सत्यमेव जयते

Office of the Principal Scientific Adviser
to the Government of India

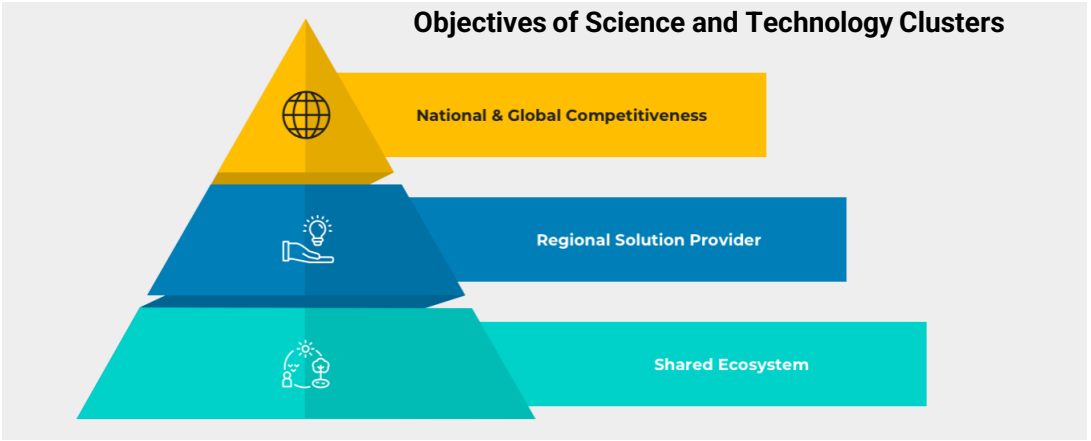
PUNE KNOWLEDGE CLUSTER
पुणे
PKC

Open Source Data for UHC

Role of S&T Clusters in Fostering Multi-Stakeholder Collaborations

Science and Technology Clusters

Established by the Office of Principal Scientific Adviser, Govt. Of India in 2020 under The City Knowledge and Innovation Cluster Initiative (CKIC)

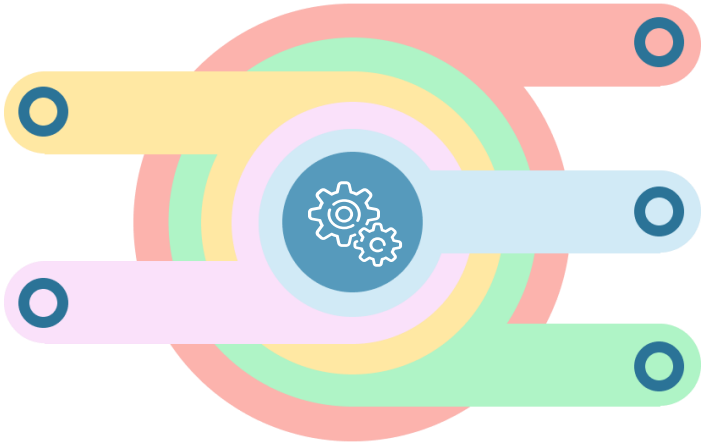


The Pune Knowledge Cluster (PKC) aims to bring together academia, R & D institutions and the Industry of Pune and its surrounding areas, to address challenging problems of the region through innovative means, using scientific knowledge and engaging highly skilled human resources

PKC's Role as an Enabler

Citizen Engagement
Engagement platforms, Capacity building

Open Innovation Platforms
Data, Models, Accessibility



Multi-organizational S&T based Projects
Conceptualize, Initiate, Facilitate & Implement

Planning and Strategy for Decision Makers
Vision documents, White Papers

Technology Adoption
Identify, Assess, Pilot

Public Health

Environment & Energy

Sustainable Mobility

Waste Management (Plastic and Water)

STEM Education & Capacity Building

Value Proposition for Stakeholders

Industries

- Enabling Public Private Partnerships
- Identification of growth areas
- Mobilizing funding for joint projects
- Policy and Strategy Advocacy
- Capacity Building & Skill Development

R&D/Academia

- Collaborative R&D Projects
- Scale R&D innovations
- International Visibility
- Integrate interventions in public systems
- Data sharing platforms

Government

- Evidence Based Decision Making
- Techno-Commercial Feasibility Analysis
- Increase Reach for Programs
- Innovation driven Projects
- Citizen Engagement

