidelines

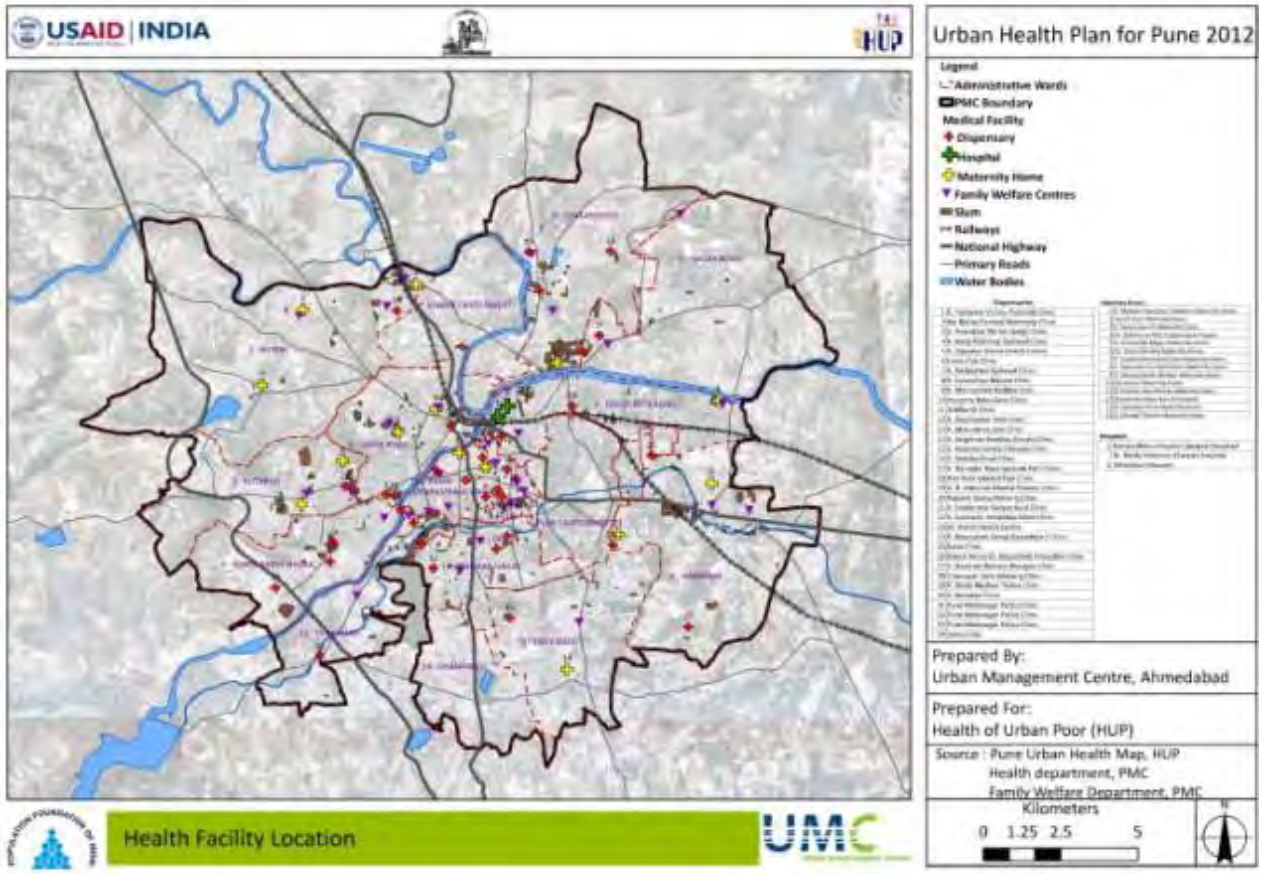
Required Urban Primary Health Centres (One for 50000 population)		
Required	**Actual**	**Gap**
62	50 (34 Dispensaries+ 16 OPD in Maternity Homes and Hospital complexes)	**12**

2.2.2. Secondary and tertiary health facilities

Table 20 Secondary and tertiary health facilities in Pune

Name	Address
K. MatoshriRamabaiAmbedkar Maternity Home	Near Neelayam Cinema, Sanegurujinagar, AmbilOdha
Aundh*Kuti* Maternity Home	PariharChowk, Near PMC Garden, AundhGaon
K. Sanjay Gandhi Maternity Home	Elphinstone Road, Nr.Kirloskar Oil Company, Bopodi
Dr. Dalvi Pune PMC Collaborative Project	Near Shivajinagar ST Stand
K. AnnasahebMagar Maternity Home	Magarpatta, Hadapsar
Dr. Homi J Bhabha Maternity Home	Deepbungalow Circle, Wadarwadi Health Camp
K. JayabaiNanasahebSutar Maternity Home	Near Gujarat Colony, KothrudGaon
K. SakharamKundalikKodre Maternity Home	In front of Mundhwa Police Circle, MundhwaGaon
K. SahdevEknathNimhan Maternity Home	21 Pashan Circle, Near Vegetable Market, PashanGaon
Sonawane Maternity Home	Near Sonmarg Cinema Home, Bhavanipeth
K. Namdev Rao Shivrak Maternity Home	Fatimanagar Road, Shivarkar Marg, WanavadiGaon
Bharatratna Rajiv Gandhi Hospital	In front of Parnakuti Police Chowki, Yerwada
K. SavitribaiPhule Maternity Home	Panchhod Mission, Khadkamal Ali, GuruwarPeth
K. MinataiThakare Maternity Home	Near Maruti Temple, Kondhwa
Kamala Nehru Hospital (General Hospital)	MangalwarPeth
Dr. Naidu Infectious Diseases Hospital	Near Hotel Le Meridian, Behind Railway Station

The PMC run health facilities in Pune (dispensaries, maternity homes, hospitals and FWCs) are indicated in the following map.



Map 15 PMC Run Health facilities in Pune

5.2. Convergence of national health programs with urban health

The Government of India has undertaken specific measures to tackle disease and other major health issues in the country through design and implementation of National Health Programs. The National Urban Health Mission calls for integrating these national programs in the health delivery mechanism focused on the urban poor. This section presents the delivery system of these programs under the PMC health department. For purposes of receiving grants from the State Government, PMC has formed an Integrated Health and Family Welfare Society (IHFW).Currently, only certain programs are under the jurisdiction of the society. The chairman of this society is Addl. Commissioner who is in-charge of health. The secretary is Medical officer of health and there are three joint secretaries, who are ex-officio nodal officers for Reproductive and Child Health Program (RCH), Revised National Tuberculosis Program (RNTCP) and National AIDS Control Program (NACP). The Society receives funding as allocated under state PIP. Hence the funding allocation does not reflect in the PMC budget.

5.2.1. National Vector Borne Diseases Control Program

Malaria control is one of the mandatory functions of Municipal Corporation under BPMC Act, 194. Thepurpose of National Vector Borne Diseases Control Program is the control of malaria, dengue and chikungunyaand it is implemented by the PMC health department within the PMC limits. The program is monitored by the Malaria head office located in KasbaPeth.

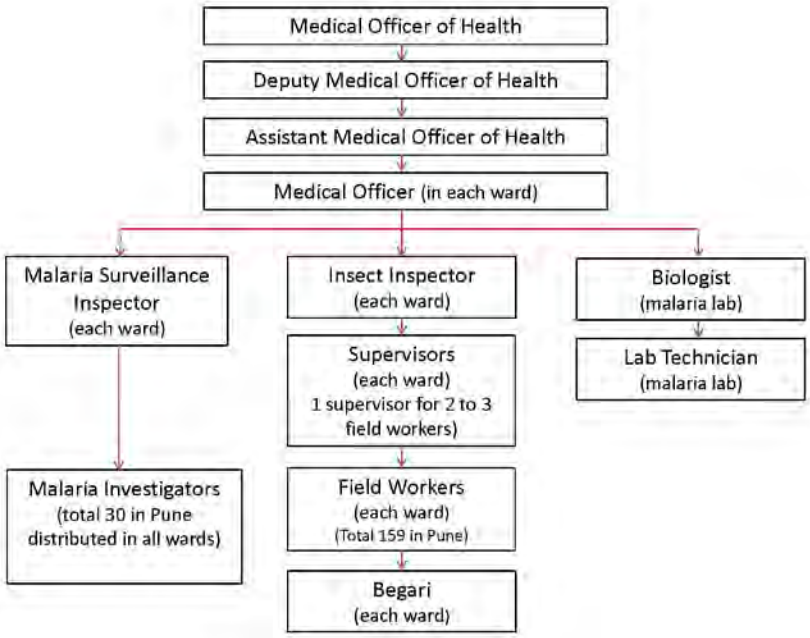


Figure 16 Organogram of Malaria Department

Outreach: Malaria investigators are allotted particular slum areas of approximately 20000 populations where they need to conduct household visits. Each malaria inspector has a 10 day working chart in which he visits 4000 households. In a month, each household is visited twice. A record of each household visited is kept. Blood samples of suspicious malaria/dengue/chikungunya patients (persons with fever etc.) are collected and sent through the Malaria surveillance inspector to the Malaria lablocatedinKasbaPeth office. The lab results are out in two days. The cases detected positive are reported to the head office and ward medical officers for further action. Positive cases are referred to hospitals.

Disease Reporting: Compiled daily report of malaria, dengue and chikungunya from dispensaries and hospitals is compiled by the IDSP unit and sent to the Malaria department. This report contains the name and complete address of the patient along with the hospital where he was treated. The locations of patients who are detected positive in the lab test or are being treated in hospitals are reported to ward medical officers. The house of the patient and the surrounding locality (200 households) are fogged and sprayed by the field workers. Public space fogging, checking of localities for mosquito breeding areas, destruction of breeding areas etc. is carried out by the field workers. As per records every identified vulnerable area is fogged once in 15 days.

2.2.3. Revised National Tuberculosis Control Program (RNTCP)

RNTCP started in India with World Bank assistance in 1993. The goal of the program isto decrease mortality and morbidity due to TB and cut transmission of infection until TB ceases to be a major public health problem. RNTCP is being implemented in Pune corporation area since 1998. The program is monitored by a designated nodal officer for TB. The organizational structure of the TB unit is explained in the figure below.

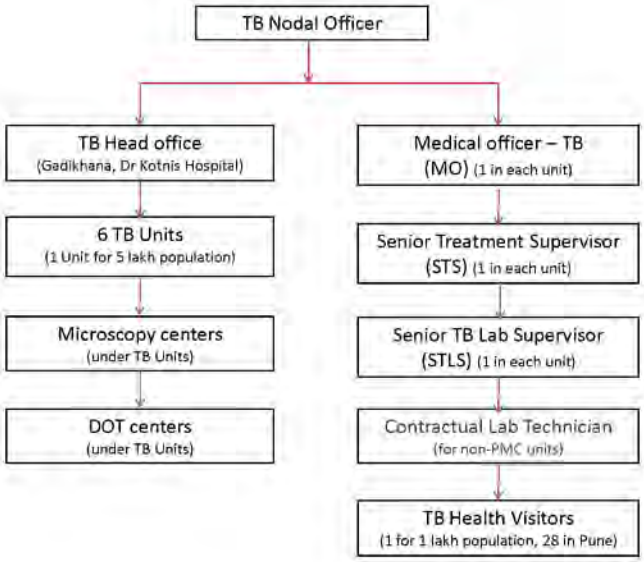


Figure 17 Organogram of RNTCP in Pune

The TB head office for PMC area is located in DrKotnis hospital in Gadikhana, Pune. The head office monitors six TB units within the PMC area, each covering a population of five lakhs. One of these units is co-located with the head office. The others are located in Bhavanipeth, Sahakarnagar, Kothrud, Yerwada and Hadapsar. Each of this unit has specific areas of operation in the city. Each of these units has a Microscopy lab. X-ray facilities in the city are available in Gadikhana and in Kamla Nehru hospital.

Each TB unit is staffed with a Medical officer, senior treatment supervisor, senior TB lab supervisor and five TB health visitors. Each unit monitors the Directly Observed Therapy (DOT) centers under their area.These DOT centers are present in all government health facilities. In addition PMC health department has a Memorandum of Understanding (MOU) with several private doctors and NGOs to provide DOT services.

Patient Registration: Once a suspected patient is brought/referred to a TB unit, a sputum test is conducted. If the patient tests positive, he isenrolled for 6 to 8 months of medication based on the type of infection. A registration form containing details of the person is filled and an identity card is issued. The registration form contains details of doses of medicines consumed by patient. This form is kept in the respective DOT centers and updated each time the patient visits the centre. Cases of multi drug resistant TB are referred to the district run chest hospital in Aundh where the patients are hospitalized for 7 days after which the treatment is continued through DOT centers for a period of two years.

Outreach: The TB health visitors conduct regular visits to all government and private DOT centers. The workers also visit the homes of registered TB patients to provide awareness on regular medicine consumption, cause of infections, precautions to be taken etc. Suspected cases in nearby areas are brought to the TB unit by the health visitors. The TB health visitors also conduct household surveys biannually.In addition to the regular outreach, PMC conducts several programs for TB awareness in partnership with local organizations and NGOs.

Disease Reporting: Monthly reports are prepared by each TB unit and sent to the head office. The TB unit under PMC compiles quarterly reports and submits them to the district and state RNTCP unit.The number of suspects tested for TB in each quarter is around 140 per lakh population.Around 10% of the suspected cases turn out to be sputum positive. According to 3rd quarter 2011 report, total 895 cases were registered for treatment in Pune. (Directorate of Health Services, Gov. of Maharashtra, 2013)

5.2.2. National AIDS Control Program

The Pune AIDS Control Society was setup in 2001 in association with the Maharashtra government and PMC with the objective of controlling HIV infection in Pune. Components of the AIDS control program include increasingthe use of condoms, free medication to HIV positive people, free anti retro hydro treatment to the affected and free testing and counseling in integrated counseling and testing centers (ICTC).

There are 11 ICTC centers in PMC area for which the space is provided by PMC. The ICTC kit, testing material, furniture and other infrastructure and operation costs areborne by the Maharashtra State AIDS Control Society (MASACS). Each ICTC center has one councilor and one lab technician. The salary of the staff is also paid by MASACS. ICTC facilities are also provided in 9 other PMC health facilities.

There are 55 NGOs who work in the field of HIV –AIDS with MASACS. MASCS funds these NGOS for special projects directed towards commercial sex workers, migrant population etc. Foreign funds are also received for some projects by NGOs. Some private agencies also carry out minor projects in AIDS control in PMC area especially those for HIV positive children.There are no outreach services under this program. Reporting by ICTC centers is directly done to MASACS.

5.2.3. National Immunization Program

The National Immunization Program is implemented under the Reproductive and Child Health Program –II (RCH-II) through the PMC runFWCs and dispensaries. Vaccination is done on particular week days in dispensaries, OPD of maternity homes, hospitals and family welfare centers. Household visits and inter-personal communication are only done only by ANMs associated with the family welfare centers. Specific vaccination programs like the pulse polio drive are carriedout in collaboration with the Anganwadi centers.

The program is supervised by the nodal officer for immunization. Targets for immunization are received from the state for the year as well as for each month for Pune city. These targets are then divided and forwarded to the dispensaries and family welfare centers. Vaccination done in private hospitals is also counted towards the achievement of the yearly targets. The targets and achievements for April 2011 to March 2012 are indicated in the following table.

Table 21 Immunization targets for Pune

Indicators	Annual Target	April 2011 to March 2012	% Annual Achievement
B.C.G.	59866	64212	107.26
DPT1		60482	
DPT2		60488	
DPT3	59866	60544	101.13
OPV 0		62988	
Measles	59866	60240	100.62
Hepatitis -B 1		43722	
Hepatitis -B2		43499	
Hepatitis -B3	59866	4355 1	72.75
DPT B– 16-18 months		6 1211	
OPV B – 16-18 months	60274	6 1288	101.55
D P T [5Yrs.]B	52097	52293	100.38
T.T. [10Yrs.] B	49646	49773	100.26
T.T. [16Yrs.] B	51632	5 1101	98.97
Vitamin A 1	54885	60240	109.76
Vitamin A 2	44645	61065	136.78
Vitamin A 3		23766	
Vitamin A 4		19225	
Vitamin A 5		28597	
[IFA Small] 1		10174	
[IFA Small] 2		10680	
[IFA Small] 3	138647	178179	128.51
ANC Registered [total]	62499	57532	92.05
ANC Registered before 12 weeks	49999	46019	92.04
IFA Large [Prop] 1		13958	
IFA Large [Prop] 2		12837	
IFA Large [Prop] 3	62499	57532	92.05
IFA Large [th] 1		4437	
IFA Large [th] 2		3515	
IFA Large [th] 3		15618	
T.T. [P.W.] 1		38191	
T.T. [P.W.] 2		20487	
T.T. [P.W.] B	65853	8492	89
Total Deliveries	61333	52223	85.15

(Family Welfare Centre, PMC, 2012)

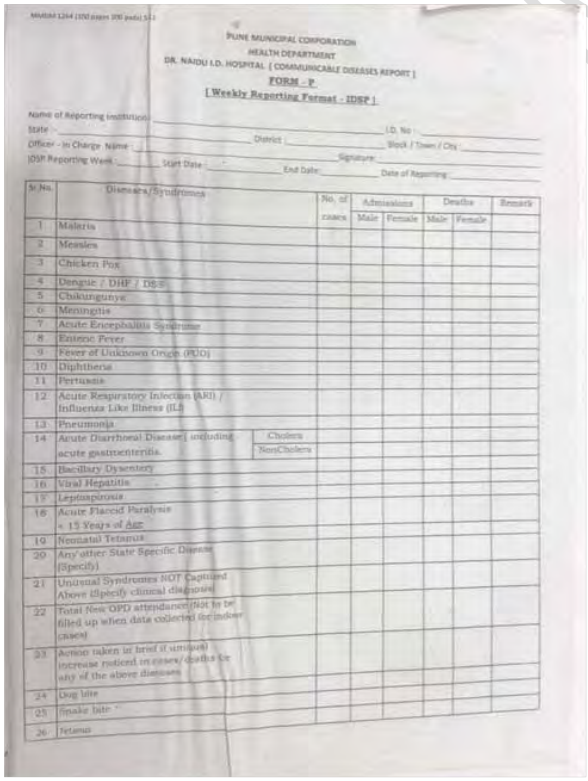
5.2.4. Integrated Disease Surveillance Project (IDSP)

Integrated Disease Surveillance Project (IDSP) was launched with World Bank assistance in November 2004 with the purpose of detecting and responding to disease outbreaks quickly. The project was extended for 2 years in March 2010 and will continue for the duration of the 12th Plan as a central scheme under NRHM.

