



# Use of Health Information Technology (HIT) to improve urban health services: an innovative approach to augment and revitalize urban health centers of Dehradun

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## ABSTRACT

*Urbanization has risen exponentially in Dehradun after the creation of Uttarakhand state on 9<sup>th</sup> November 2000 and Dehradun city was declared the interim capital of the state. Rapid urbanization has led to the sudden surge of migrants, expansion of the city boundaries, vast rise in slum populations and urban poverty, which have correspondingly thrown multiple challenges for managing health services and its determinants, comprising water, sanitation, waste disposal, Communicable and Non-communicable diseases, Trauma, Drugs & Alcohol abuse, Domestic violence, etc. Despite the immediacy of urban poor to urban health facilities, their access to facilities is badly confined and the urban poor are more vulnerable and worse off than their rural counterpart because of inadequacy in the urban health delivery system, ineffective outreach, and weak referral system, which are multiplied further by lack of standards and norms for the urban health facilities. Raised catastrophic out of pocket expenses has evaporated the earnings of the poor people, residing in the outskirts and slums of the city.*

*Recognizing the seriousness of the problem, National Urban Health Mission (NUHM) was launched as a separate mission in years 2013 with the objective of improving the health status of the urban poor particularly slum dwellers and other marginalized sections. In line with the objective Uttarakhand Health & Family Welfare Department is running 39 UHC (Urban Health Centers) in four districts of the state. This paper briefly outlines an action plan for revitalized, revamp existing urban health services in District Dehradun with use of Health Information Technology.*

**Keywords:** *Urban Health Centers, National Urban Health Mission, Health Information Technology, Health Infrastructure, Out of pocket expenses, marginalized community.*

## 1. INTRODUCTION

The National Urban Health Mission was envisaged to address the health concerns of the urban poor through facilitating equitable access to available health facilities by rationalizing and strengthening of the existing capacity of health delivery for improving the health status of the urban poor. It focuses on the following:

- Urban Poor living in registered and unregistered slums
- Other vulnerable population of homeless, rag-pickers, street children, rickshaw pullers, construction and brick and lime kiln workers, sex workers, and other temporary migrants.
- Public health thrust on sanitation, clean drinking water, vector control, etc.
- Strengthening existing public health capacity of urban local bodies.

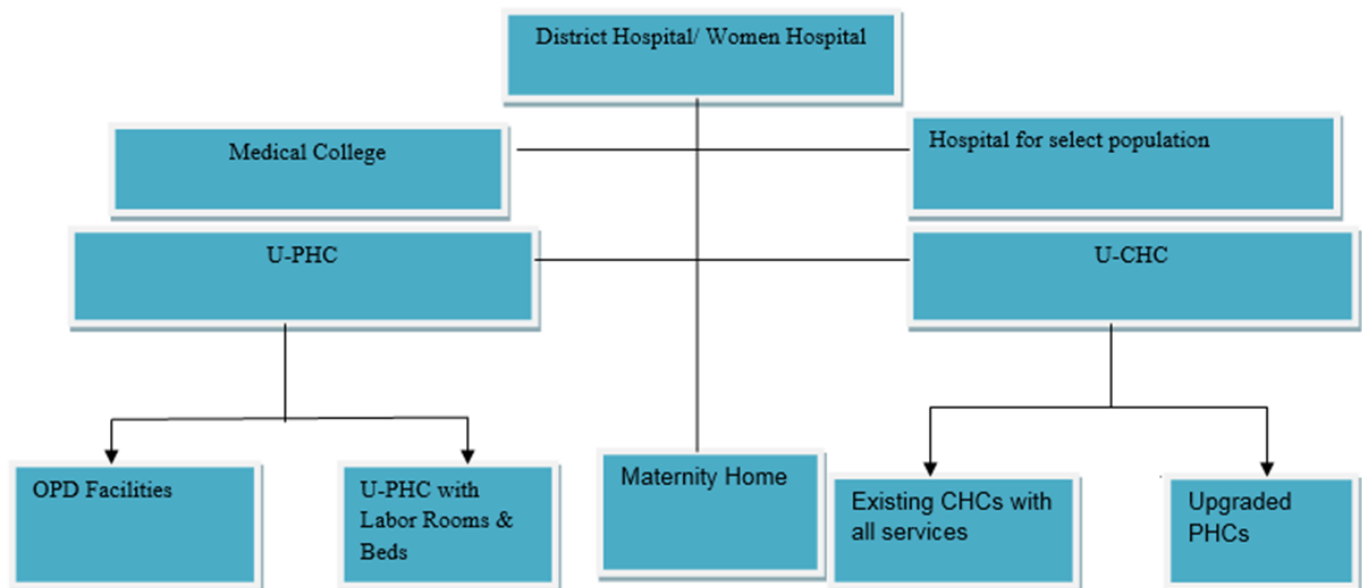
Urban population growth trajectory comprises of natural population growth, migration of people from rural to urban areas and transformation and reclassification of cities and peri-urban areas.