Impact (2020-2024)

₹ 65 CR Funds mobilized for Partners

17 Projects Enabled under National Missions

180+ Capacity Building Programs

13K+ Beneficiaries

80 Internships Enabled

36 Industry Partnerships

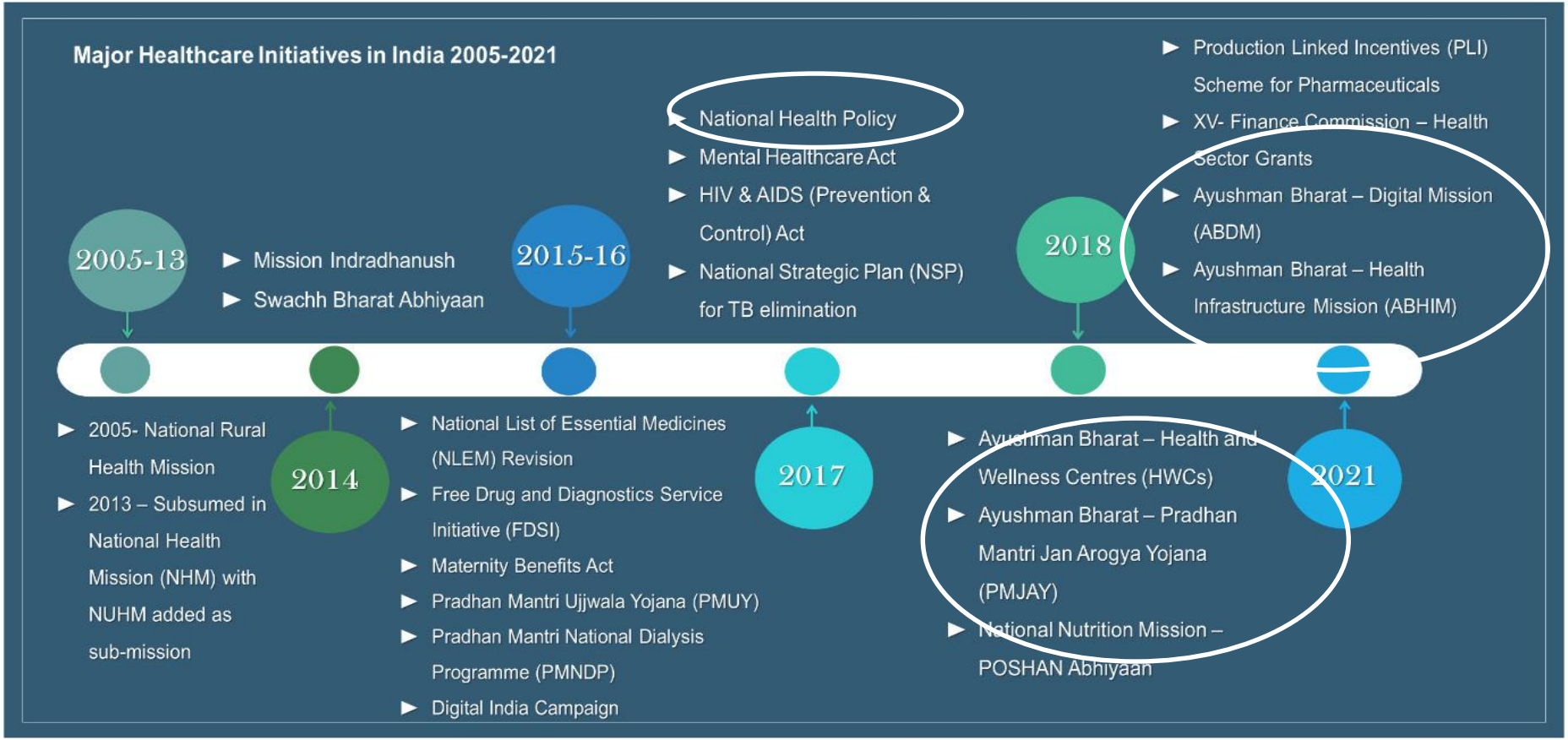
51 R&D Partnerships

33 Government Partnerships

10 International Partnerships

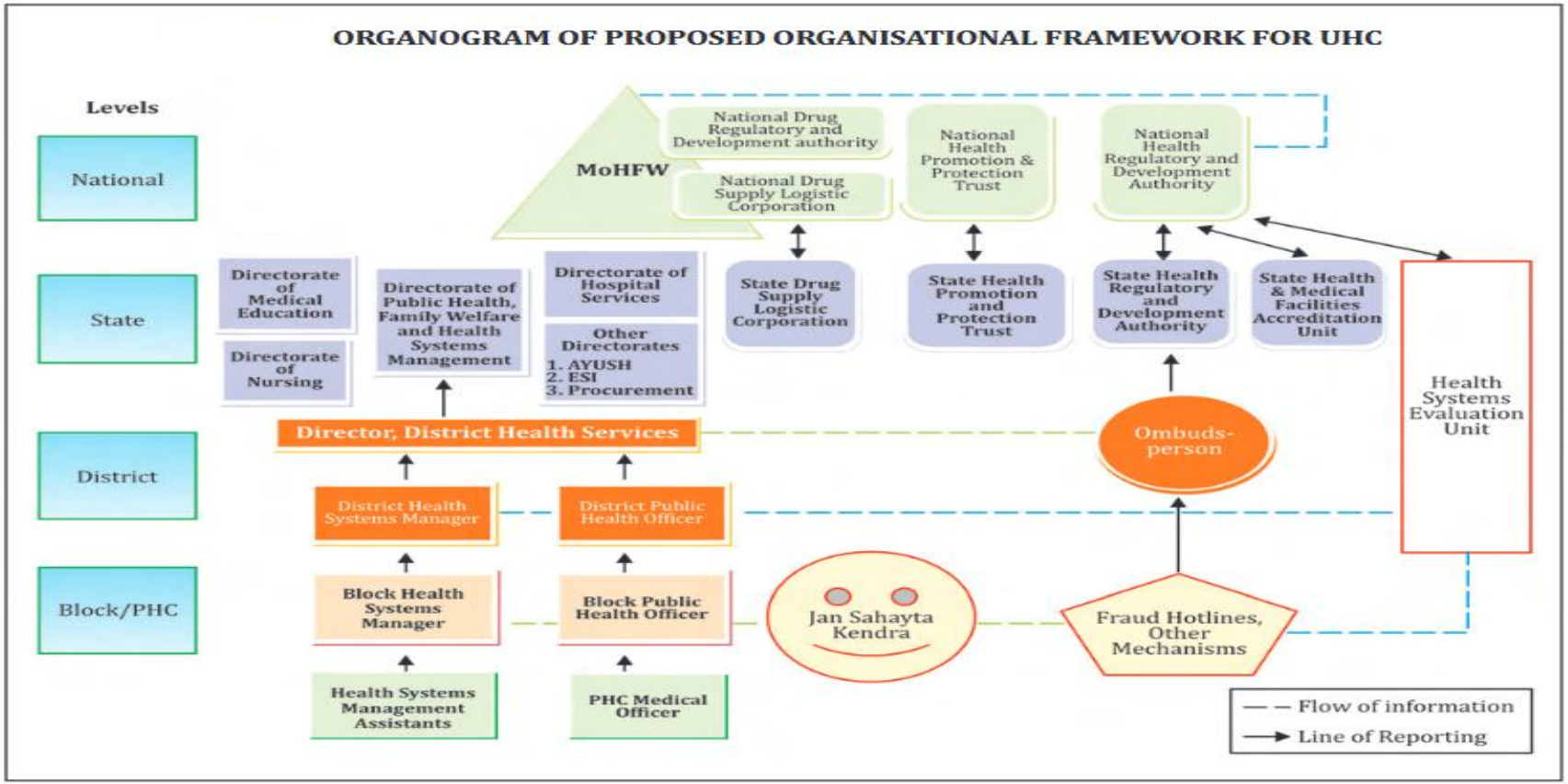
Universal Health Coverage (UHC): Everyone, Everywhere