The disease surveillance unit of Pune Municipal Corporation was established in January on the fourth floor of Naidu Hospital. Incidences of specific infectious as well as non-infectious diseases along with resultant deaths are reported on daily basis by all government facilities as well as registered private hospitals via e-mail or printed copies. The information is collected in a specific format called form-P and form-L(Figure 20 Form P and L for reporting disease incidence to IDSP).

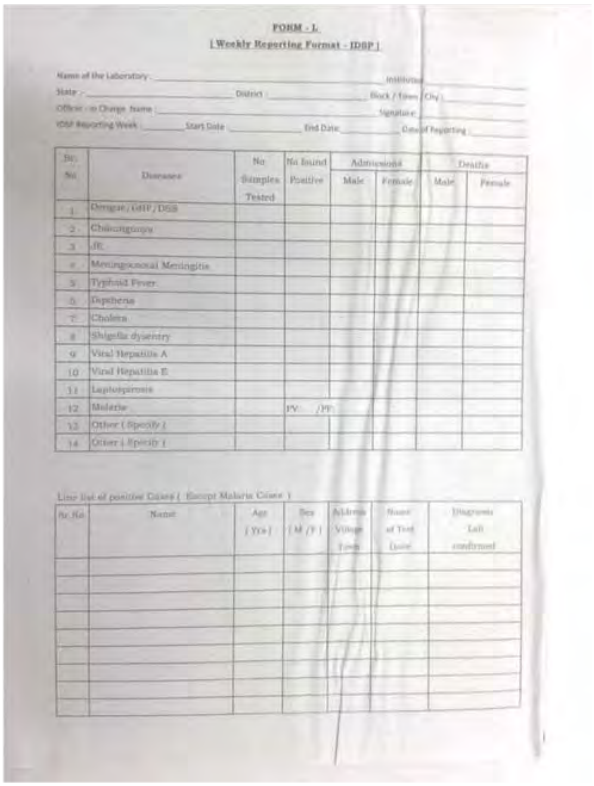
Incidences per day are reported along with other details including name of hospital, ward name in which hospital is located, name of patient, age, address of patient (area and street address) and the wardin which patients residence is located.

The IDSP unit compiles all health data received and sends daily reports via e-mail to all important medical centers including ward offices, malaria centers, TB centers, medical officers etc. This regular exchange of health data helps in the early detection of any outbreak and allows the concerned authority to take timely action. A statistical analysis report is sent to the district surveillance unit, state government, central government and other health institutes on regular basis. The IDSP unit also publishes and disseminates weekly and monthly reports on key disease outbreaks and health challenges in the city.



PUNE MUNICIPAL CORPORATION
HEALTH DEPARTMENT
DR. NAIDU I.D. HOSPITAL [COMMUNICABLE DISEASES REPORT]
FORM - P
[Weekly Reporting Format - IDSP]

Sr. No.	Diseases/Syndromes	No. of cases	Admissions Male	Admissions Female	Deaths Male	Deaths Female	Remark
1	Malaria						
2	Measles						
3	Chicken Pox						
4	Dengue / DHF / DSS						
5	Chikungunya						
6	Meningitis						
7	Acute Encephalitis Syndrome						
8	Enteric Fever						
9	Fever of Unknown Origin (FUO)						
10	Diphtheria						
11	Pertussis						
12	Acute Respiratory Infection (ARI) / Influenza Like Illness (ILI)						
13	Pneumonia						
14	Acute Diarrhoeal Disease (including acute gastroenteritis.	Cholera / NonCholera					
15	Bacillary Dysentery						
16	Viral Hepatitis						
17	Leptospirosis						
18	Acute Flaccid Paralysis < 15 Years of Age						
19	Neonatal Tetanus						
20	Any other State Specific Disease (Specify)						
21	Unusual Syndromes NOT Captioned Above (Specify clinical diagnosis)						
22	Total New OPD attendance(Not to be filled up when data collected for indoor cases)						
23	Action taken in brief if unusual increase noticed in cases/deaths for any of the above diseases						
24	Dog bite						
25	Snake bite						
26	Tetanus						



FORM - L
[Weekly Reporting Format - IDSP]

Name of the Laboratory: _____ Institute: _____
State: _____ District: _____ Block / Town / City: _____
Officer - in Charge Name: _____ Signature: _____
IDSP Reporting Week: _____ Start Date: _____ End Date: _____ Date of Reporting: _____

Sr. No.	Diseases	No. Samples Tested	No. found Positive	Admissions Male	Admissions Female	Deaths Male	Deaths Female
1	Dengue / DHF / DSS						
2	Chikungunya						
3	JE						
4	Meningococcal Meningitis						
5	Typhoid Fever						
6	Diptheria						
7	Cholera						
8	Shigella dysentry						
9	Viral Hepatitis A						
10	Viral Hepatitis E						
11	Leptospirosis						
12	Malaria		PV: /PF:				
13	Other (Specify)						
14	Other (Specify)						

Line list of positive Cases (Except Malaria Cases)

Sr. No.	Name	Age (Yrs)	Sex (M /F)	Address Village / Town	Date of Test Done	Diagnosis Lab confirmed

Figure 18 Form P and L for reporting disease incidence to IDSP

5.3. Delivery of outreach services

The outreach services in slums provided by the PMC health department are largely focused on RCH and are delivered through the FWCs. Each family welfare centreemploys 4 trained ANMs all responsible for outreach in slums. The key responsibilities of ANM are to spread awareness about RCH and family planning and link slum dwellers with the health facilities via referrals for institutional deliveries, immunization and family planning services. Each ANM is in charge of a specific geographically delineated area and works in the field for three days in a week. In addition the ANMs conduct a detailed population survey once a year to identify target groups in slums for RCH and family planning interventions. Follow up visits are done three times in a year for the target population.

There are 140 allotted posts for link volunteers (LV) under the RCH program which are less than the required NUHM norms. Pune currently has 152 LVs enrolled for outreach activities in slums, with 2 link volunteers assigned for each electoral ward. The link volunteers are currently not associated with the dispensaries or the FWCs but are centralized under the nodal officer for RCH.

Table 22 Required outreach staff in Pune as per NUHM norms

ANMs (One for 10,000 urban population)		**ASHA (One ASHA for 1,000-2,500 slum population , assumed 1 for 2000)**		**MAS (1 MAS for 100 HH) only for the slum and vulnerable population**
Required	**Actual**	Required	Actual	Required
311	218	402	152	1861

The key responsibilities of the link volunteers are to improve immunizationcoverage in slums and among construction workers. The list of construction sites was acquired and immunization there was initiated. Such immunization camps are conducted every month. 90% of the time the camps are conducted in Anganwadi centers, howeverthe coordination between link workers/ASHA and Anganwadi workers is weak.

The link volunteers are paid Rs 500 per month. The link volunteers are additionally given an honorarium of Rs 150 for each meeting conducted with community based groups or arogya samitis. The arogya samiti worker and link volunteer are provided training on health and safe hygiene practicesby the State Health and Family Welfare Department under the RCH programonce every three months.

5.4. Delivery of woman and child development services

5.4.1. Integrated Child Development Scheme

The other institution working for women and child development is the Department of Women and Child Development which implements the Integrated Child Development Scheme (ICDS). There are 890 Anganwadi centers within the Pune Corporation limits. There is a district level nodal officer assigned for Pune urban area.

He coordinates with the 10Child Development Project Officers (CDPOs) in urban reas of Pune District. Out of the 10 CDPOs, 8 CDPOs are responsible for the 890 Anganwadi centers that fall within PMC limits. Each Anganwadi center has an Anganwadi worker (AWW) and an Anganwadi helper (AWH). 20-25 Anganwadis are clubbed under one supervisor. AW centers provide basic child development related services including immunization, health checkups, nutrition, informal education and referral services. Anganwadis are dependent on the Health Department for immunizations and checkups.

Interviews with anganwadi workers, supervisors and CDPOs revealed that the regular health checkups to be provided by the Health and Family Welfare Department/ PMC Health Department are limited only to a few Anganwadis and there is little coordination between the WCD Department and PMC. Several NGOs are filling these gaps by providing free checkups and immunization in Pune slums.

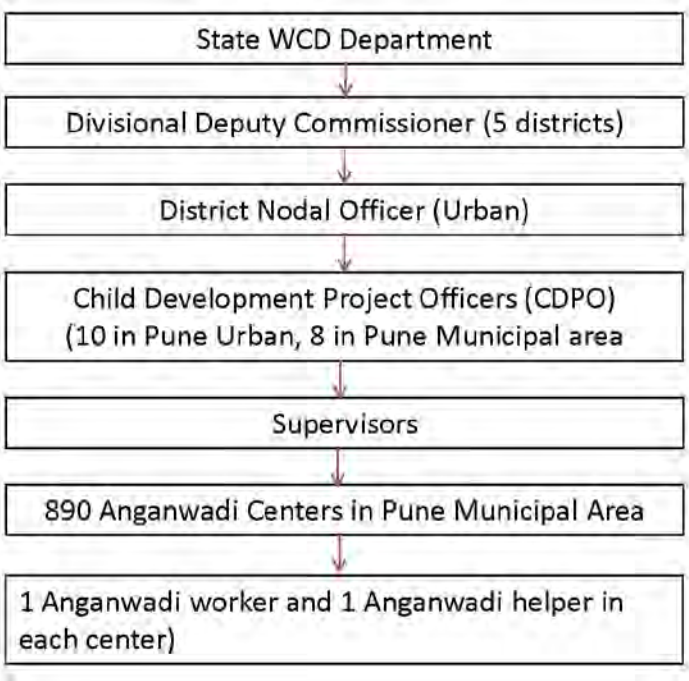


Figure 19 Organogram of ICDS in Pune

The 890 Anganwadis under the eight CDPOs are geographically spread all across all wards of PMC. Since Anganwadiunder one CDPO are not clustered together in one area, supervisors have to traverse all across the city for regular monitoring and supervision. This is inefficient and hampers the functioning of the program. Discussions with the District Nodal Officer (urban) and other ICDS staff revealed that the Department is keen to rationalize the eight ICDS projects geographically to cut down travel distances, improve the efficiency of service delivery and foster convergence with other allied health programs.

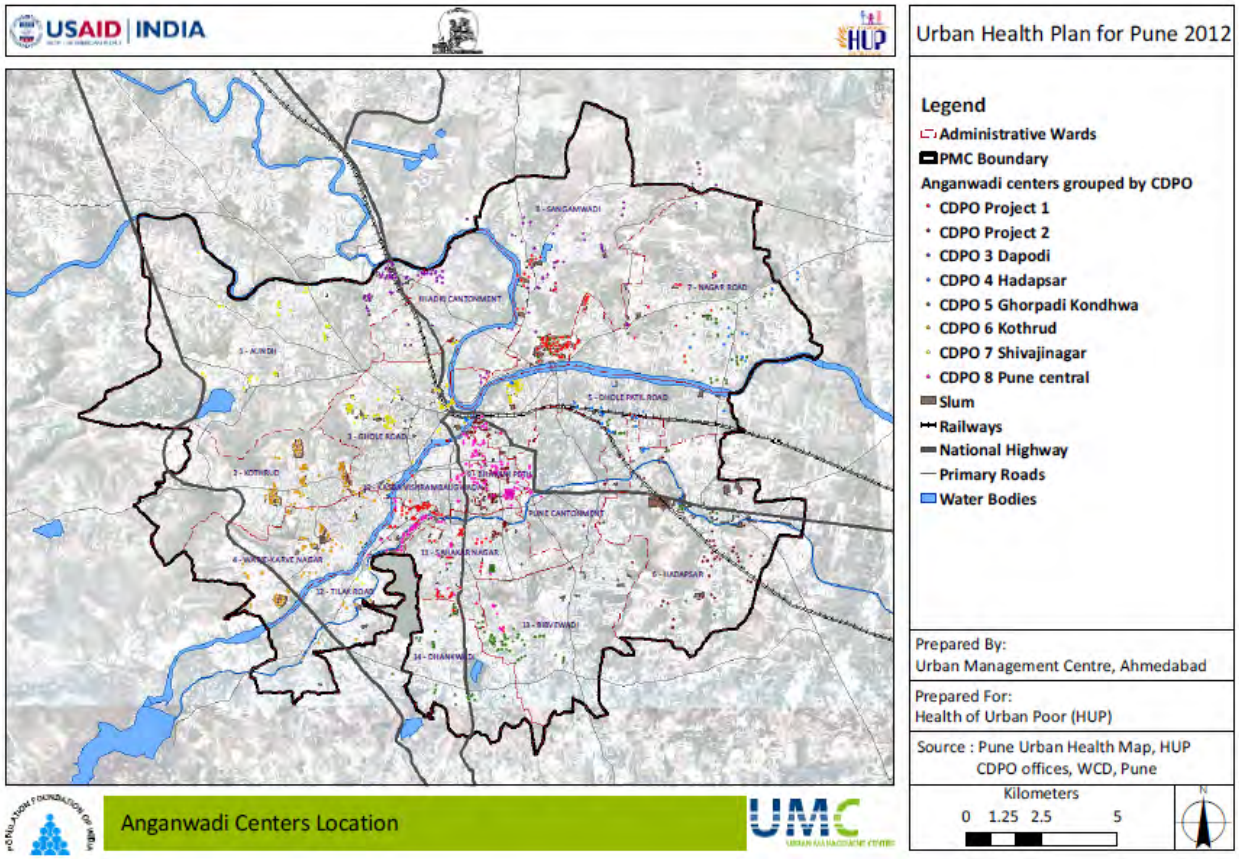
Discussions also revealed that the ICDS department earlier had dedicated medical staff for conducting health check-ups in Anganwadis. However these positions have been discontinued since 2004 and activities pertaining to routine immunization, health check-ups, referrals and organizing the health and nutrition day are to be undertaken in close association with medical staff of PMC. However, the Anganwadi workers do not have a list of link volunteers and ANMs who are working in the same geographical area. There is also a need to strengthen and streamline referral system between the Anganwadis and the UHCs and maternity homes.

There is an extensive data collection being undertaken at the individual Anganwadicentre as well as at the supervisory level (one supervisor for 25 Anganwadis). Records maintained by the ICDS department include data on

- Number of Pregnant women
- Number of nursing mothers
- Number of adolescent girls
- Children divided by age-groups
- Information on Birth (whether ARI or low birth weight etc.)
- Information on death of children and mothers/ pregnant women
- Health service accessed for delivery
- Immunization details
- Information on home deliveries
- Information on nutritional status of children

This data is recorded daily and compiled monthly. This data base could be aligned geographically with the catchment areas of the UHCs and could be extremely useful for identifying focus areas and planning of outreach service delivery.

The following map depicts the location of all Anganwadicenters in Pune under the eight ICDS projects.



Map 16Anganwadi Locations in Pune

5.5. Summary of government schemes and programs

Name	Implementing Agency (Department/ Ministry)	Funding Agency/ Source	Aim/ Intervention	Target Population	In effect from	Type of Support/ incentive	Financial Outlay (Amount)	Coverage Details
JananiSurakshaYojana	Ministry of Health and Family Welfare	(MoH&FW)	To promote Institutional Delivery	Pregnant women (BPL household) of the age of 19 years and above and up to two live births	26th October 2005	One time Cash incentive when a woman comes for delivery in a Government Institution	Rs. 1000 per beneficiary	
Janani-SishuSurakshaKaryakram (JSSK)	Public Health Department, Government of Maharashtra	Public Health Department, Government of Maharashtra	Ensure cash less deliveries including cesarean sections and new born services up to 30 days at all public health institutions in both rural and urban areas	Pregnant women and new-borne.	7th October 2011	**For Pregnant Women** • Cashless Delivery • C-Section • Exemption from all kinds of User Charges • Drugs and Consumables • Diagnostics • Diet during stay in hospital • Provision of Blood • Transport: Home to Health facility **For newborn** • Free treatment • Free drugs and consumables • Free diagnostics • Free provision of blood • Exemption from all user charges • Free Transport from Home to Health Institutions • Free Transport between facilities in case of referral and free drop back from institutions to home	No user fee for beneficiaries	
JeevandaiArogyaYojna	Public Health Department, Government of Maharashtra	Public Health Department, Government of Maharashtra	to provide financial help to weaker sections of the Society and BPL, for providing Super Specialty Services and treatment of serious diseases of	• weaker sections of the Society (yellow Ration Card Holder) • BPL Families • Freedom fighters • ICDS	11th October 1997	Financial help provided to the beneficiary for getting services availed in the recognized government hospitals.	Rs.1,50,000/- per beneficiary	

Name	Implementing Agency (Department/ Ministry)	Funding Agency/ Source	Aim/ Intervention	Target Population	In effect from	Type of Support/ incentive	Financial Outlay (Amount)	Coverage Details
			heart, kidney, brain , Spinal cord and cancer.	children (0-6 years) Domicile Certificate is required				
Scheme for treatment of Indigent and economically weaker section patients	Public Charitable Trusts	Charity Commissioner of Maharashtra	Timely treatment of Indigent and economically weaker section patients	Indigent Patient – Income less than Rs 25000 per annum Economically weaker section patients – Income between Rs 25000 to Rs 50000 per annum	6th December 2005	Emergency treatment given till patient is stabilized Emergency patients should not be asked for deposit. Cost free/ 50% of cost as applicable of treatment to target population.		
SavitribaiPhuleKanyaKalyanParitoshikYojana	PMC	Public Health department, Government of Maharashtra	Protection of girl child and family planning	couples Below Poverty Line (BPL)	1st May 2000	For couples accepting sterilization with only one daughter and no son, Rs. 10,000 will be kept in the name of the daughter as a fixed deposit. This amount will be due to the girl at the age of completing 18 years. An additional amount of Rs. 5000 will be kept in terms of a 5-years fixed deposit, if this girl completes 10th standard. She will be entitled to this additional amount only if she does not get married before completing the age of 20 years. Similar scheme will be applicable to couples with two daughters and no son		