Housing sector does not commensurate with the rising demand of the migrant population's demands, leading to the mushrooming of slums in the cities, eventually gives birth to overcrowding, poor hygiene, sanitation, and diseases.

In line with the objective of the Ministry of Health & Family Welfare, National Health Mission, Uttarakhand is running 39 Urban Health Centers in the following four districts, since 2013:

- Dehradun
- Nainital
- Haridwar
- USNagar

## 2. HIERARCHY OF PUBLIC HEALTH FACILITIES IN URBAN AREAS



Annual Population Growth Rate	
All India	2 %
Urban India	3%
Mega Cities	4%
Slum population	5-6%

### Urban Areas Covered Under NUHM

- Town Panchayats
- Notified Area Committees
- Municipalities
- Municipal corporations

### Services offered by Urban Health Centers

#### Maternal Health Services

- Identification of pregnant women for ANC
- Promoting institutional and safe deliveries
- PNC Services
- Vaccination of Mother
- RTI/STI Management
- Distribution of IFA Tablet

#### Child Health Services

- Routine Immunization
- Provide support for Pulse-Polio Immunization
- Promoting early and exclusive breast feeding
- Preparing birth plans and escorting to higher facility
- Nutrition counseling and listing of children with medium and severe malnutrition
- Listing of eligible couples: contraception/birth spacing, different methods, vector control measures
- Provision of curative care
- Preparation of Birth certificate

## Family Planning Services

### Provision of service: negligible or requiring substantial strengthening

- Identification of eligible couples
- Promotion of spacing and terminal methods for family planning (e.g. distribution of OCP's condoms and IUD insertion)

### Free Diagnostic Services

- HB, TLC, DLC, ESR, Platelets, Malaria Parasite
- Urine (Routine and Microscopic)
- Serum Cholesterol, Lipid Profile, Blood Urea, Creatinine, Blood Sugar
- Typhoid Test for other communicable diseases
- Pregnancy Test

### Other services

- Health Education and menstrual hygiene
- Identification of adolescents and counseling on personal hygiene/health promotion
- Promoting the use of safe water and toilets
- School health programme
- Advocacy against tobacco, alcohol, and substance abuse
- Oral hygiene education
- Promoting wellness and counseling
- Establishing assured referral linkage
- Training the service providers for necessary behavioral and technical skills

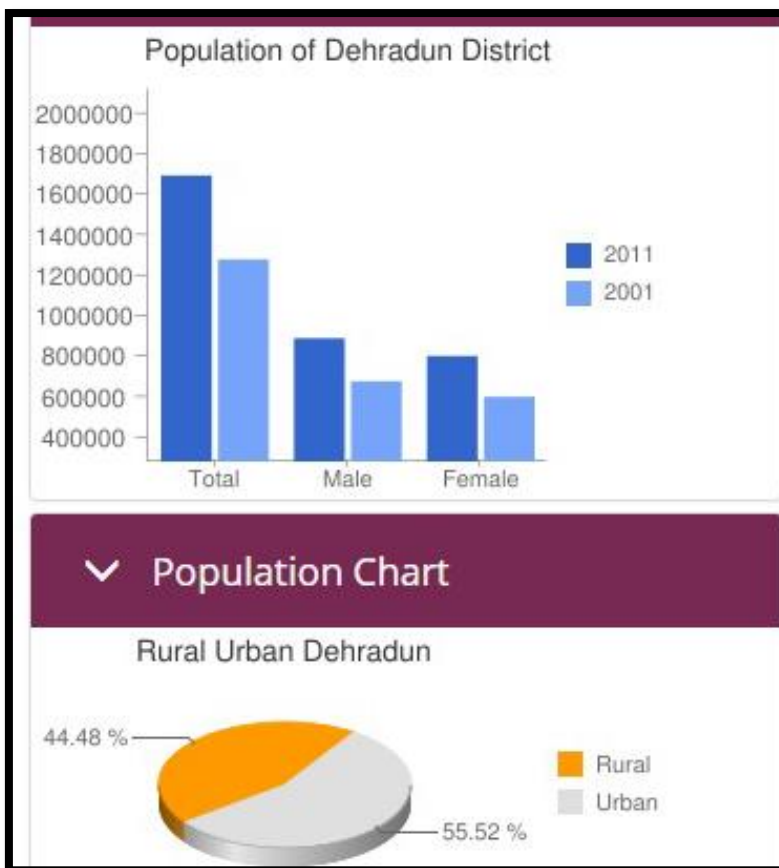
### Outreach services

### Human Resource in Urban Health Center

S. No.	STAFF CATEGORY	NUMBER
1	Medical officer	1
2	2 <sup>nd</sup> Medical officer	1
3	Nurse	3
4	LHV	1
5	Pharmacist	1
6	ANM	3-5
7	Public Health Manager	1
8	Support Staff	3
9	M&E Unit	1