National Healthcare Policies



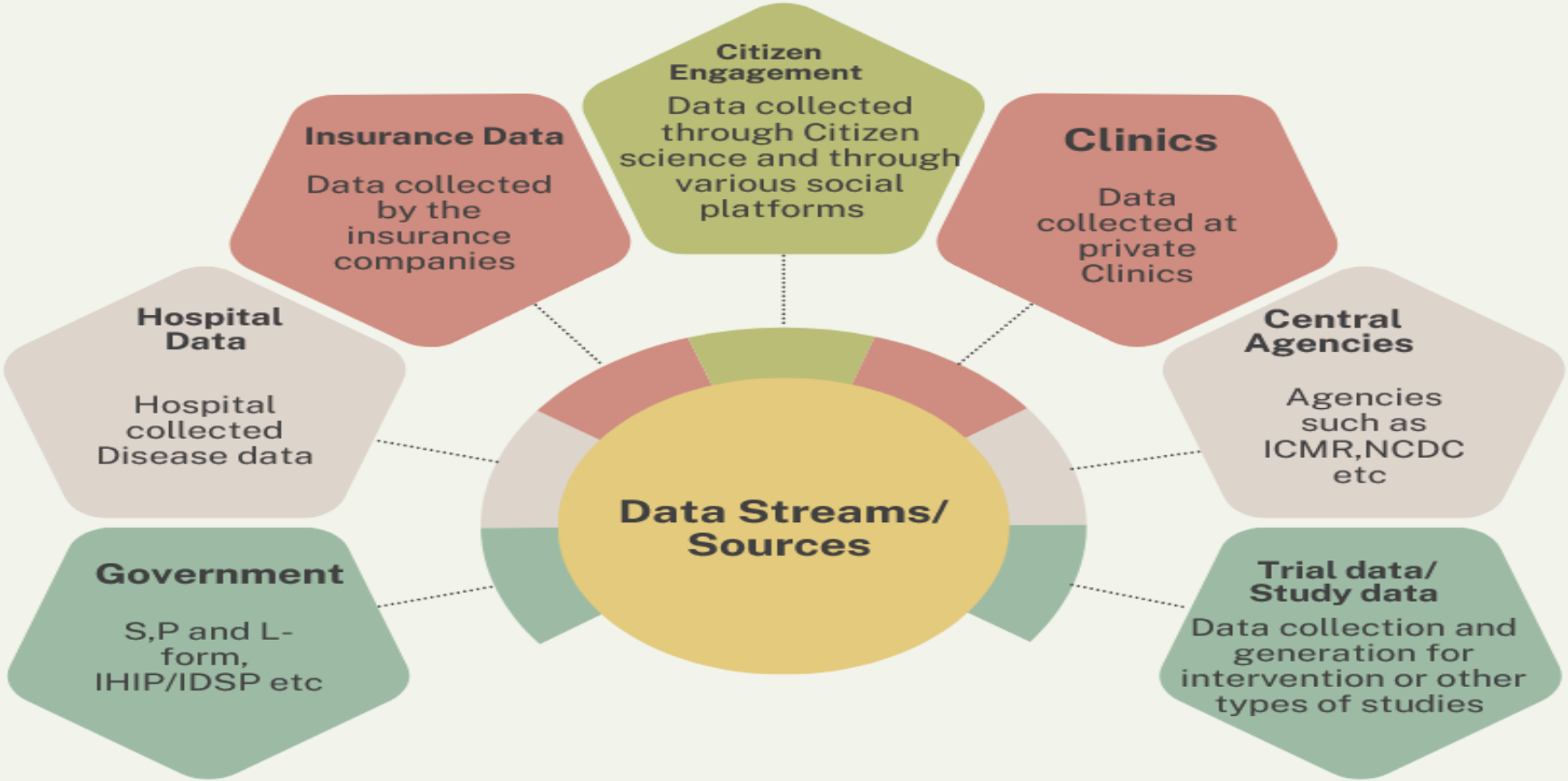
Source :- **Recent initiatives for transforming healthcare in India: A political economy of health framework analysis**