Name	Implementing Agency (Department/ Ministry)	Funding Agency/ Source	Aim/ Intervention	Target Population	In effect from	Type of Support/ incentive	Financial Outlay (Amount)	Coverage Details
						with Rs. 5000 to each of the daughters.		
health scheme for the below poverty line (BPL)	PMC	PMC	to provide health benefits to people living below poverty line and earning less than one lakh rupees per annum.	BPL people with an annual income of less than one lakh rupees per year.	January 26th , 2012	Where treatment is not available in government hospital, PMC would pay 50% of the bill. The scheme designated 44 private hospitals to provide medical facilities for the poor people.	Upto 1 lakh rupees per person.	
Concessions for BPL patients ailed by swine flu (urban poor health schemes)	PMC	PMC	Private hospitals to provide concessions for poor patients ailed by swine flu.	Yellow ration card holders, patients with a family income less than Rs 1 lakh and slum-dwellers	2012	Compensation for treatment of swine flu by corporation under urban poor health schemes	Fifty per cent of the bill or a maximum of Rs 1 lakh would be paid by the corporation under urban poor health schemes	
Urban Poor Health Insurance Scheme	PMC	PMC	To provide financial aid to poor for treatment of serious illnesses that is not provided in government hospitals.	living in slums and those below the poverty line (BPL)		Free primary health services to all members of the family in PMC dispensaries & hospitals. In 44 identified private hospitals, 50% of bill should be paid by the member & PMC will pay 50% of bill up to maximum of Rs 1 lakh.	Health insurance covers of Rs 1 lakh against an annual fee of Rs 100 and a membership fee of Rs 100.	
KanyaRatnaYojana	PMC	PMC	Protection of girl child	for people under Below Poverty Line (BPL) category – girl child		One girl child: An investment of Rs.6000 in *KisanVikasPatra* (KVP) will be made by PMC for five years in the name of the girl child and on maturity the investment is handed over to the girl child after she attains 18 years of age. Two girl child: An investment of Rs.3000 is *KisanVikasPatra* (KVP) will be made by		

Name	Implementing Agency (Department/ Ministry)	Funding Agency/ Source	Aim/ Intervention	Target Population	In effect from	Type of Support/ incentive	Financial Outlay (Amount)	Coverage Details
						PMC for each girl for five years and on maturity the investment is handed over to the both the girls after they attains 18 years of age.		
Basic services for urban poor(BSUP), JNNURM	Pune Municipal Corporation	JNNURM, Ministry of Urban Development, Govt. of India	Improvement of housing and environmental conditions in slums	Urban poor in Pune	November 2006	Provision of dwelling units and basic services such as roads, water supply sanitation in slum areas	32.92 Crore approved for Warje project and 39 Crores for Hadapsar	1344 dwelling units approved in Warje, 2408 dwelling units approved in Hadapsar
RajiAwasYojna (RAY)	Pune Municipal Corporation	Ministry of Housing and Poverty Alleviation, Govt. of India	Bringing existing slums within the formal system and enabling them to avail of the same level of basic amenities as the rest of the town by integrated development of all existing slums, notified or non-notified	BPL families residing in slums	2012. Biometric survey of slum households in the progress	Provision of dwelling units to slum dwellers in urban areas.	No project sanctioned yet	-

5.6. Financial allocations towards urban health

For the purposes of financial assessment, the finance data for the last 3 years, from 2008-09 to 2010-11 has been analyzed.Pune Municipal Corporation follows a cash based accounting system. Expenditure towards the revenue heads are treated as revenue expenditure while expenditure on capital projects is capital expenditure.

5.6.1. NRHM program funding to Maharashtra

The National Rural Health Mission (2005-12) launched by the Govt. of India seeks to provide effective healthcare to rural population throughout the country with special focus on 18 states, which have weak public health indicators and/or weak infrastructure and Maharashtra is one of them. The following graph shows that the allocation has grown from Rs.63 Crore in 2007-08 to Rs. 300 Crore in 2011-12.

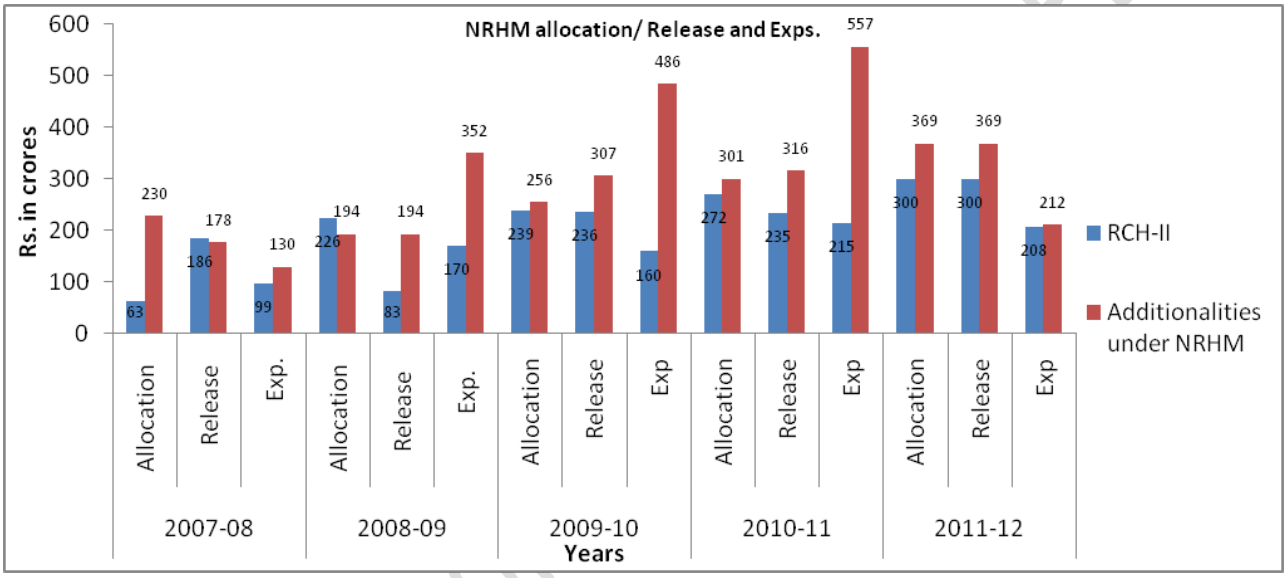


Figure 20 NRHM fund allocation/ release and expenses

For analyzing the financial health of the Municipal Corporation, an assessment of the revenue income and expenditure of the Pune Municipal Corporation has been conducted here.

5.6.2. Revenue income

The revenue incomes sources comprise own sources, assigned revenues,grants and contributions. Own sources include octroi, property tax (comprising general tax, water, sewerage and sanitation taxes), other taxes and non-tax income in theform of development charges, income frommunicipal properties, fees & fines and other miscellaneous income.

The total revenue income of the Corporation has consistently grown from Rs. 1681 Crores in 2008-09 to 2363Crores in 2010-11 at anannual growth rate of 25%. The highest increase in the revenue income was a 41% growth in the year 2010-11.

The revenue income (comprises income from tax revenue, Octroi compensation, rental income, fees & user charges, sale & hire charges, interest income etc.) has been contributing an average of 56% of the total income of PMC for the last three years. Out of that 42% is compensation in lieu of Octroi received which was abolished few years ago.

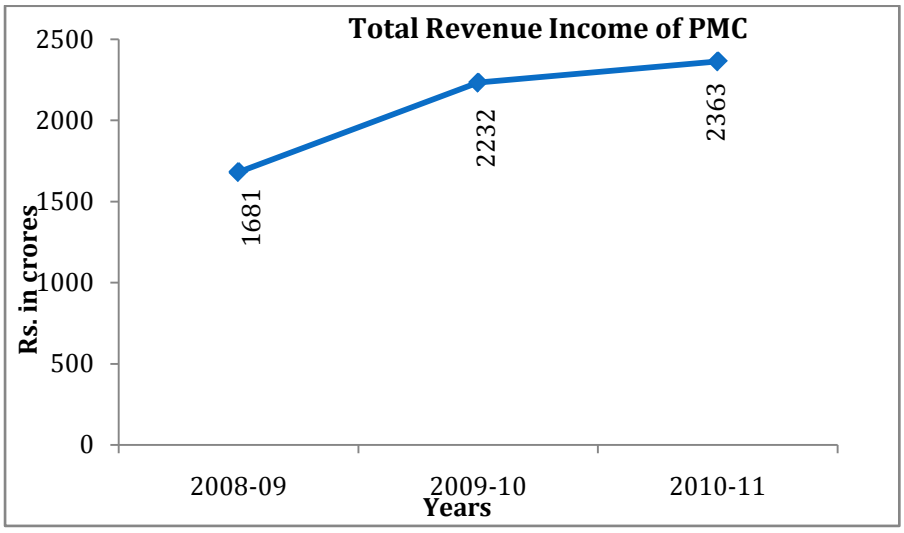


Figure 21 Revenue income of PMC

5.6.3. Revenue Expenditure

Revenue Expenditure of the PMC constitutes of salaries of staff of various departments, primary and secondary education, slum improvement, public health, roads, land and building repair, city development, environment and garden etc. Looking at the trends of the revenue expenditure, it can be seen that the highest expenditure of Rs. 2906 Crores was made in the year 2009-10while the lowest was in the year 2008-09 at 2089 Crores.

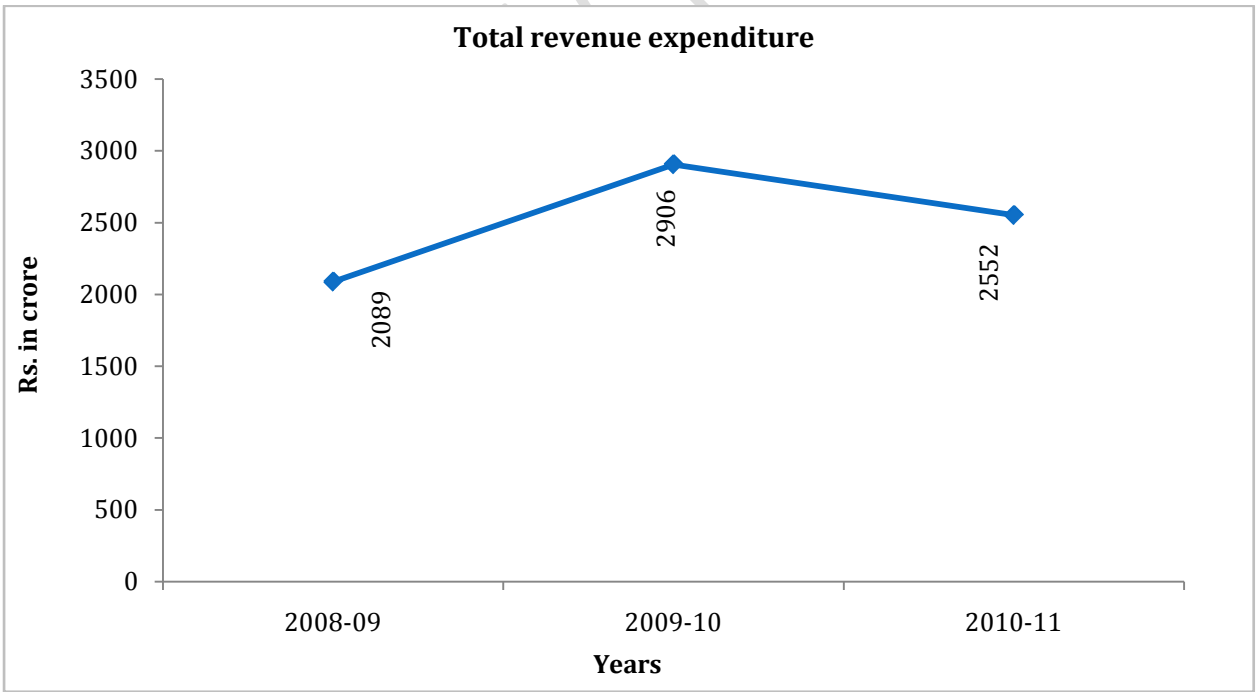


Figure 22 Revenue expenditure of PMC

5.6.4. Revenue expenditure on slumimprovement (slum improvement program)

The slum improvement department monitors the provision of basic infrastructure facilities including water supply and sewerage in all slums of Pune. Nationally funded projects such as BSUP-JNNURM and RAY are being implemented in Pune in accordance with the procedure of slum improvement department. The Slum Improvement Department is also responsible for construction and maintenance of community toilets in slums. The revenue expenditure on slum improvement shows an increase from 13.87 Crores in 2006-07 to Rs. 23.13 Crores in 2009-10.

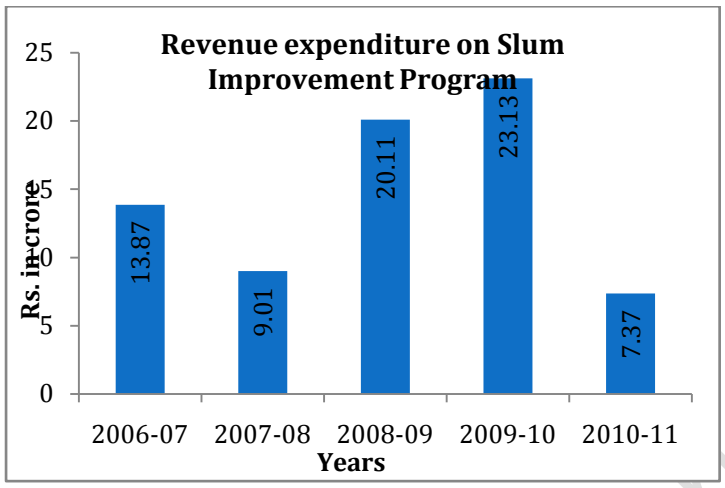


Figure 23 Revenue expenditure on slum improvement program

5.6.5. Revenue income in health

The revenue income sources for PMC for the health department includes grants for the malaria eradication program as well as other income of the PMC through levy of fines, levy of licenses for food establishments, sale of medicines from the pharmacy, registration of births and deaths and marriages, etc.

The grant for the malaria eradication program was to the tune of Rs. 5.58 Crores in the year 2010-11 and which has now decreased to Rs. 10 lakhs in the years 2011-12 and 2012-13.The grants for the implementation of the national health programs (RCH, RNTCP, NACP etc.) are directly given to the Integrated Health and Family Welfare Society of the PMC. A total grant of about one CroreRswas received by the society in 2012. These grants flow in from the State Govt. to the society directly and are not reflected in the PMC budget.

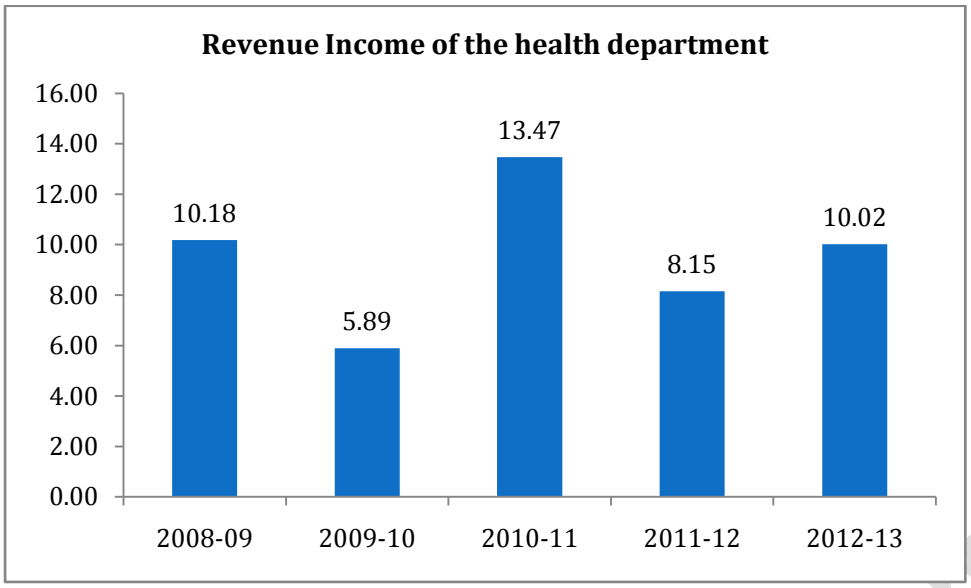


Figure 24 Revenue income of health department

Looking at the break up for the income, the maximum sources for the revenue is 44% from Staff health aid. Fixed amount is deducted per month from the staff salary for health aid scheme to be availed when required. Sale of drugs from the pharmacy accounts for around 14% of the revenue income while the levy of fines by the health department across the 14 wards contributes another 10%.

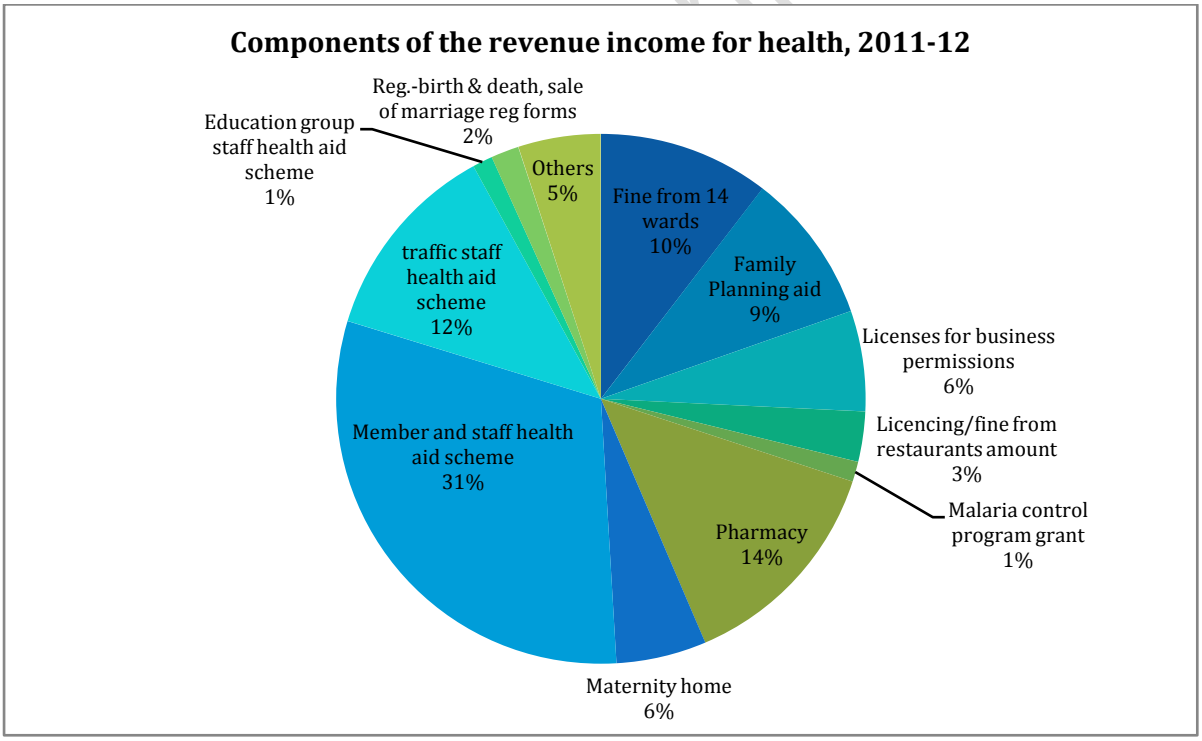


Figure 25 Components of revenue income of health

5.6.6. Revenue expenditure on health

The 2012-13 budget of the PMC has announced a total expenditure of Rs. 125.18 crores in health which approximately forms 3.42% of the total PMC budget.