### The population of Dehradun as per the Census 2011

S. No.	The year 2011	The year 2001
Actual Population	1,696,694	1,282,143
Male	892,199	679,583
Female	804,495	602,560
Population growth	32.33	25.00



**Total number of UHC (Urban Health Centers) in Dehradun**

S. No.	Facility Name	SN	Facility Name
1	Seemadwar	9	Bakralwala
2	Majra	10	Chukkumohalla
3	Reetha Mandi	11	Deep Nagar
4	Jakhan	12	DL Road
5	Kargi	13	Nalapani
6	Kishan Nagar		
7	Gandhi Nagar		
8	Mussourie		

**Major Health Challenges in Urban areas**

- Unaware households about availing health services
- A weak and dysfunctional public system of outreach
- Contaminated water and poor sanitation system
- Poor environmental health, poor housing facilities
- Unregistered practitioners and prevalence of quacks promoted treatment.
- Apathetic support of community organization towards health-related issues
- Poor public health planning capacity in urban local bodies
- Availability of large private sector health facilities, but beyond the reach of poor people
- Lack of convergence among wider determinants of health

<b>Age wise causes of Deaths (%), Urban India</b>					
	<b>0-4 yrs</b>	<b>5-14 yrs</b>	<b>15-24 yrs</b>	<b>25-69 yrs</b>	<b>70+ yrs</b>
Cardiovascular diseases	----	----	7.6	32.8	34.7
Malignant and neoplasams	----	3.8	5.3	11.3	5.6
COPD, Asthma and other respiratory disease	----	----	----	7.7	10.6
Tuberculosis	----	----	8.1	7.7	2.9
Senility	----	----	----	----	14.3
Diarrheal disease	13.2	17.4	----	----	5
Unintentional injurious : other	3.1	14.7	11.2	3.6	4.5
Symptom signs and ill defined conditions	3.6	5.9	8.4	4.3	3.8
Digestive disease		3.5		5.8	----
Respiratory infections	19.5	8.3	----	----	----
Perinatal conditions	35.7	----	----	----	----
Other infectious and parasitic disease	8.8	12.4	4.3	----	----
Congenital anomalies	5.2	----	----	----	----
Nutritional deficiencies	3.1	----	----	----	----
Malaria	1.2	5.9	3.5	----	----
Fever of unknown origin	1.2	----	----	----	----
Motor Vehicle Accidents	----	4.4	11.8	3.7	----
Intentional Self harm	----	3.2	13.1	----	----
Maternal conditions	----	----	3.7	----	----
Genito- Urinary diseases	----	----	----	3.3	2.8
Diabetes Mellitus	----	----	----	2.8	3.4

*\*Source: Report on Causes of Deaths in India (2001-2003), based on SRS, RGI, India*

### **3. ACTION PLAN TO REVITALIZE AND REVAMP URBAN HEALTH CENTERS OF DEHRADUN THOUGH INNOVATION AND INFORMATION TECHNOLOGY INITIATIVES**

Since the inception of National Urban Health Mission in Uttarakhand, Urban Health Centers are being consistently run in PPP mode. Modalities and institutional mechanism for roll out of the scheme are being worked out by the government of Uttarakhand. These UHCs are being run on the basis of MoU signed between the service provider and the Department of Medical Health & Family Welfare, Uttarakhand. The MoU mechanism is a tool for collective priority setting, involves agreement on measurable outcomes and their relative weight. It allows flexibility in implementation and accountability based on objective assessment and incentivization of performance. Though MoU covers the availability, accessibility of health services at Urban Health Centers, it lacks technology enabled rigorous monitoring and linked to a performance bases appraisal and incentive system along with the innovation for augmenting urban health services.

In order to revamp, revitalize the existing urban health services at Urban Health system, an innovative approach to the inclusion of Health information technology tools is highly needed. The first step for stimulating such a transformative process of change will require mapping of facilities with the requisite service provider and involve the community in planning the optimal utilization of resources in hand, in a consultative and transparent manner and establishing monitoring structures.

#### **Action points**

- 1) Installation of SIM card based Biometric machine in all the Urban Health Centers. This will facilitate in the strict monitoring of all the concerned staff and analyze their performance towards the tasks. The SIM card based attendance can be monitored from district and state level, by the higher authority of the department.