Framework for UHC

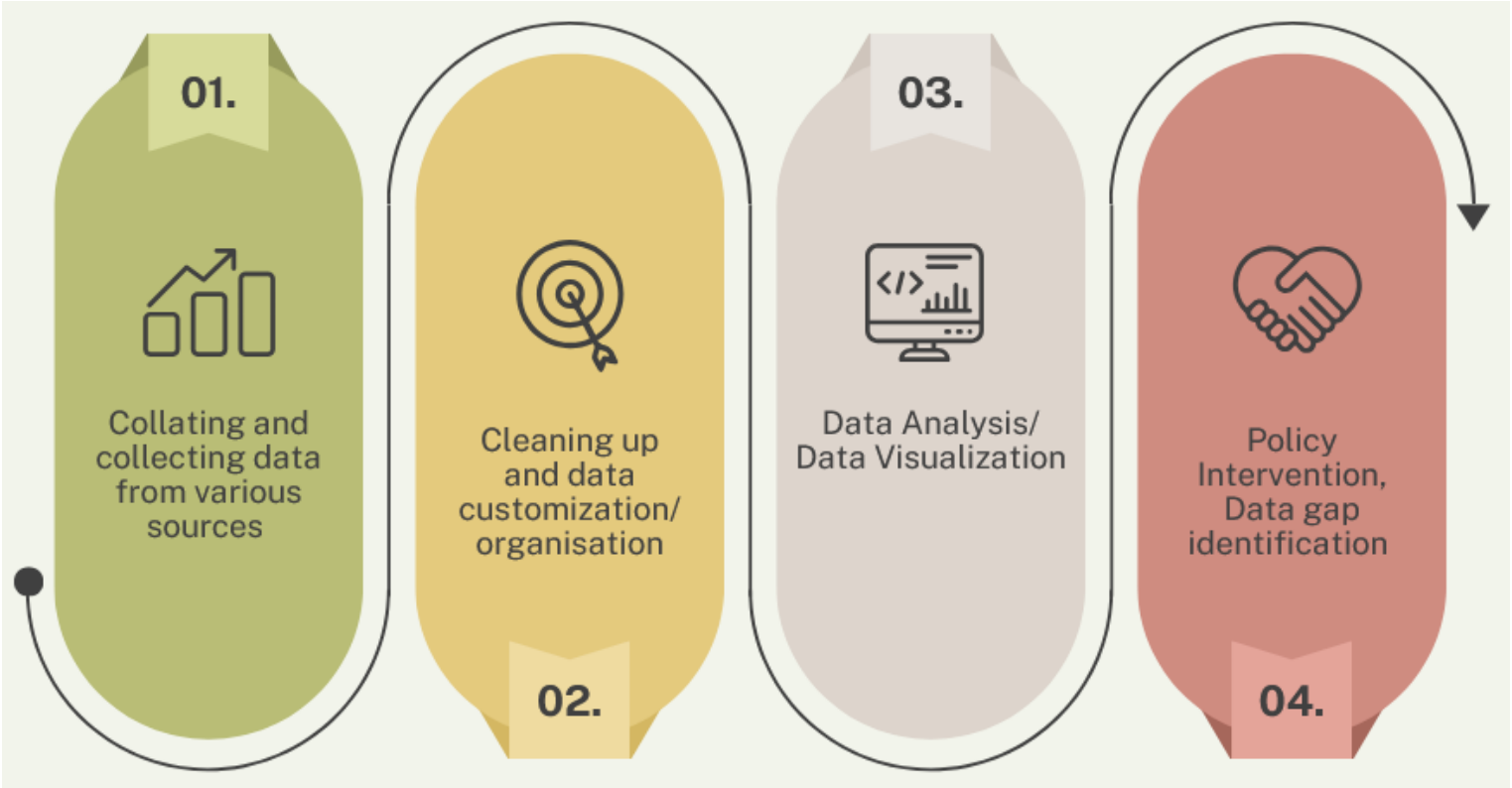


NHM :- High Level Expert Group Report on Universal Health Coverage for India

Data Distribution



Data to Action



COVID-19: Retrospective Clinical Data

PKC worked with hospitals and technology partners to collect, collate and digitize clinical and lab data of COVID-19 patients. This collaboration resulted in the development and launch of a COVID-19 Clinical Database. PKC, through 3 hospitals spread across Pune city (BJMC, Noble Hospital, and Symbiosis University Hospital and Research Centre), has access to over 12,000 COVID-19 IPD files and their corresponding lab files.