Going into the details of expenditure on health, the overall expenditure is divided into broad four categories-

- public health (includes expenditure towards staff salaries for public health purposes like cremation and burial facilities, family planning programs, stray dog and cattle management, control of vector borne diseases)
- Health checkup in schools
- Hospitals, maternity homes and dispensaries (includes expenditure towards staff salaries, medicines and apparatus, Operation and maintenance of equipment, etc.)
- health insurance and aid for councilors, PMC staff and BPL (includes expenditure on health insurance scheme for PMC staff, other health benefits to PMC elected representatives and staff, specialized tertiary care to the poor and vaccine program for slum children)

Table 23Trend of various categories of health expenditure by PMC

Year/ Health Revenue Expenditure in Crores	2008-09	2009-10	2010-11	2011-12	2012-13
Public Health	16.2	20.1	27.9	26.0	28.5
School children health checkup	0.1	0.2	0.1	0.2	0.2
Health facilities	24.1	32.4	41.7	39.0	41.5
State Insurance Scheme for Kamgaar	0.4	0.4	0.5	0.6	0.6
Health for Corporators and PMC staff	13.8	18.0	19.4	14.9	16.2

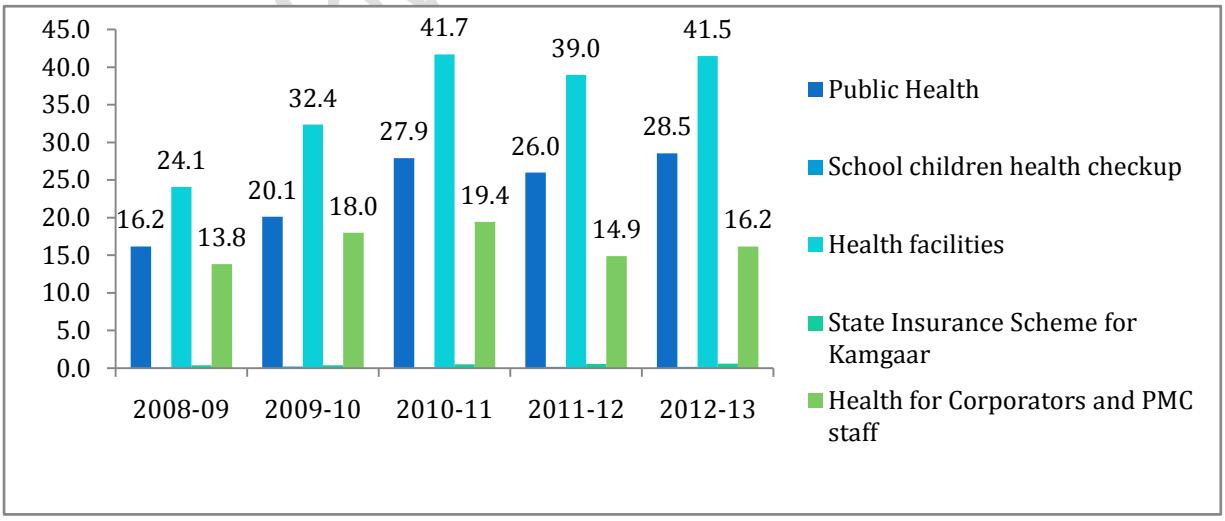


Figure 26 Trend of various categories of health expenditure by PMC

Breaking down revenue expenditure in health for the year 2011-12, it can be seen that expenses in running the various dispensaries, maternity homes and hospitals constitutes almost 50% of the total health expenses. Expenditure for school children health checkup forms a negligible component. This has gone down from Rs. 22 lakhs in the year 2009-10 to Rs. 15 lakhs in 2011-12

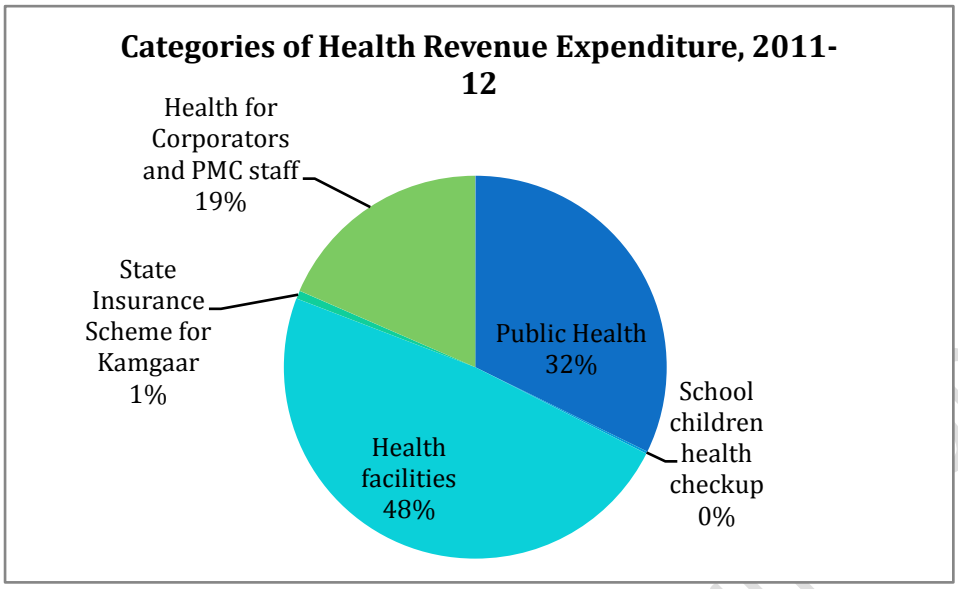


Figure 27 Components of revenue expenditure on health

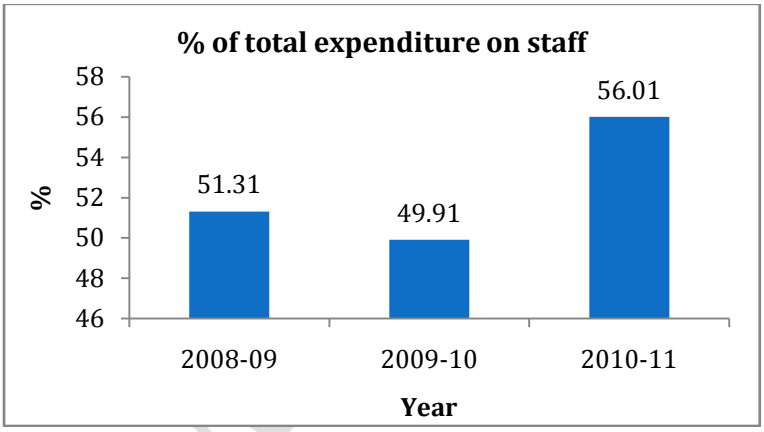


Figure 28 Percentage of total expenditure on health

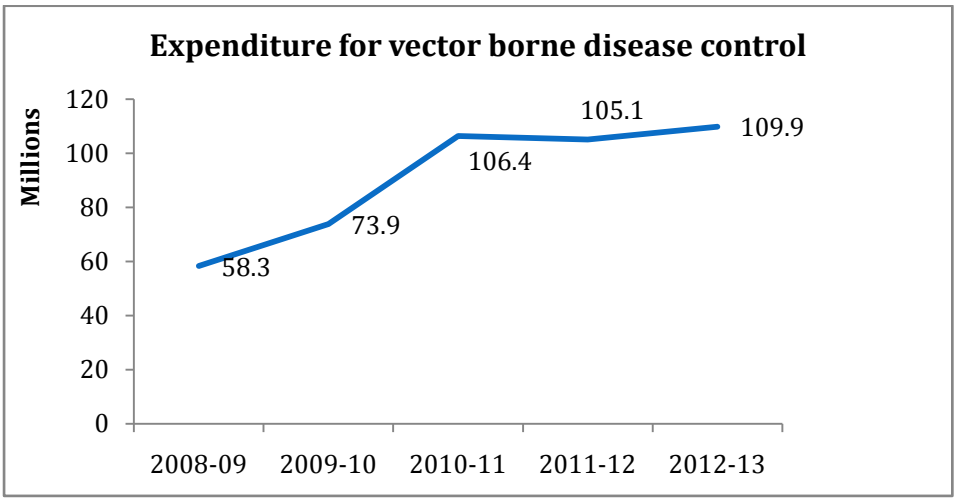


Figure 29 Expenditure on vector borne disease control (in millions)

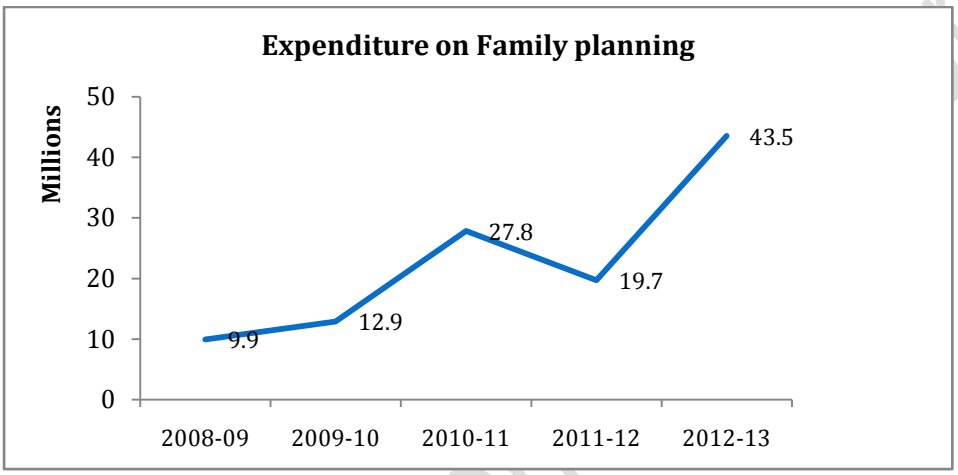


Figure 30 Expenditure on family planning (in millions)

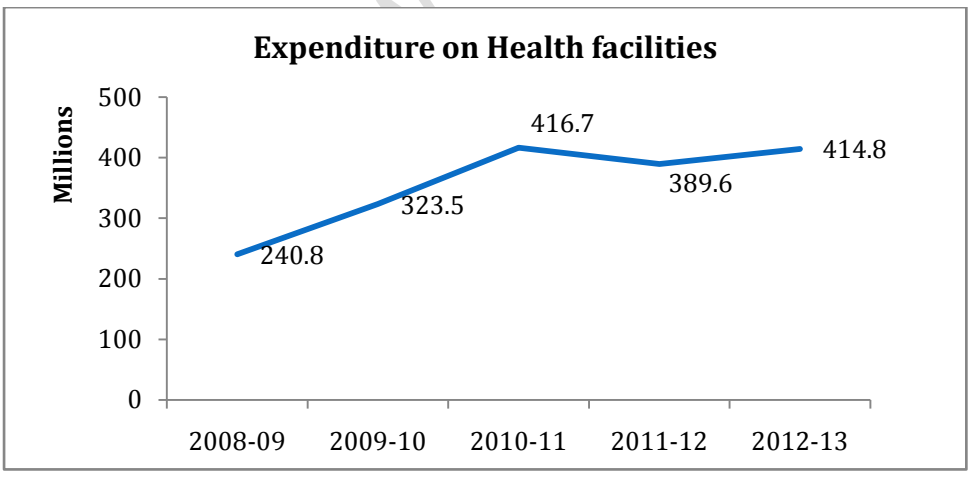


Figure 31 Expenditure on health facilities (in millions)

5.6.7. Capital expenditure of PMC

Pune Municipal Corporation has been making steady increments in total expenditure on creation of new infrastructure and facilities. The total capital expenditure of PMC has grown from Rs.1234 crores in 2008-09 to Rs. 2068crores in 2010-11. The major expenditure heads include expenses on roads, buildings etc.

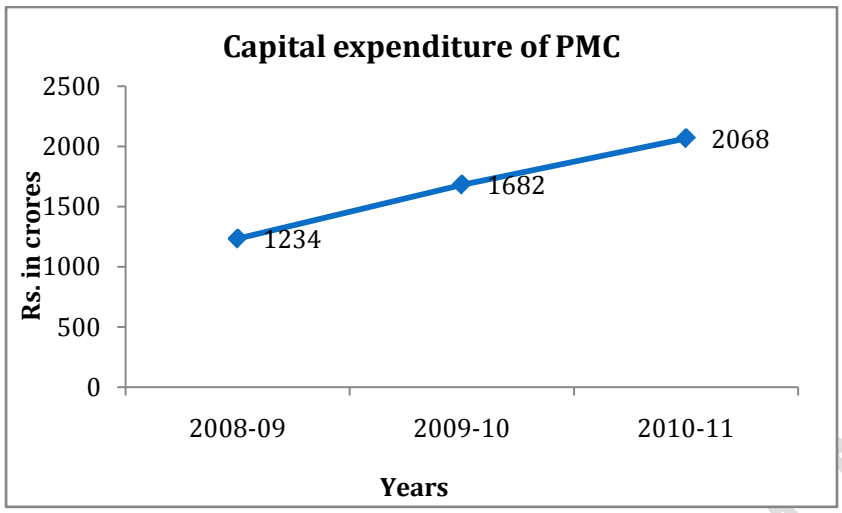


Figure 32 Capital expenditure of PMC

Capital Expenditure: Health Department

Capital expenditure on health comprises 1.56% of the total capital expenses made by PMC. The following graph shows that the capex in health has been increasing steadily. In the year 2010-11, the PMC made an expense of Rs. 32.3 crores. The major heads where these expenses have been made include construction and expansion of existing health facilities, installation of treatment plants (e.g. Waste treatment plant in slaughter house etc.) purchase of machinery and equipment etc.

Capital Expenditure: Slum Improvement program

It is important to also note the capex that the Corporation has made towards slum improvement programs since this would lead to overall improvements in water sanitation conditions and hence leading to improved health as well. The Corporation has been increasing capital expenditure towards slum improvement from Rs. 123.51 Crores in 2008-09 to Rs. 166.75 Crores in 2010-11.

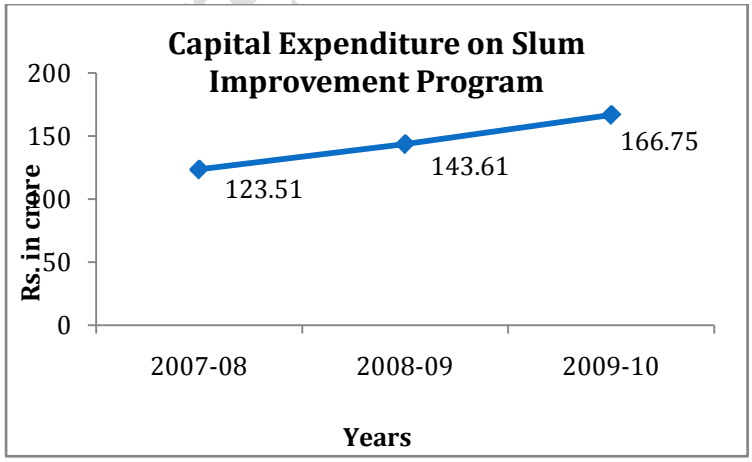


Figure 33 Capital expenditure on slum improvement program

5.7. Summary of key issues in health care delivery in Pune

- Most government health facilities in Pune are managed by the PMC health department. Among the 30 Family Welfare Centres (FWCs) in Pune, 21 are managed by the PMC, while the remaining 9 are managed by NGOs and by the State Government. These are not under the direct supervision of PMC and are directly managed by the State Health and Family Welfare Department through its district setup and are managed on a PPP basis by NGOs. Since PMC health department does not have financial supervision over these facilities, it cannot efficiently monitor the smooth functioning of these facilities.

- There is an integrated Health and Family Welfare Society (IHFW) set up at the Pune city level for purposes of receiving grants from the State Government NRHM PIP. The grants received by the society are varying for different programs, viz.- RCH receives a budget of Rs. 25 lakhs while there is 65 -70 lakhs for RNTCP implementation. The financial allocation for other PMC health programs and facilities happens directly through the health department. There are multiple sources from where grants are allocated for various health programs. This needs to be streamlined and pooled together for efficient and smooth allocation.

- There is a need to improve systematic allocation of outreach workers to foster routine immunization in slums. As per PMC records, there are a total of 152 link volunteers working under the RCH department, however few slum residents are unaware of these volunteers and their outreach activities. Also these link volunteers are currently tied to maternity homes and hospitals and primary level health facilities. The ANMs responsible for immunization and outreach in slums are not tied to the dispensaries but to family welfare centers and maternity homes.There is currently no coordination between the ANMs and the link volunteers. There is no micro plan for routine immunization in slums. Most slum residents go to the dispensaries and maternity homes for immunization.There is a need to reallocate and rationalize the intervention areas for the ANMs and link volunteers. There is also a need to create a monitoring and supervisionmechanism where ANMs could supervise and allocate areas and tasks to the outreach link volunteers.