- 2) Installation of web-based CCTV cameras in all UHCs for close monitoring of work performance of staff, IPD and OPD load of the facility. Web-based CCTV can be accessed and monitored from the remote dashboard.
- 3) Doctors will be provided with a Tablet, having the inbuilt intelligent software. The prescription will be automatically converted into electronic form, as well as in the hard copy. Records will be uploaded to cloud-based software and can be accessed by any authorized person, at the time of need.
- 4) Patients will be provided with an Aadhaar based or mobile linked electronic card at the time of registration. It will record all their statistics and create an EHR (Electronic Health Record) that will be uploaded to cloud-based software. This will facilitate future follow up and diagnosis. The software will provide following services:
  - a) Create and manage profiles of patients and his family member along with their medical needs
  - b) Smart assistance in managing healthcare needs by getting alert notifications and track health indicators of the patients
  - c) A comprehensive view of interactions, record, and updates from the doctor in the facility
  - d) Getting alerts and reminders for prescribed medicines, diagnostic tests, and doctor's next appointment.
  - e) Help in finding emergency services like pharmacy, doctor, blood bank near the location.
- 5) Minor diagnostic tests will be provided at health facilities and major diagnostic services will be outsourced to the competent diagnostic firms on nominal/CGHS rates. The prescription will be directly sent to the concerned diagnostic firm.
- 6) All the prescribed generic drugs will be (excluding basis drugs) provided by the authorized medical shops, which are being proposed to be empanelled by the department. The authorized shops will be having the requisite software, which will immediately receive the prescription and provide the drugs accordingly. The prescription can be also accessed through whatsapp and other software.
- 7) For the outreach camps, ANMs will carry the software-based Tablet and furnishes the details of the patients.
- 8) In order to reach out to other vulnerable sections like construction workers, rag pickers, sex workers, brick kiln workers, rickshaw pullers and street children, the involvement of NGO, ASHA worker and MAS (Mahila Aarogya Samiti) will be made to carry out IEC/BCC activities in an innovative way. ASHA worker and other selected member will be provided with a tablet, who will collect all the corresponding data and upload in the cloud-based designated software. Payment will be generated to the requisite stake holders on viewing the performance on the software.
- 9) Communication facility in the form of Closed User Group (CUG) will be made available
- 10) Quarterly performance on the following output level indicators will be measured by the department at district and state level and will subsequently recommend for the release of requisite payment to the service provider :
  - i. Increase in OPD attendance
  - ii. Increase in BPL referrals from U-PHCs/ referral availed
  - iii. Increase in institutional deliveries as a percentage of total deliveries
  - iv. Increase in complete immunization among children < 12 months
  - v. Increase in case of detection for malaria through blood examination
  - vi. Increase in case detection of TB through identification of chest symptomatic
  - vii. Increase in referral for sputum microscopy examination for TB
  - viii. Increase in number of cases screened and treated for dental ailments
  - ix. Increase in ANC check-up of pregnant women
  - x. Increased Tetanus toxoid (2nd dose) coverage among pregnant women
  - xi. Strengthened civil registration system to achieve 100% registration of births and deaths

#### **4. CONCLUSION**

It is evident from the fact that urbanization is rapidly growing all across the nation. The census 2011 data reflects the percentage of 55.42 urban populations against the 44.48 percentage of rural. Ineffective outreach and weak referral system limit the access of urban poor to health care services. Social exclusion and lack of information and assistance at the secondary and tertiary hospitals makes them unfamiliar to the modern hospitals. Thus, it is very imperative that Urban Health Centers should function to their optimum level, as they cater the health need of the marginalized community. Lack of preventive and curative health services will deteriorate their physical health as well as economic condition. Marginalized communities are certainly vulnerable to social evils and in order to earn and get involved in the creative activity, it is important that they are physically sound and free of diseases. The existing UHC of the city is certainly to be revitalized and strengthen as per the Quality Assurance Standards of the Ministry of Health and Family Welfare, Government of India. Monitoring is one of the important and integral parts of the execution of the plan. The era of Information technology has certainly given the tool to measure the performance of facilities against the pronounced objective. Above-cited methods will certainly help in achieving the National Urban Health Mission objective and provide the

equitable and accessible health service access to the vulnerable and marginalized communities. The UHCs are being mandated to provide the RCH (Reproductive Health Services) to the poor community, their proper functioning is very essential for improving the health indicators of the state, as the NITI Ayog data for the year 2015-16 has reflected the poor indicator of IMR (Infant Mortality Rate), U5MR (Under 5 Mortality Rate) and Sex ratio against the base year of 2014-15.

## **5. ACKNOWLEDGEMENT**

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## **6. FOOTNOTES**

Source of support –Department of Medical Health & Family Welfare, Uttarakhand

Conflict of interest - Nil

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