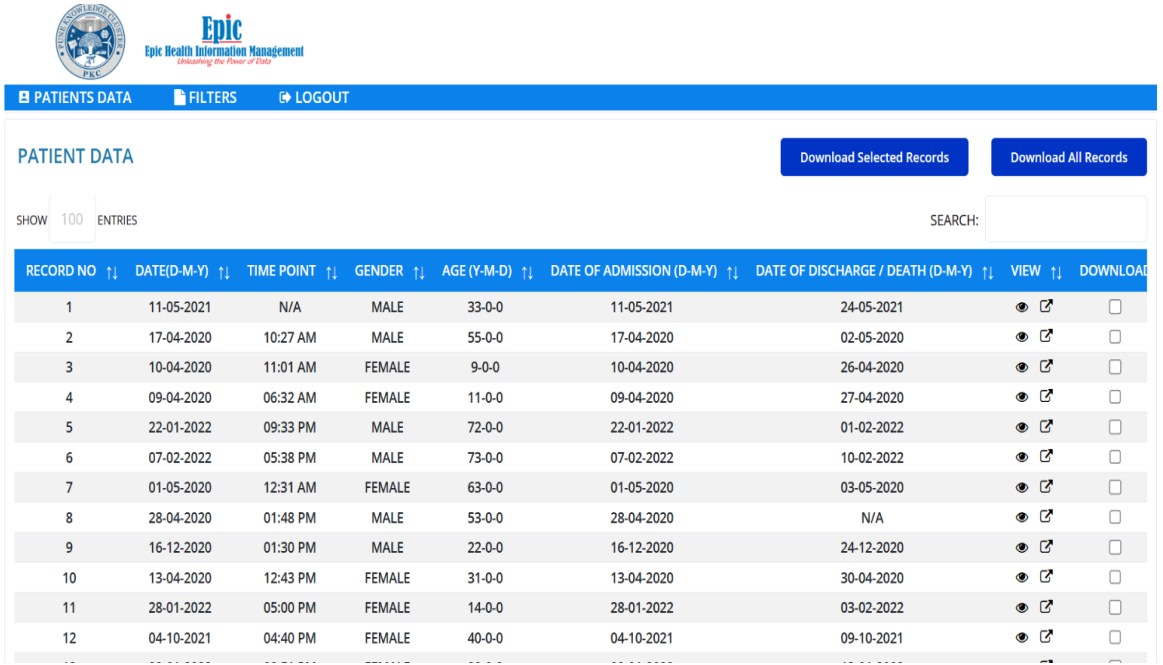
<u>The COVID-19 Clinical Database – COVI-CORE</u> hosts digitized clinical and lab data of 2000 COVID-19 patients and captures over 100 clinical parameters from the day of admission of a patient to the day of their discharge/death.

COVI CORE

COVID-19 Clinical Database

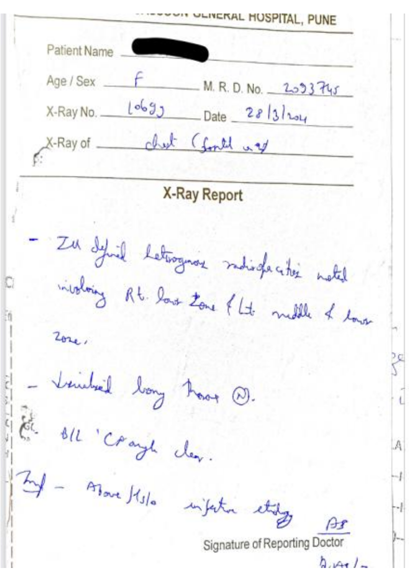
The database was created by EPIC-Health Information Management and is an open-source resource available on the PKC website.

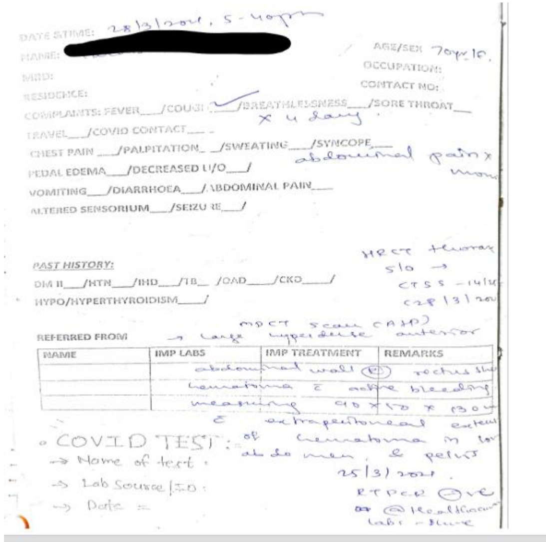
Data available on the PKC website, we have also partnered with India Urban Data Exchange (IUDX) to increase access to the data