- Currently various health programs such as Malaria, TB, RCH etc. , all have their own outreach staff working in slums. The geographical delineation of zones for the implementation of all these programs is done independently. Each of these health programs have their own zone definitions which do not necessarily align with each other or with the administrative ward boundaries. This many times means that there are different cadres of outreach workers staffs going to the same geographical area for similar type of work. There is a need to streamline outreach activities.

- There are only two hospitals in the city with in-patient wards which provide advanced and emergency care. There is currently a lot of load on these establishments as there is no other facility to admit people who require even minor interventions and surgeries. There are existing maternity homes which have good infrastructure and which could be upgraded to include male in-patient wards as well for minor surgeries and ailments requiring hospitalization.

- There is also a need for improving convergence between the link volunteers and the ICDS staff. Currently the Anganwadi staff is not aware about the activities of the PMC health department in slums. Both departments are running independently with little coordination and interaction. The Anganwadi workers are not aware of the ANMs and link volunteers working in their area and there is no fixed micro-plan for immunization at the Anganwadis. The Anganwadis are partially reliant on private practitioners and NGOs for health checkups and immunizations in slums.

- The UCD department of PMC works actively in slums for economic and social development. The UCD department has also fostered the constitution of close to 11000 women self-help groups in slums. The PMC health department can utilize these institutions for health purposes as well. These groups could be co-opted as the MahilaArogyaSamitis proposed under the NUHM. However, currently there is little convergence between the UCD and the health department.

- The ward level meetings foster convergence among PMC staff involved in the provision of environmental, preventive and curative health services. However there is no health coordination mechanism at the city level.

6. Assessment of health facilities and services

Health Department of Pune Municipal Corporation runs 34 dispensaries, 14 maternity homes, one general hospital, and one hospital for infectious disease, 2 mobile clinics, 21 family welfare centers and DOT centers. The facilities provided by these include general health checkup, curative services, implementation of national programs (tuberculosis, leprosy, AIDS, mother and child care, vector borne disease etc.), pre and post-delivery facilities, immunization, dental health care. Family welfare centers provide referral help for deliveries, pre and post-delivery vaccinations, contraceptives, distribution of iron tablets, family planning guidance and assistance etc. PMC also runs laboratories for blood sample checking and sputum tests. Health checkup of school students is also carried out per the program norms.

A detailed survey of all the dispensaries, maternity homes and hospitals was conducted to understand the current situation of health care delivery. The results are indicated in the following section along with the expected standards and records. Key services provided in PMC health facilities are listed in the table below:

Table 24Health services provided by PMC

Services	Service Delivery Mechanismper PMC	Additional Observations based on field visits
Immunization	Immunization is done through all dispensaries under PMC.	Implemented as per targets.
RNTCP	Through Microscopy and DOT centers	Primary care and medicine given in most dispensaries and all DOT Centers.
Vector borne diseases	Through ward wise field investigators, field workers.	Ward wise field investigation is done. Treatment provided in 18 dispensaries.
AIDS Control	Carried out through ICTC	Counseling, checkup and guidance are provided in 7 dispensaries. ICTC facilities are present in 9 maternity homes. In others test samples are sent to AIDS center. 11 ICTCs are run by MASACs
Leprosy Control		Leprosy treatment provided in 27 dispensaries and most maternity homes.
Dental Services	Provided at: Sanjay Gandhi hospital, Bhopodi K. KalavatibaiMalve Dispensary, Narayanpeth K. SahadevEknath Maternity Home, Pashan Kamla Nehru Hospital, Mangalwarpeth	Dental services operated privately by rotary club in Sanjay Gandhi hospital. Not provided in SahadevEknathNimhan Hospital Ser.vices upcoming in KalavatibaiMalve dispensary. ShivshankarPotehospital, DrKotnisArogya Center, JayabaiSutar Maternity Home and ChandumamaSonwaneDawakhana have a visiting Dentist.
Sonography	Provided at: Kamla Nehru Hospital, Sonwane Maternity Home K. MeenataiThakre Maternity Home	Services not provided every day of the week in maternity homes because of shortage of technical staff
C T Scan, Mammography	Provided at: Kamla Nehru Hospital	Provided at: Kamla Nehru Hospital

6.1. Primary health care facilities

Dispensaries run by PMC are the first point of curative health care in Pune. Keyservices provided in dispensaries includebasic health checkups including ANC checkups, immunizations, consultation and medicines for common ailments and referral services to appropriate health facilities. The following table provides a comparative analysis of themandatory functions of a U-PHC as per NUHM and the services provided at PMC dispensaries.

6.1.1. Services provided

Table 25 Comparison of services provided in dispensaries with NUHM norms

Functions in UHC as per NUHM	Current Situation as per Survey
OPD	Separate OPD room is present in all dispensaries.
Basic Lab Diagnosis	4 dispensaries and 8 maternity homes providediagnostic facilities.
Drug Dispensing	31 dispensaries have a pharmacy and pharmacist.
Contraceptive dispensing	Counseling and Contraceptive dispensing happens in 27 dispensaries and all maternity homes.
Counseling for communicable diseases	Done in most dispensaries
Counseling for non-communicable diseases	Referred to hospitals in most dispensaries
Distribution of health education material	Done in most dispensaries
Evening Hours	None of the primary or secondary health facilities function during evening hours.
Co-location of Ayush centers (optional)	Only 2 dispensaries have Ayurvedic OPD.
RCH II services	RCH is implemented through Family welfare centers which have outreach ANMs and nurse. None of the dispensaries have permanent or visiting gynecologist.
National Health Programs	RNTCP and NLEP are implemented in most dispensaries. NVBDCP is implemented in 18 dispensaries.
Collection and reporting of vital events and IDSP	Manual reports are maintained on key diseases.
Referral Services	Cases are referred to larger maternity homes, general hospital (Kamla Nehru Hospital) and district hospital (Sasoon Hospital)
Social Mobilization and community level activities	Outreach services and community level activities are not tied to dispensaries and are centralized under the RCH program.

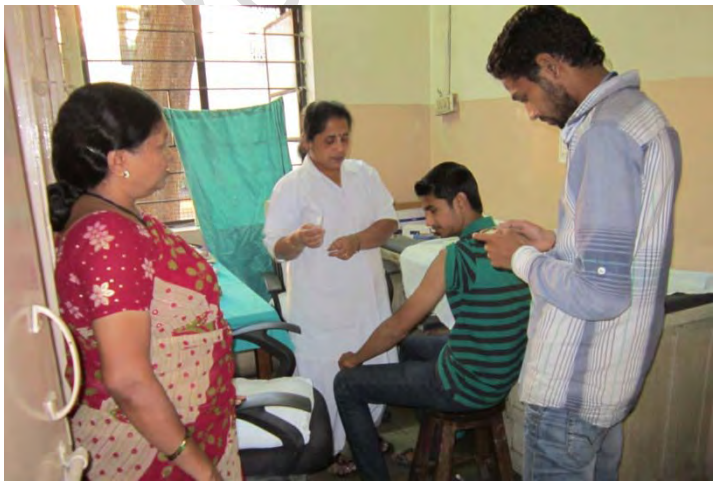
Key issues in provision of health services

- Delivery of only a few national programs such as TB and Leprosy control happens through the primary health facilities. Some programs are only partially implemented. For instance, under the Blindness Control Program, dispensing of vitamin A is done only in a few dispensaries. Most cases are referred to secondary and tertiary institutions.
- None of the primary health facilities function during evening hours. The general time for functioning of the OPD in all dispensaries is 9:00 am to 1:00 pm in the morning and from 1:30 pm to 5:00 pm in the evening. There is a need to extend the evening hours to allow patients to access health services without compromising on daily wages.
- Dog bites is a major issue in Pune and there are several cases reported daily. However most dispensaries do not provide treatment for dog bites.

- There is an increasing incidence of non-communicable and chronic diseases such as diabetes, heart problems, and hypertension in Pune, even among the urban poor. There is a need to integrate preventive and curative services for these diseases including regular check-ups, medicines and counseling.
- Some dispensaries do not have a pharmacy.Easy and efficient delivery of drugs needs to be strengthened in all primary health facilities.

Photograph 11Notice in a PMC dispensary indicating the day of immunization. Immunization is done in all PMC dispensaries

Photograph 12Phramacy at a PMC run dispensary



Photograph 13 Dispensaries provide treatment for common ailments

6.1.2. Staffing

The following table compares the staffing requirement of U-PHC as per NUHM norms with the sanctioned posts in PMC dispensaries.

Table 26 Comparison on staffing in dispensaries with NUHM norms

Staff Position	NUHM staffing standards for UPHC	Sanctioned positions in Dispensaries	Actual Staff in Dispensaries
Medical Officer	1	1	Medical Officer not available in NamdevGanujiShiverkar clinic. Mostmaternity homes have 2-3 doctors who also manage OPD services.
Multi Skilled Paramedic including Pharmacist/ Lab technician etc.	2	1	30 Dispensaries have Pharmacists. Four maternity homes have only 1 pharmacist and the rest have 2.
Program Health Manager	1		Not present in any dispensaries. 4 Maternity homes have program health manager.
Multi Skilled Nurse	2	1	Minimum of 1 staff nurse present in 31 dispensaries. 2 dispensaries don't have nurses.
ANMs	4	1	11 dispensaries don't have any ANMs. 12 Dispensaries have only one ANM. Only 3 dispensaries have 4 ANMs.
Secretarial staff including Account Keeping	1	1	Only seven Dispensaries have a statistical analyst.
Support Staff	3		Only 2 to 3 is dispensaries have support staff like sweeper and security guard.
Aaya	0	1	5 to 6 dispensaries have other supporting health staff such as aayas.

Photograph 14 All dispensaries have one Medical Officer

Key issues in staffing of dispensaries

- Medical staff in several dispensaries expressed the need for more than one medical officer in some dispensaries which have high patient loads.
- There is a shortage of paramedical staff like nurses, ANMs and support staff like sweepers, security guards etc.
- Since there is shortage of staff at all levels, PMC dispensaries require substitute doctors/ nurse/ lab technicians frequently.However substitute staff is not available every time when needed.
- Currently very few dispensaries have allotted positions for program health managers. There is a need for mainstreaming health management into curative service delivery.
- Dispensaries do not have any outreach workers associated with them.

6.1.3. Infrastructure and equipment

The PMC run dispensaries in Pune are in good condition and are fairly well maintained. Most of these operate from standalone government buildings with access to adequate light and ventilation. The following table compares the infrastructure requirements of primary health centersas per NUHM norms and the current condition of PMC health facilities.

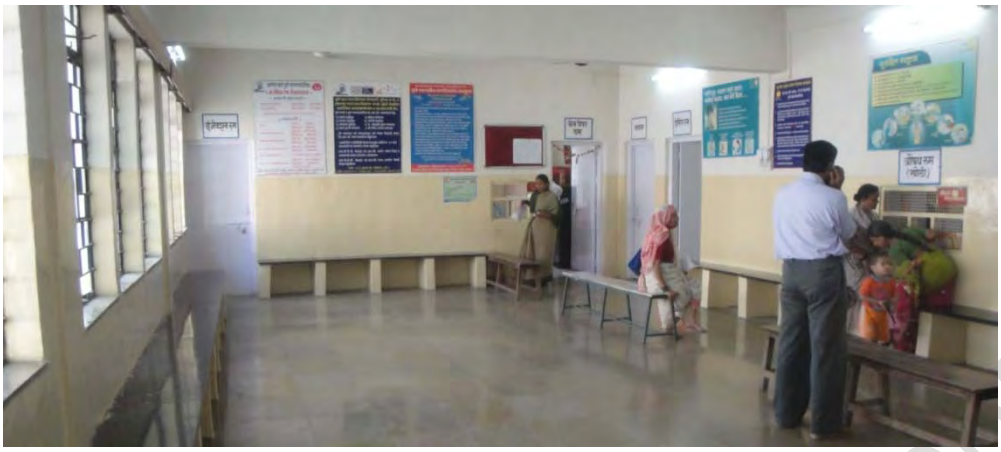
Table 27 Comparison of infrastructure in dispensaries with NUHM norms

Infrastructure requirements	Current Situation
Consultation room	Present in all dispensaries
Dressing and treatment room	Not present in most dispensaries
Medicine room	30 dispensaries have dedicated room for medicine storage and dispensing.

Medical equipment and instruments	General equipmentis present.
Examination Table	Present in most dispensaries.
Drinking water source	25 dispensaries have a drinking water facility while 7 dispensaries don't have. Many dispensaries do not have a municipal water connection and drinking water is arranged from other sources.
Hand wash facility	29 dispensaries have hand wash facility but many of them do not have continuous running water.
Toilets for patients and staff	32 dispensaries have toilets; however separate toilets for men and women are not there. There are also no separate toilets for patients in most cases. Lack of sufficient toilet facilities has been expressed by most.

Key issues in primary health infrastructure

- In most dispensaries, the number of toilets is not sufficient. There is a need for separate toilets for men and women patients. The upkeep and maintenance of toilets is poor due to shortage of support staff.
- A few dispensaries do not have drinking water facility especially for patients.
- Furniture in waiting areas is not maintained. Some of the dispensaries have waiting areas in the corridor. There is a need to have segregated waiting areas for patients with infectious diseases.
- Some of the dispensaries are very small and congested with severe space constraints.
- Electricity power back-up is not available in any of the dispensaries.
- Several dispensaries share premises with other government facilities which are sometimes notsuitable for a health facility. Some dispensaries are located next to public toilets without proper screening. Appropriate location of health facilities facilitates easy access to health services.
- Basic emergency equipment such as oxygen masks and drip equipment should be made available at the dispensaries.
- None of the facilities have computerized data recording. Manual maintenance of records is tedious and time consuming.
- Signage and display boards in some dispensaries are old and worn out and need to be upgraded. Additionally, dedicated space is required to display IEC and health educational material.
- Most dispensaries do not have enough space to integrateor co-locate Ayush facilities
- Appropriatestorage facility for medicines including cold storage is lacking in some dispensaries.
- The newly added 7 dispensaries do not have sufficient infrastructure and most parts of the building are non functional.



Photograph 15 Waiting area and drug dispensing in AnandibaiGadgil Dispensary

Photograph 16 Examination room in Rohidas Kirad Dawakhana

Photograph 17 Dispensaries such as Kondiba located in central city such are cramped and short of space.

6.1.4. Proximity of dispensaries and maternity homes to slums

According to the NUHM guidelines one Urban Health Centre should be available for every 25,000 slum population. Special consideration should be given to the projected slum population and the migratory population settled in slums. The urban health centers should preferably be in close proximity of slums and should be easily accessible by slum dwellers. Similarly outreach services should be put in place with one ANM for every 10,000 urban population and one ASHA for every 2500 slum population.

The following table compares the number of existing primary health care facilities and outreach staff in Pune with the NUHM norms.

	Required Urban Primary Health Centres (One for 50000 population)		
Total Population of Pune City(2011)	**Required number of U-PHCs**	**Actual**	**Gap**
3115431	62	50 (34 Dispensaries+ 16 OPD in Maternity Homes and Hospital)	**12**

The number of primary health centers in Pune is less than what is required as per NUHM norms. Interviews and consultations with dispensary staff as well as patients revealed that there is a significant load on existing facilities and hence the waiting times in the dispensaries are very long. There is a need to establish more primary centers in the city to provide prompt and efficient health services to the urban poor.

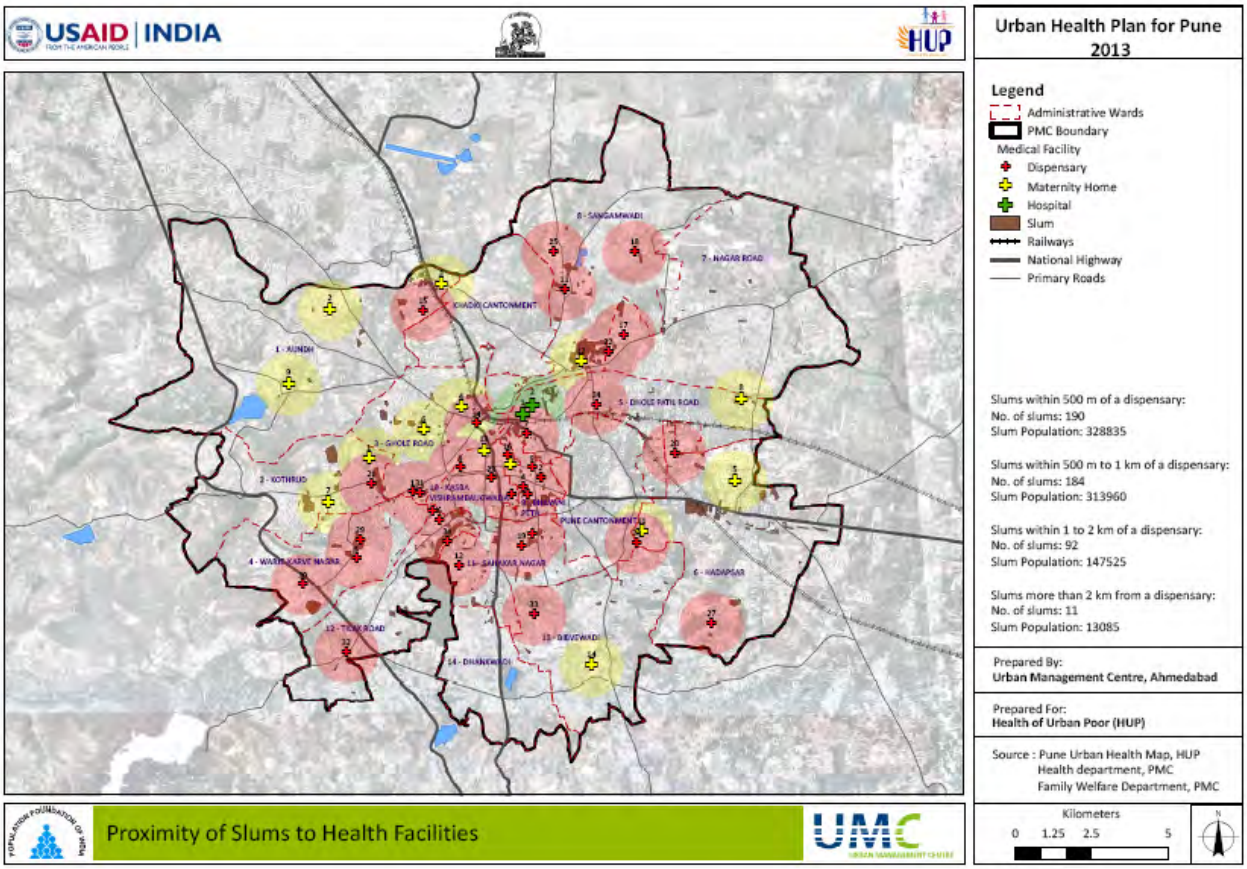
To assess the proximity of slum dwellers to these primary health centers, all dispensaries as well as maternity homes and hospitals providing OPD serviceswere marked on the city map. A buffer of 1 KM radius (Assumed Accessible Distance to a health facility)(Map 17)was generated around each primary health facility. All slums within 1 km, between 1-2 km and more than 2 km from a health facility were identified. This spatial analysis helped identify the percentage of slum population not within a proximate distance from a health facility. The mapping also helped prioritize locations in the city where new centers need to be established

Map 17 highlights a catchment area of 1KM around dispensaries and maternity homes and slums that fall in this catchment. The results of the spatial analysis indicate that a little over forty per cent of slum population in Pune has access to a primary health facility within proximity of 500meters. Another forty percent has a health facility located within a distance of one kilometer. However close to twenty percent of the city's population has to travel more than a kilometer to access a primary health care facility.