RECORD NO	DATE(D-M-Y)	TIME POINT	GENDER	AGE (Y-M-D)	DATE OF ADMISSION (D-M-Y)	DATE OF DISCHARGE / DEATH (D-M-Y)	VIEW	DOWNLOAD
1	11-05-2021	N/A	MALE	33-0-0	11-05-2021	24-05-2021		
2	17-04-2020	10:27 AM	MALE	55-0-0	17-04-2020	02-05-2020		
3	10-04-2020	11:01 AM	FEMALE	9-0-0	10-04-2020	26-04-2020		
4	09-04-2020	06:32 AM	FEMALE	11-0-0	09-04-2020	27-04-2020		
5	22-01-2022	09:33 PM	MALE	72-0-0	22-01-2022	01-02-2022		
6	07-02-2022	05:38 PM	MALE	73-0-0	07-02-2022	10-02-2022		
7	01-05-2020	12:31 AM	FEMALE	63-0-0	01-05-2020	03-05-2020		
8	28-04-2020	01:48 PM	MALE	53-0-0	28-04-2020	N/A		
9	16-12-2020	01:30 PM	MALE	22-0-0	16-12-2020	24-12-2020		
10	13-04-2020	12:43 PM	FEMALE	31-0-0	13-04-2020	30-04-2020		
11	28-01-2022	05:00 PM	FEMALE	14-0-0	28-01-2022	03-02-2022		
12	04-10-2021	04:40 PM	FEMALE	40-0-0	04-10-2021	09-10-2021		

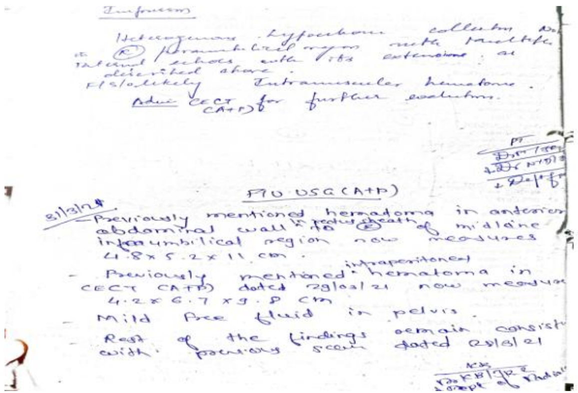
How do we decipher the data?





(Recent Results are shown first)

Lab Service	Reference_Range (Unit)	12/11/2020 12:49:25	12/11/2020 07:06:49	12/11/2020 06:07:44	11/11/2020 23:44:47	11/11/2020 19:35:55	11/11/2020 18:05:43
Alkaline Phosphtase**	64.0 - 306.0 (U/L)						
Bilirubin-Total	0.2 - 1.0 (mg%)						
Billirubin-Direct	0.2 - 0.5 (mg/dl)						
Creatinine**(serum) (modified Jaffes)	0.7 - 1.5 (mg%)						
Protein-Albumin	3.5 - 4.5 (gm%)						
Protein-Total	6.0 - 8.0 (gm%)						
SGOT	8.0 - 40.0 (U/l)						
SGPT**	1.0 - 40.0 (IU/L)						
Urea**(serum) (GLDH)	15.0 - 40.0 (mg%)						
Activated Partial Thromboplastin Time	24.0 - 38.0 (second)			00 ✓			
Basophils** %	0.0 - 1.0 (%)	0.0 ✓					
Eosinophils** %	1.0 - 6.0 (%)	0.0 ✓					
Haemoglobin IP **	11.0 - 18.0 (g/dL)	8.6 ✓					
Hematocrit**	32.0 - 54.0 (%)	24.6 ✓					
Lymphocytes** %	20.0 - 45.0 (%)	4.4 ✓					
Mean Cell Volume** (MCV)	79.0 - 101.0 (f1)	96.4 ✓					
Mean Corpuscular Haemoglobin Concentration** (MCHC)	31.0 - 37.0 (g/dL)	35.1 ✓					
Mean Corpuscular Haemoglobin** (MCH)	26.0 - 36.0 (Pg)	33.8 ✓					
Mean Platlet volume** (MPV)	9.0 - 17.0 (f1)	12.6 ✓					
Monocytes** %	2.0 - 10.0 (%)	3.0 ✓					
Neutrophils** %	40.0 - 75.0 (%)	92.6 ✓					
Platlet Crit** (PCT)	0.13 - 0.28 (%)	0.067 ✓					



Take aways
- Data is fragmented
- Data capture differs for each hospital
- Conversion through AI/OCR is difficult