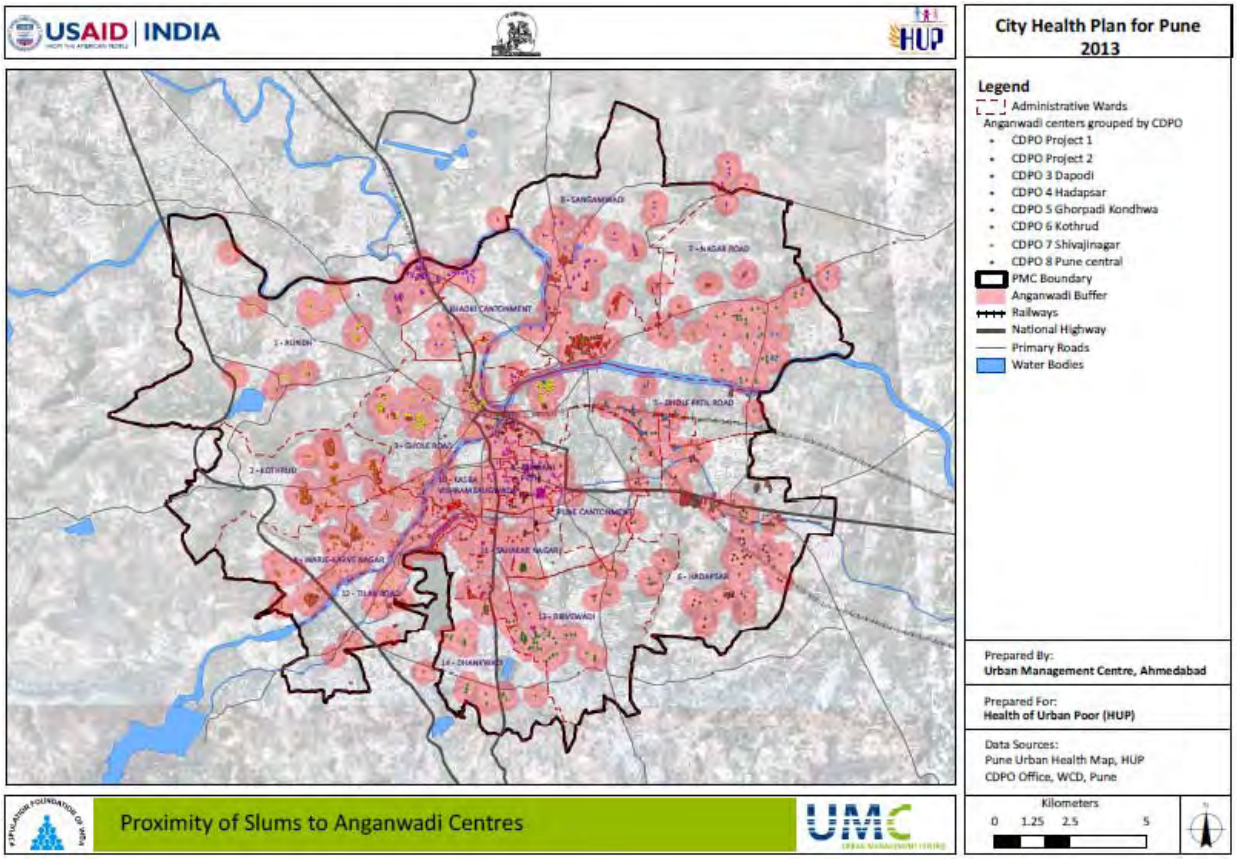
Table 28 Proximity of Slums to Primary Health Care

Distance of health facility from slums	Slum population	% of slum population
0.5 km	328835	41
0.5 - 1 km	313960	39
1 - 2 km	149625	18
>2	13085	2

A similar proximity analysis was carried out for Anganwadi which is illustrated in **Map 18**. The results indicate that most slums have an Anganwadicentrewithin a walking distance of 500 meters.



Map 17 Proximity of slums to health care

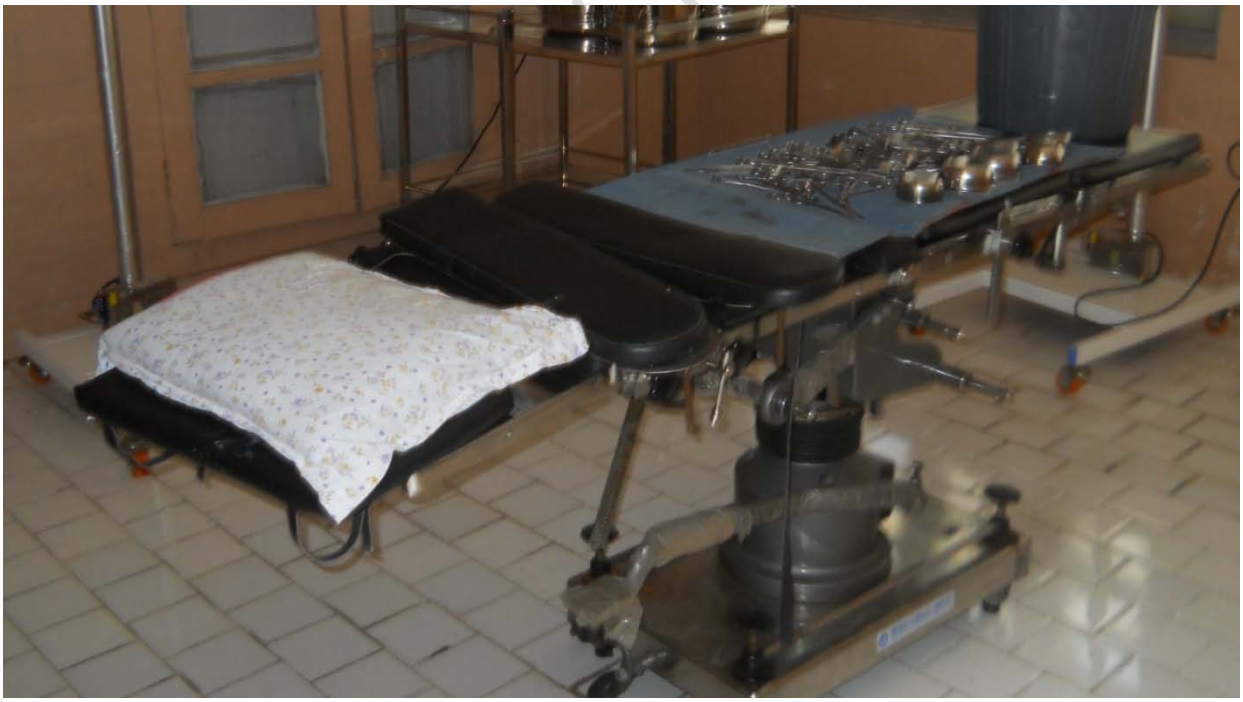


Map 18 Proximity of slums to anganwadis

6.2. Secondary and tertiary health care

The key issues in secondary healthcare services as identified in the stakeholder consultation meetings as well as through the rapid facility assessment are listed below:

- There is only one general hospital in the city which has a high patient load. There are 14 maternity homes which cater only to normal delivery cases. C-section deliveries and complicated cases are referred to the Sasoon Hospital which is the district hospital. There is a need to strengthen the maternity homes to be able to handle complicated cases of delivery as well.
- There is also a need for smaller decentralized secondary level health facilities with in-patient wards and facilities for minor surgeries and hospital care.
- The number of wheelchairs and stretchers in maternity homes is insufficient. Several medical officers expressed the need to install elevators in maternity homes to ease the transfer of patients.
- Need for intercom and announcement system facilities for emergency and trauma department at Kamla Nehru Hospital.
- The Sonography/ ultra sound, facilities currently available in the city through the PMC heath department are insufficient.
- There is a need for separate staff room/ locker rooms for the hospital staff at Kamla Nehru General Hospital as well as in maternity homes.



Photograph 18 Minor OT in Anna Magar Hospital

6.3. Overall staffing gap in PMC Health Department

The following table presents the total staffing gap in the PMC health department based on current and allotted positions.

Table 29 Staffing Gap in PMC based on current allotted positions

Post	Allotted Number	Currently Working	Vacancy	% Vacant
Medical Officer/ Residential Medical Officer	110	102	8	7.27
Ayurvedic Medical officer	21	16	5	23.81
Bio-chemist	4	4	0	0
Radiographer	6	5	1	16.67
Stuart	5	4	1	20
In charge Pharmacist	2	2	0	0
Pharmacist	75	67	8	10.67
Matron	3	3	0	0
Senior Nurse	25	23	2	8
Junior Nurse	113	99	14	12.39
Operation Nurse	239	223	16	6.69
Leprosy Technician	2	1	1	50
Junior Technician	21	20	1	4.76
Lab Technician	8	5	3	37.50
V.K.S (writer)	39	31	8	20.51
Darkroom Assistant	4	2	2	50
Tailor	3	3	0	0
Cook	2	2	0	0
Cook Mate	2	2	0	0
Nursing Orderly	164	159	5	3.05
Theatre Assistant	9	8	1	11.11
Aaya	167	137	30	17.96
Dhobi	2	2	0	0
Ambulance Cleaner	6	5	1	16.67

(Health Department, PMC, 2012)

6.4. Overall assessment as per NUHM guidelines

Table 30 Assessment of health services as per NUHM guidelines

	Community Outreach		Urban Primary Health Centre		Referral Centres	
Services	**NUHM guidelines**	**Extant situation**	**NUHM guidelines**	**Extant situation**	**NUHM guidelines**	**Extant situation**
Maternal health	Registration, ANC, identification of danger signs, referral for institutional delivery, follow-up Counseling and behavior promotion	Implemented under the RCH program through Family Welfare centres and ICDS program at Anganwadi	ANC, PNC, initial management of complicated delivery cases and referral, management of regular maternal health conditions, referral of complicated cases	Not happening in most dispensaries. Services being provided at FWC and maternity homes.	Delivery (normal and complicated), management of complicated gynaec/maternal health condition, hospitalization and surgical interventions, including blood transfusion.	Complicated cases are not dealt in most maternity homes and are referred to the district (Sasoon) hospital.
Family welfare	Counseling, distribution of OCP/CC, referral for sterilization, follow-up of contraceptive related complications	4 ANMs in each of the 29 Family welfare centres and the 152 LV under RCH program do the outreach for family planning	Distribution of OCP/CC, IUD insertion, referral for sterilization, management of contraceptive related complications	Done in most dispensaries, maternity homes and family welfare centres.	Sterilization operations, fertility treatment	Services provided in some maternity homes and Kamla Nehru Hospital.
Child health and nutrition	Immunization, identification of danger signs, referral, follow-up, distribution of ORS, pediatriccotrimoxazole post-natal visits/counseling for newborn care	Services provided at Anganwadis under the ICDS program.Immunizationcamps organized in slums periodically.	Diagnosis and treatment of childhood illnesses, referral of acute cases/ chronic illness Identification and referral of neonatal sickness	Immunization is done in dispensaries and maternity homes. Treatment of common ailments done. Only 1 dispensary and 7 maternity homes have a Pediatrician. Only one maternity home has SNCU.	Management of complicated pediatric/neo-natal cases, hospitalization, surgical interventions, blood transfusion	Although some facilities are provided in Kamla Nehru Hospital, most cases are referred to Sasoon Hospital.
RTI/STI (including HIV/AIDS)	Symptomatic search, referral, community level follow-up for ensuring adherence to treatment regime of cases undergoing treatment	No outreach under PMC.	Diagnosis and treatment, referral of complicated cases	Counseling and treatment is done in 7 dispensaries, all maternity homes and ICTC centers.	Management of complicated cases, hospitalization (if needed)	Services provided in KamlaNehru and Naidu Hospital.
Nutrition deficiency disorders	Height/weight measurement, Hb testing, distribution of therapeutic doses of IFA, promotion of iodized salt, nutrition supplements to identified children and	Services provided at Anganwadicentres.	Diagnosis and treatment of seriously deficient patients, referral of acute deficiency cases. Early identification of mild and severe under-nutrition,	Counseling at dispensaries and treatment at maternity homes.	Management of acute deficiency cases, hospitalization	Services provided in Kamla Nehru Hospital.

	Community Outreach		Urban Primary Health Centre		Referral Centres	
Services	**NUHM guidelines**	**Extant situation**	**NUHM guidelines**	**Extant situation**	**NUHM guidelines**	**Extant situation**
	pregnant/ lactating women Promotion of breast feeding, complementary feeding for prevention of under-nutrition.		counseling for optimal feeding practices or referral			
Vector-borne diseases	Slide collection, testing using RDKs, DDT ,chemical, biological larvicidesetc. Counseling for practices for vector control and protection	Ward level field inspectors collect samples of suspicious cases.	Diagnosis and treatment, referral of terminally ill cases	18 dispensaries and 11 maternity homes provide treatment.	Management of terminally ill cases, hospitalization	Services provided in Kamla Nehru Hospital..
Mental Health	Case detection and referral, counseling, rehabilitation	Campaigns organized by PMC health department intermittently	Diagnosis and treatment	Counseling done in 2 dispensaries and 1 maternity home.	Psychiatric and neurological services, including hospitalization, if needed	Psychiatrist services available in Kamla Nehru hospital.
Oral Health	Basic dental education, screening for precancerous lesions, referrals	No outreach	Diagnosis and treatment	4 to 5 dispensaries and 3 maternity homes have dental services.	Management of complicated cases, hospitalization	Services provided in Kamla Nehru Hospital.
Hearing Impairment/ Deafness	Early detection and awareness for preventive steps/actions, referral	No outreach	Diagnosis and treatment	Referral to Kamla Nehru Hospital.	Management of complicated cases, hospitalization (if needed)	Treatment in Kamla Nehru Hospital.
Chest infections (TB/ Asthma)	Symptomatic search and referral, ensuring adherence to DOTs, other treatment	28 health workers under TB program doing outreach.	Diagnosis and treatment, referral of complicated cases (MDR, reactions, terminal illness)	Diagnosis and treatment providedthrough dispensaries and DOT centres.	Management of complicated cases	Treatment in Kamla Nehru, Naidu Hospital and district chest hospital in Aundh.
Cardio-vascular diseases	BP measurement, symptomatic search and referral, follow-up of under treatment patients	No outreach	Diagnosis and treatment, emergency resuscitation, referral of cardiac emergencies cases	Preliminary checkup in 5 dispensaries and 3 maternity homes and referrals to hospitals. Specialist visit in one dispensary.	Management of emergency cases, hospitalization and surgical interventions (if needed)	Services provided in Kamla Nehru Hospital..
Diabetes	Blood/urine sugar test (using disposable kit), symptomatic search and referral, follow-up of under-treatment patients	No outreach	Diagnosis and treatment, referral of complicated cases	Preliminary checkup in 5 dispensaries and 3 maternity homes and referrals to hospital. Specialists visit in one dispensary.	Management of complicated cases, hospitalization (if needed)	Services provided in Kamla Nehru Hospital.

	Community Outreach		Urban Primary Health Centre		Referral Centres	
Services	**NUHM guidelines**	**Extant situation**	**NUHM guidelines**	**Extant situation**	**NUHM guidelines**	**Extant situation**
Cancer	Symptomatic search and referral, follow-up of under treatment patients	No outreach	Identification and referral, follow-up of under-treatment patients	Referred to KamlaNehru and Sasoon Hospital.	Diagnosis, treatment, hospitalization (if and when needed)	Services provided in Kamla Nehru Hospital.
Trauma care (burns & injuries)	First aid and referral	No outreach	First aid , emergency resuscitation, documentation for MLC (if applicable) and referral	24 dispensaries and all maternity homes provide first aid. Only 2 dispensaries and 1 maternity home have emergency room.	Case management and hospitalization, physiotherapy and rehabilitation	Services provided in Kamla Nehru Hospital.
Other surgical interventions	not applicable	No outreach	Identification and referral	Referred to KamlaNehru and Sasoon Hospital.	Hospitalization and surgical interventions	Services provided in Kamla Nehru Hospital.
Other support services						
IEC/BCC	IPC, Health Camps/fairs, performing arts, wall/poster writing, events (in schools, women's groups)	PMC health department organizes events and campaigns with the help of outreach workers	Distribution of health education material	Health education material displayed in dispensaries. Some material distributed.	Distribution of health education material	Health education material displayed in hospitals. Some material distributed.
Counseling	Individual and group/family counseling – HIV/AIDS/Mental disorders/stress management/Tobacco/Alcohol. Substance abuse	Camps are organized sometimes.	Patient/attendant counseling	Done in all dispensaries when patient come.	Patient/attendant counseling	Services provided in Kamla Nehru Hospital.
Personal & Social Hygiene	IEC on hygiene, community mobilization for cleanliness drives, disinfection of water sources, etc.	Camps are organized regularly.	NA		NA	

6.5. Slum dwellers perception of government health care

The focus group discussions conducted with slum dwellers to assess health seeking behavior among urban poor revealed the following issues and barriers with regards to government health care in Pune:

- Government facilities have a long waiting time. Lot of time is also taken to find the case papers.Wages for one work day have to be compromised in order to visit government health facility.
- Not all medicines are available at the government pharmacy and the patients are asked to buy from outside.
- Behavior of medical staff towards patients is not very friendly. Detailed information about the illness is not provided to the patient.
- Many times the doctors in the dispensary are not available. Temporary or replacement doctors are not aware of the history of the patient.
- The timings of government facilities are not very suitable. The dispensaries are not open during evening hours. Also the medical staff does not come on time.
- Most slum dwellers are not aware of the dispensaries closer to their homes and approach the OPD in the maternity homes or other secondary and tertiary facilities for their medical needs. Distance of secondary facilities from the slums is often longerincreasing the travel time and expense.
- Not all the facilities are kept very clean. Most of the slum dwellers have rated the cleanliness as poor or average.
- Very few slum dwellers have reported that they are aware of health outreach workers visiting the slums.
- Routine Immunization does not happen in slums. Most slum dwellers go to the dispensaries for children's vaccination.

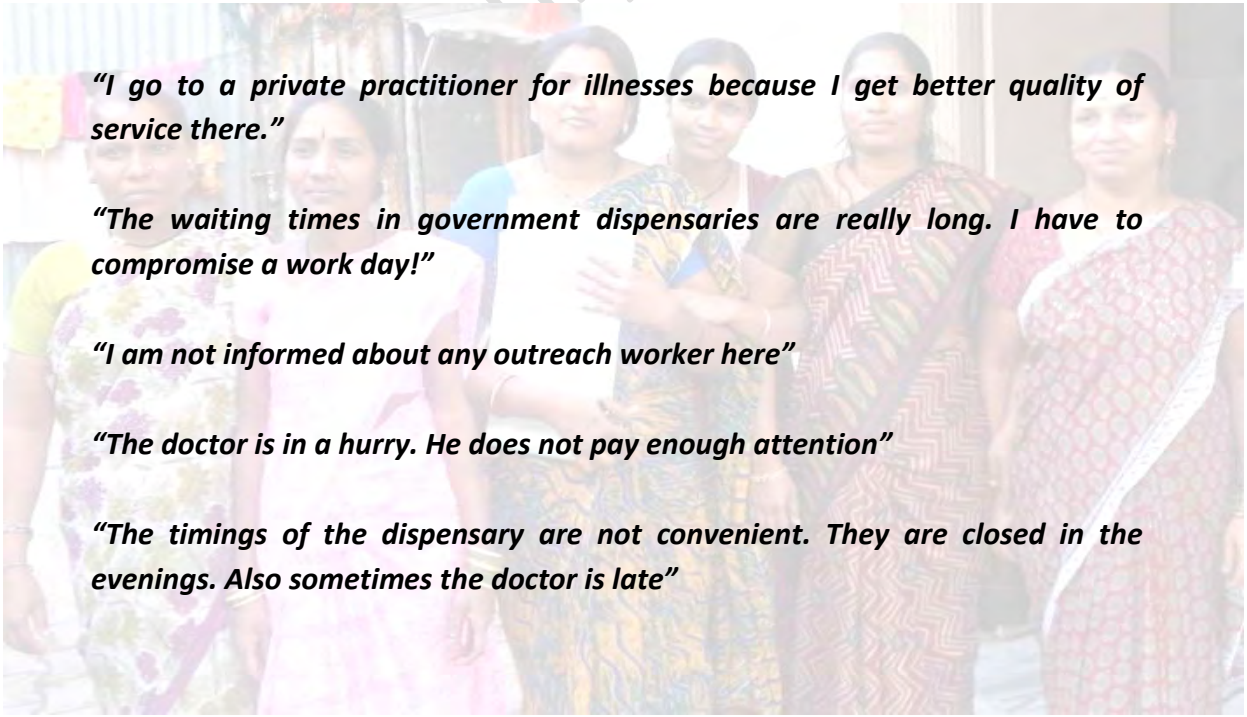


Figure 34 Quotes from FGD: sum dwellers perception of government health care

The following graph presents a summary of different health care facilities that slum dwellers access in the 25 slums wherea total of 27 focus group discussions were conducted:

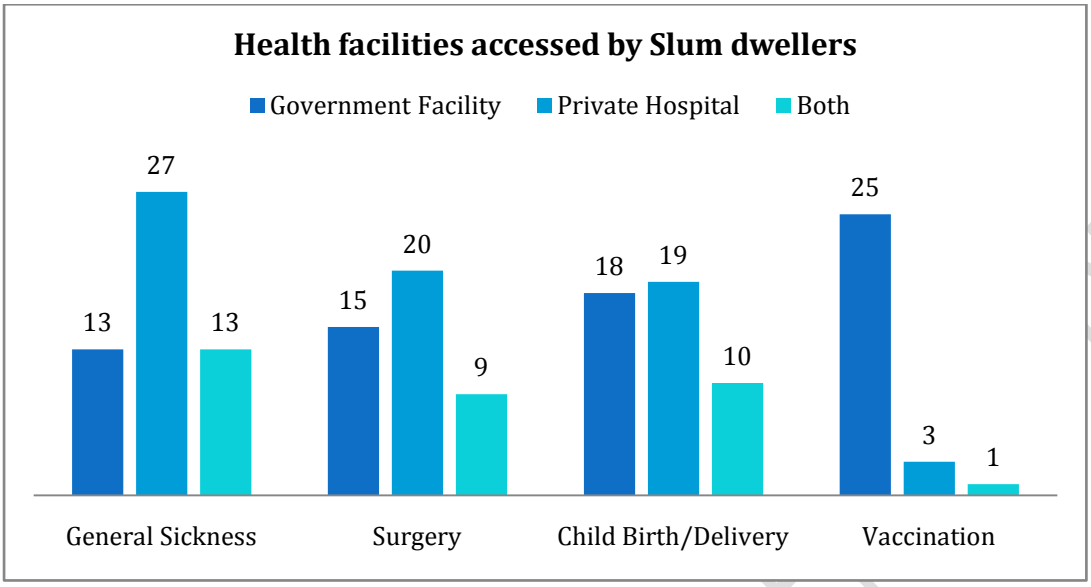


Figure 35 Health facility accessed by slum dwellers

For general sickness, slum residents largely visit private clinics or local health practitioners. The reasons for not accessing government health facilities are reported as -longer distances, lack of quality of service and attention and long waiting times.

For surgery, slum residents are accessing both government and private hospitals. The reasonsattributed for availing government facilities for surgery is reported to be cost effectiveness.

For child birth/ deliverymost slums residentsavail government health facilities. Proximity and cost effectiveness are the major reasons for availing delivery services at PMC maternity homes. However, there are no ambulance services available to take pregnant women from slums to and from the maternity homes.

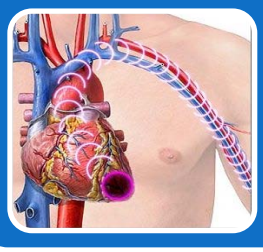
For immunization and pediatric care, most slum residents access the PMC run dispensaries government because of there is an established schedule for vaccination, cost effectiveness and ease of access. Immunization is not being undertaken at Anganwadis or at health camps organized in slums.

Improvement Plan

7. Summary of key heath needs for Pune

At the stakeholder consultation with PMC health departmentofficers, doctors, technicians and field staff, the following areas were identified as priority areas for improving the health of urban poor in Pune:

Rationalization and strenghtening of primary, secondary and tertiary health facilities



Focus on non-communicable, chronic and lifestyle diseases in addition to RCH and communicable diseases.

5% of PMC budget (excluding salaries) to be allocated to health sector

Augment the provision of subsidized sonography facilities either through investment in new equipment or partnerships with private providers.

Focus on preventive health services such as better nutrition through the ICDS program.

8. Institutional structure for health services delivery

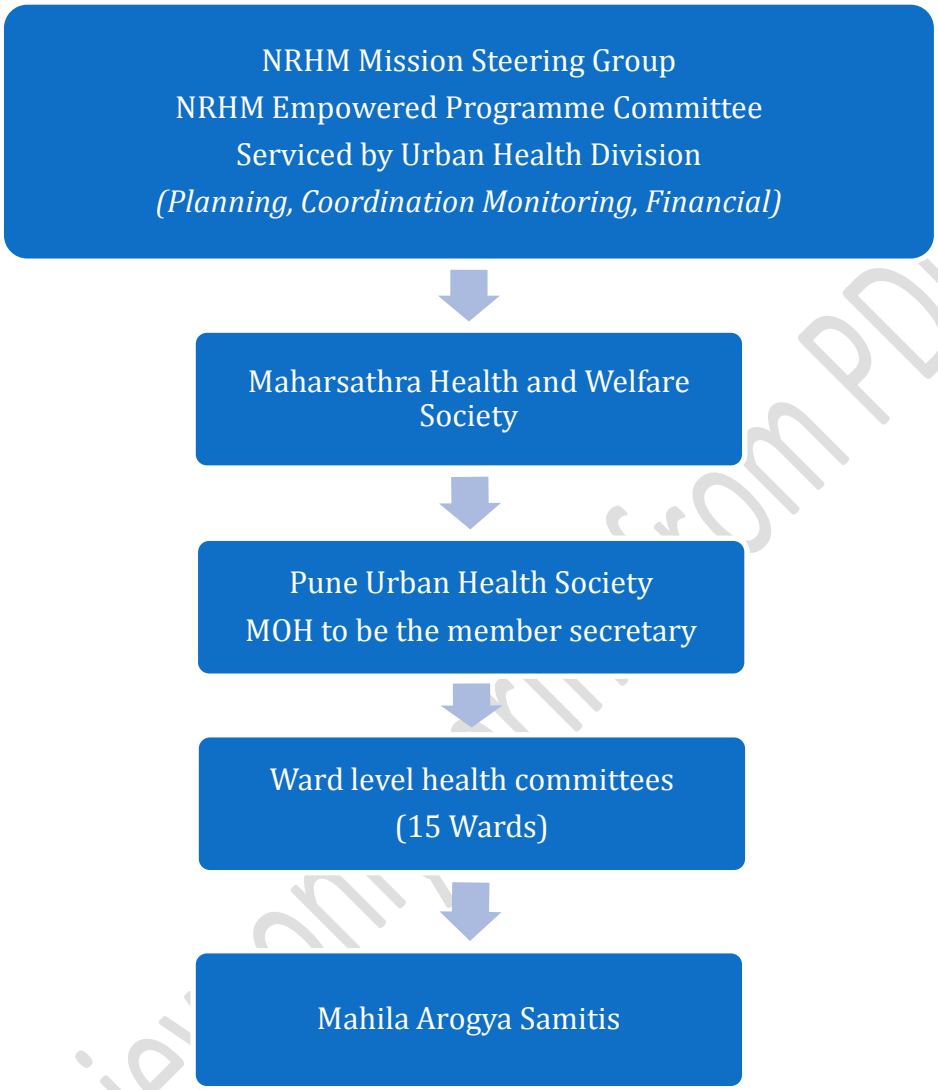


Figure 36 Institutional Structure of Health Delivery in Pune

8.1. Strengthening the city health society

For better monitoring and implementation of health programs in Pune, it is recommended that an Urban Health Society (currently functioning as Integrated Health and Family Welfare Society of PMC) be strengthened and centralize all national health programs as well as PMC's health programs through this Society in conformity with the NUHM guidelines. This would help in better monitoring and implementation of the programs. All the urban health centres and health staff would work under this Urban Health Society. Central Government funds disbursed through the State Government as well as PMC's budgetary allocation will be allocated to the Urban Health Society. All the expenses, including salaries of health workers, would be centralized and paid through the Urban Health Society.

The structure of the proposed health society is as follows:

- **City Urban Health Mission**

The city urban health mission would be the apex policy decision making authority of the proposed Urban Health Society. It would be headed by the Mayor of PMC as the Chairman of the committee. The other members of the board would include Dy. Mayor, Municipal Commissioner, Standing Committee Chairman, Chairman-Health Committee, School Board, Leader of Opposition Party, Medical Officer of Health and Nodal Program officers of RCH, RNTCP, AIDS, NVBDCP. The health mission will guide the decisions of the Governing Board and the Executive Committee.

- **Governing Board**

The governing board would be the body responsible for all budgetary decisions and sanctions and where inter-departmental convergence between health, slum improvements and wat-san issues would be undertaken. This board would be headed by the Municipal Commissioner with the Addl. Municipal Commissioner (general) as the Vice-chairman. The other members will potentially include Dy. Commissioner –Slum Improvement and UCD, Jt. Municipal Commissioner-SWM, Medical Officer of health (MOH), nodal program officers, Dy. MOH, Asst. MOH, Suptt. Engineer-Water Supply and Sewerage, President of the Pune chapter of the Indian Medical Association etc.

- **Executive Committee**

The Executive Committee would be responsible for actual implementation of various health programs. The Committee will be headed by the Addl. Municipal Commissioner (general) with the MOH as the Member Secretary and two dy. MOH as technical coordinators, one for all national programs and one for licenses, registration etc.

- **Programmatic Sub Committees**

The executive committee would have sub-committees for each national program service delivery. The Dy. MOH would serve as chairman in these committees and the nodal officer would be the member secretary of the respective committees.

For improved inter-sectoral coordination, it is also proposed to have representation from program officer from ICDS program in the committee. There would be specific programmatic sub-committees which each would be headed by the CMHO as its Chairman and Program officers as member secretaries.

- **Cross cutting: IDSP Unit**

For better coordination and transparency among the programs, a Corporation Health Management Unit has been proposed within the PMC. The management unit would be decentralized to the four zonal levels. This unit would also assist in implementation of the Health MIS.

The nodal Corporation Health Management Unit would be headed by a Health Program Coordinator who will be a person qualified in Public Health Management. It would also have an accounts Officer with degree in MBA Finance/ Chartered Accountancy/ Masters in Commerce, a monitoring and evaluation assistant and a data entry operator.

The management unit would also be responsible for all human resources issues viz.- recruitment, training, reviews etc. and administrative issues such as handling accounts of the health department.

The proposed model for the Urban Health Society is described below:

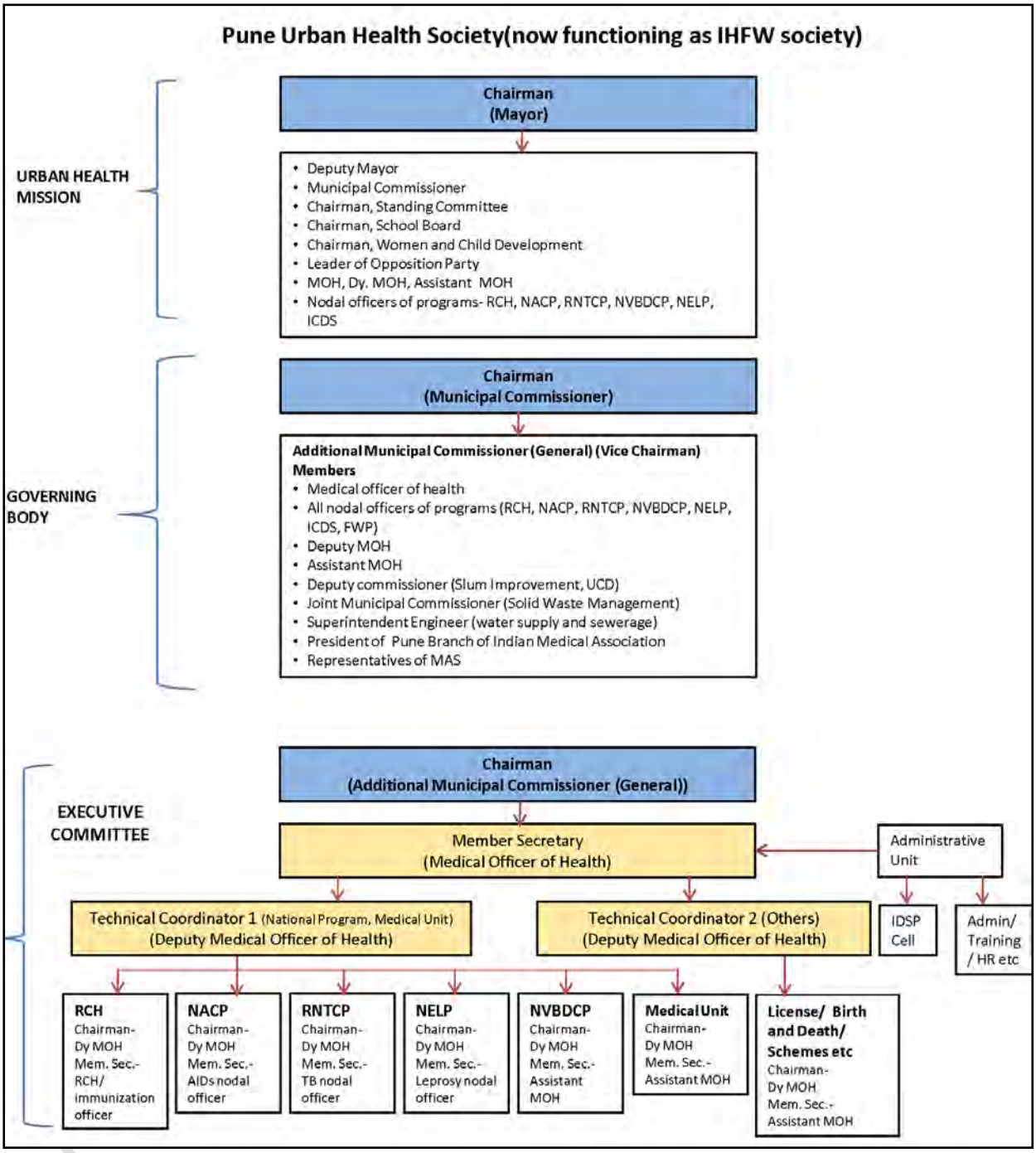


Figure 37 Proposed Structure of Pune Urban Health Society

At the ward level, it is also recommended to form a ward committee. This ward committee could be similar to the ones proposed under mandatory reforms of the JNNURM. The same committee should at-least include ward medical officer, health officer for SWM, CDPO, officials for water and sanitation and UCD. The ward committee would help in prioritizing areas for improvements, taking local actions, inter-departmental convergence at the ward level, schedule and locations for urban health and nutrition days. The same committee would also aid in preparation of ward level budgets for these sectors.

At a UHC level, it is recommended to have dedicated ANMs for monitoring the outreach programs by ASHAs and to run the urban health and nutrition days.Each ANM would supervise 3-4 ASHAs. It is also recommended to delineate work areas (geographically and population wise) to each link worker. This would ensure quality outreach and reduce duplication of efforts.

Each of the extant 890 Anganwadis in the city would be linked with specific ASHAs. This would streamline the planning and implementation of the urban health and nutrition days and strengthen referral linkages as well.

9. Strengthening urban health services

The assessment of extant health care delivery system in Pune indicates a preference towards private practitioners and secondary and tertiary institutions even for common ailments. The key reasons behind this are perceived lower quality of care in public sector dispensaries as well as unavailability of primary care in some parts of the city. The following plan of action is proposed for rationalization of health facilities in Pune to make primary as well as secondary health care more accessible to slum dwellers:

9.1. Improving primary health care

- 12 new urban health centers should be established in the city to ensure equitable distribution of facilities in each of the 15 wards and to ensure service delivery to the fringe areas of the city.
- All existing dispensaries should be upgraded to the U-PHC standards with diagnostic facilities, technical support staff and proper medicine dispensing facilities. 20 facilities have been targeted for infrastructure upgradation over a period of 5 years.The renovation and up-gradation of UHCs will potentially include expansion, design changes, partitions, improved day-lighting, structural changes, new doors-windows (where needed), painting, electrical changes, new furniture, construction of toilets (where needed), adequate drinking water facilities, construction of parking spaces, proper waste disposal systems, boundary walls etc. Following 6 dispensaries are identified for upgradation in the first year based on the facility survey.
    - KondibaDavakhana
    - DadasahebGaekwadDavakhana
    - Siddhartha Davakhana
    - GalandePatilDavakhana
    - RjrshiShahuMaharajDavakhana
    - Anna BhauSatheDavakhana

- The timings of the primary health facilities should be revised. All facilities willhave the provision of an evening OPD to improve access to slum residents.
- Each urban primary health center should be allotted dedicated outreach staff in the form of 2-3 ANMs and 10-12 ASHAs based on the location of the U-PHC.
- Referral linkages with the maternity homes, PMC hospital and the district hospital will be streamlined.
- It is proposed that health workers under different programs such as RCH, Malaria control etc. be brought under one umbrella and an integrated system of trained multipurpose workers and community link volunteers be put in place. The salaries of all government employed smedical staff and health workers under different programs at same posts are proposed to be flattened.
- The location of the health facilities need to be rationalized based on slum concentration in the city, or there is a need to strengthen outreach in the slums. GIS analysis indicates that there is overlap of services in some areas and in others there is no health center in proximity of slums.
- Currently, the delineation of area of PMC for the RNTCP program does not conform with either the ward or zonal boundaries of PMC. The jurisdiction of TB units (one for 5 lakh population) should coincide with PMC administrative wards and the reporting of cases of TB should also be done in accordance with the PMC administrative wards.

9.2. Upgradation of maternity homes to CHCs

Because of the widespread development of Pune, one secondary level facility is also required in each of the zones. One maternity home in each zone should be upgraded to a 30-50 bedded urban CHC with inpatient facility for both males as well as females. TheU-CHCs should provide facilities for minor surgeries as well as admission of patients requiring medical supervision. The recommended maternity homes to be upgraded to U-CHCsbased on spatial distribution are:

Zone 1: SahdevEknathNimhan Maternity Home,
Zone 2: SakharamKundalikKodre Maternity Home
Zone 3: Sonwane Maternity Home
Zone 4: MinataiThakare Maternity Home

9.3. Rationalization of health facilities

From the table below, it can be seen that there is no health facility in Dhanakawadi ward where 6 primary health facilities are required as per norms. Similarly, Kothrudalso has lesser number of health facilities than required. Warje-Karve Nagar, Tilak Road, Sahakar Nagar, Dhanakawadi and Nagar road have no maternity homes or referral units which are essential. Primary health facilities are lacking in Aundh, Kothrud, Dhanakawadi and Bibvewadi, as highlighted in red.

Table 31 Ward wise rationalization of primary health facilities

Zone	Wards	Population (2008-09)	Population (2011 projected)	Required no. of Primary Health Facility by Population(1 for 50000 population)	Existing Number of Dispensaries	Existing Number of Maternity Homes and Hospitals	Total no. of existing OPDs
Zone 1	Aundh	179886	207792	**4**	1	3	**4**
	Kothrud	204316	236012	**5**	1	2	**3**
	Ghole Road	201527	232790	**5**	2	2	**4**
	WarjeKarve Nagar	116985	135133	**3**	3	0	**3**
Zone 2	Dhole Patil Road	100059	115581	**2**	2	3	**5**
	Nagar Road	154425	178381	**4**	3	0	**3**
	Sangamwadi	213718	246872	**5**	3	1	**4**
Zone 3	BhavaniPeth	218306	252172	**5**	4	0	**4**
	KasabaVishrambaugwada	251100	290053	**6**	4	2	**6**
	Sahakar Nagar	161665	186744	**4**	3	0	**3**
	Tilak Road	211103	243851	**5**	4	0	**4**
Zone 4	Hadapsar	205009	236812	**5**	3	2	**5**
	Bibvewadi	239532	276691	**6**	1	1	**2**
	Dhanakawadi	239370	276503	**6**	0	0	**0**
Total		2697001	3115387	**62**	34	16	**50**

10. Disease surveillance and health data management

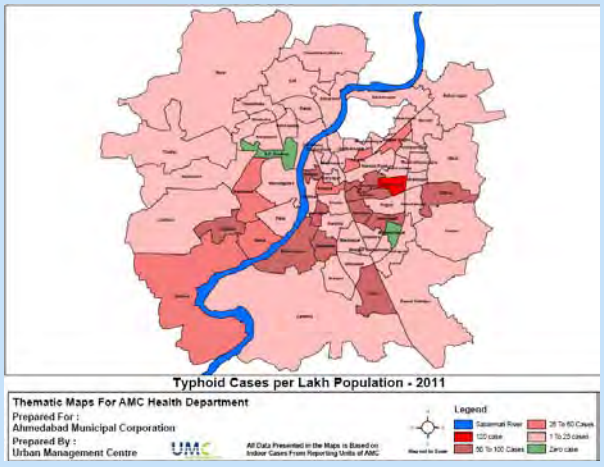
Pune has a strong zonal and ward level administrative structurewhere various environmental health services like solid waste management are implemented. The implementation and monitoring of vector borne disease control (i.e. malaria and dengue) are also implemented at ward level. The morbidity data from various dispensaries and private hospitals is reported to the IDSP cell of Pune. This data however does not get segregated ward-wise. Cases are monitored at city level and not at ward level.

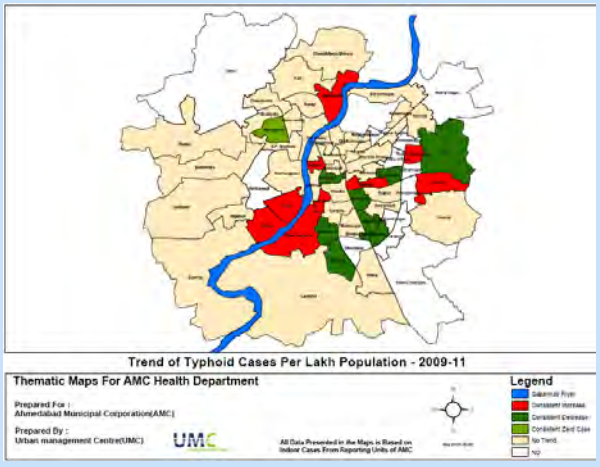
It is important to gain better understanding of morbidity profile at the ward level and take preventive and corrective actions there. Hence, it is strongly recommended that the data pertaining to disease incidence should be reported and maintained ward-wise. It is also suggested that a GIS based application be integrated into the disease surveillance unit to analyze health data spatially and develop a system of reporting alerts and incidence of diseases on a regular basis. Integrating readily available mobile technology with the disease surveillance system could be used as effective and efficient way to improve health related outreach services in the city.

Pune is one of the 33 cities selected world wise to be receiving IBM's smarter city challenge 2012 grants. The purpose of this is to provide easy access to data to citizens, elected officials, in house staff and leading to better decision making. IBM would develop a system that would help monitoring of health care at ward level.

Ahmedabad Ward Wise Monitoring System

Ahmedabad Municipal Corporation administrative ward boundaries co-inside with election wards which are 64 in number. Each of these 64 wards has at least one urban health centre (UHC) and hence one medical officer (MO). This has ensured consistent spatial distribution of primary health facility across the city. Moreover, disease outbreak/incidences record of each ward is maintained by the medical officer. This is reported to the Municipal Corporation health department as a ward level entry, thus helping to identify the most affected ward. Spatial distribution and vulnerable locations can be easily identified by this method.The maps below depict a ward level mapping of disease incidence in Ahmedabad in 2009-11





Vaccination Alerts in RajkotIUsing Mobile services for outreach

Introduced by Rajkot Municipal Corporation in the NirogiBalVarsh (Healthy Child Year 2008-09) the vaccination alert system uses simple and effective mobile technology to facilitate delivery of health services in a personalized manner and improve government-citizen interface. Under the Alert Service, all births registered with the Rajkot Municipal Corporation (RMC) are sent vaccination alerts through SMS in accordance with the vaccination camp dates. Based on the National Immunization Scheme, the alert is sent from the age of 7 days to 16 years. Vaccines covered under this service include:

Within 7 days of Birth:	BCG
Within 14 days of birth:	OPV-0
At age of 1.5months:	DPT-1 & OPV-1
At age of 2.5 months:	DPT-2 & OPV-2
At age of 3.5 months:	DPT-2 & OPV-3
At age of 9 months:	Measles & Vitamin-A (Dose 1)
At age of 18 months:	DPT Booster & OPV Booster
At age of 5 Years:	DT-5
At age of 10 Years:	TT-10
At age of 16 Years:	TT-16
At 9 Months to 5 Year (every 6 months):	Vitamin-A (Dose 2 to 9)

11. Recommendations for inter-departmental convergence

Table 32 Fostering inter-departmental convergence

Department/ Program	Strategy and Recommendations
ICDS Program	• Provide contacts list of ANMs and ASHAa working in slums to the respective Anganwadi staff and supervisors. • Sharing of data being recorded and collected by Anganwadi staff and supervisors with the health department. • Develop a micro plan for routine immunization in slums at Anganwadi centers and other sites in close coordination with the Anganwadi workers, supervisors and CDPOs. • Conduct a GIS based spatial analysis to assign primary health care center(s) to each Anganwadi center in the city and establish a strong referral system to U-PHC and other secondary/ tertiary facilities. • Geographically rationalize ICDS projects according to the 15 administrative wards in PMC. Invite Anganwadi workers and supervisors to participate in ward level coordination meetings.
Urban Community Development (UCD), PMC	• There are close to 11000 women self-help groups established in slums with the support of the UCD department. These groups could be federated into MahilaArogyaSamitis (MAS). • UCD department also has facilitated the construction of several community structures in slum areas which are currently used by the women self-help groups for various activities. This infrastructure could be used for health purposes such as for conducting immunization camps and outreach sessions. These structures should also be allowed to be used as Anganwadis in some slums where space availability is a constraint. • PMC should facilitate upgradation of these community structures such as construction of additional stories to be used for health purposes.
PMC Engineering Department	• Infrastructure upgradation in health facilities often lags behind because of administrative delays. Dedicated civil engineer from the Engineering Department should be assigned to the health department for monitoring regular maintenance of facilities as well to facilitate upgradation and new construction of health facilities.
JNNURM cell	The most vulnerable slums with high number of very poor households and high rate of water and vector borne diseases as identified under NUHM should be prioritized for provision of basic services under the JNNURM grant.

The inter department convergence is explained through the following diagram.

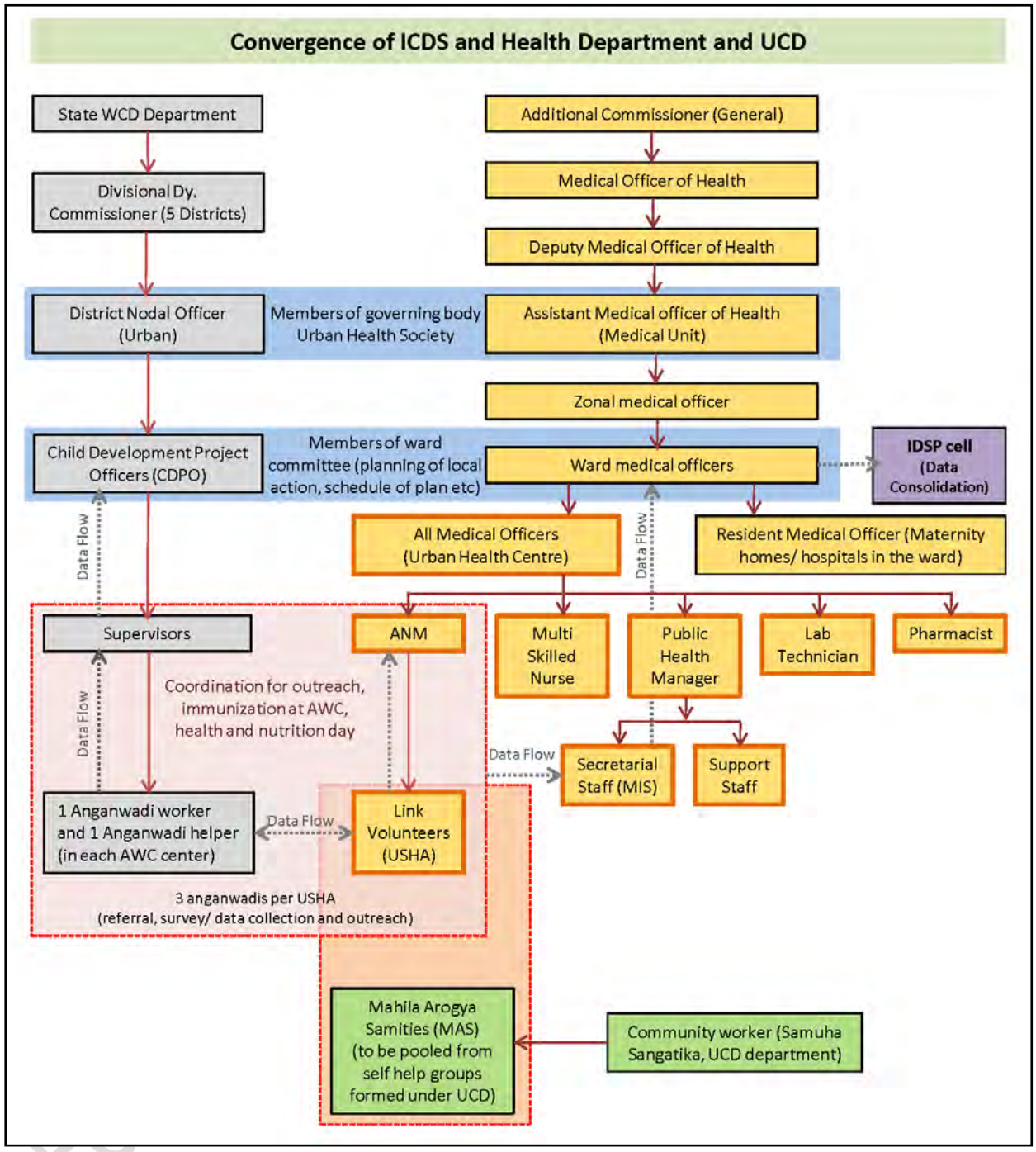


Figure 38 Structure of Convergence

12. Consolidated budget for strengthening of health delivery

This chapter focuses on the multi-year budget for strengthening outreach and primary health care facilities in Pune. The upgradation of dispensaries to U-PHCs is phased over 4 years. Facilities that require immediate upgradation are prioritized in year 1. AS per NUHM guidelines, Pune needs 62 primary health facilities to serve an urban population on over 30 lakhs. Building new U-PHCs has been phased over the first three years. Accordingly, the staff positions that need to be recruited have also been phased. Training of all existing ANMs, link volunteers of RCH and self-help groups (as MAS) have been prioritized in the first year, while new recruitments have been proposed in the second year. New staff would be recruited in the first year only if the existing staff does not fulfill the NUHM requirements.

Staffing of secondary and tertiary facilities has not been included in this budget. A lump sum budget has been allotted for their up gradation.

An escalation cost of 5% per year has been included in the overall budget calculations.

Table 33 Summary of upgradation in five year plan

Description	Existing	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Upgrading existing primary facilities	-	6	5	3	6		20
Starting of new UHCs	50	6		6			62
Link Volunteers	152	251					403
Infrastructure upgradation of maternity homes into U-CHCs	0	2		2			4
MAS (including federation of existing self- help groups)		500	500	500	361		1861
ANMs	218					30	248
Computers to all existing UHCs		50	6		6		62

12.1. Budget assumptions

Pune Population (Census 2011)	**3115431**
Slum Population in Pune	805505
No. of functional dispensaries	34
No. of maternity homes (with OPD)	14
No. of govt. hospitals (allopathic) (with OPD)	2
No. anagnwadis	890

Details	Required	Existing in PMC
Urban Primary Health Centres (One for 25,000-30,000 slum population)	62	50
ANMS (One for 10000 urban population)	248-311	218 (including ANMs of FWC)
ASHA-Urban/ Link Volunteers (One for2,000 slum population)	403	150 (actual under RCH)
MahilaArogyaSamiti (1 MAS for 100 HH)	1861	11000(Existing self-help groups under UCD)
Mobile Dispensaries	2	2

12.2. Budget summary

	Year 1	year 2	year 3	year 4	year 5	Total of 5 years
Total Budget (Rs)	28,32,99,470	17,42,81,220	32,97,86,463	27,55,99,889	20,99,53,233	127,29,20,274

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Annexure

Annexure 1: List of Slums in Pune

Annexure 2: List of Participants in Stakeholders Consultation

Annexure 3: News Articles References

Annexure 4A: Results of FGDs: Water Supply

Annexure 4B: Results of FGDs: Sanitation

Annexure 4C: Results of FGDs: Waste Water Disposal

Annexure 4D: Solid Waste Management

Annexure 5: Questionnaire for Health Facility Assessment

Annexure 6: Questionnaire for Focus Group Discussion