Collated Covid Data through the Pandemic

Per Day data (12-04-2020 till 09-06-2022)

Parameters :- samples collected
+ve detected recovered/discharged
Deaths
Critical
Ventilator
Progressive samples collected
Covid patients
Active cases
Progressive positive patients recovered/discharged
Progressive number of deaths amongst +ve patients
Number of house survey teams
Population covered by survey
Houses covered by the survey
Patients with flu or other illness found in the survey

Patient data – 661855 (March 2020-March 22)

Parameters – ICMR No
Lab name
Patient ID
Age
Gender
Date of Isolation
Patient outcome
Ward office
Prabhag
Zone
Patient status

Mortality data *

Data from March 2020- March 2022 - 9349

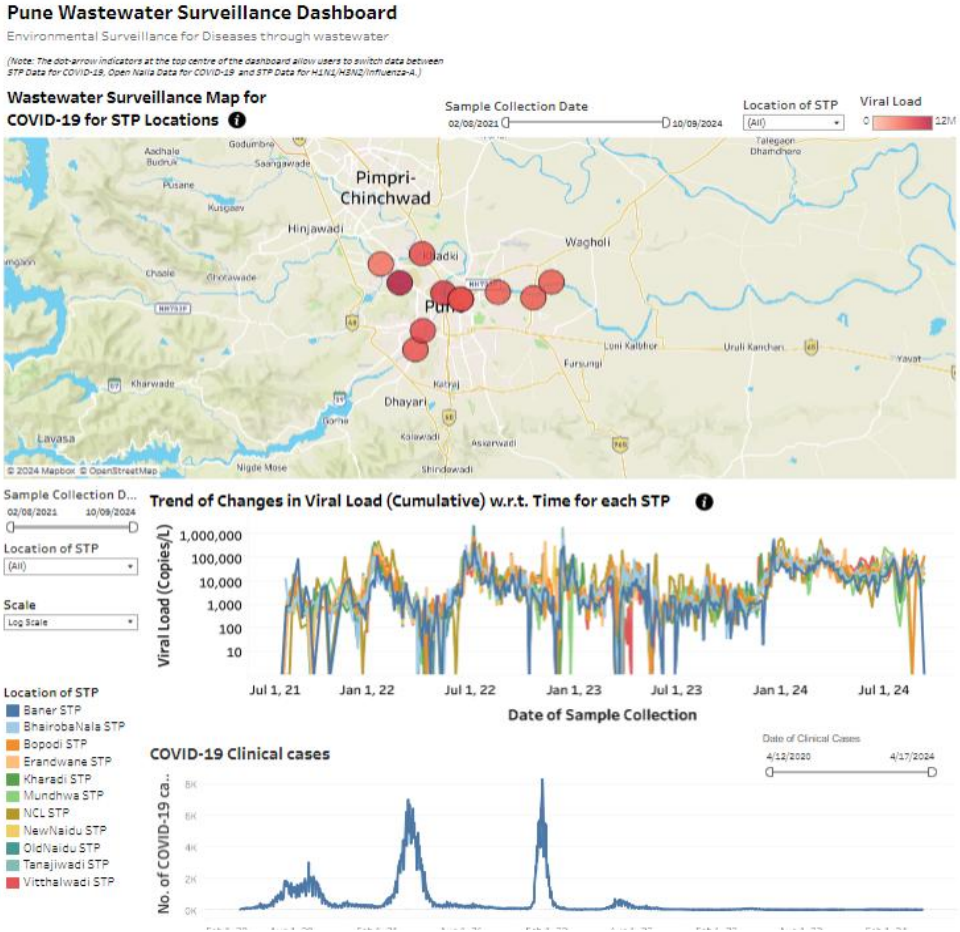
Contact tracking apps – PMC Vayashree

Covid samples collected for testing *

Parameter - Age
Gender
Date of isolation
Address
Result
Source of sample

* Data has been analyzed and papers have been published by partners

Environmental Surveillance for Infectious Disease Pathogens – SARS-CoV-2, H1N1, H3N2, Inf-A



In 2024, the World Health Organisation recognized the "Pune Wastewater Surveillance Dashboard" as its first dashboard for Wastewater Environmental Surveillance in the WHO Southeast Asia Region.
https://data.who.int/dashboards/covid19/wastewater

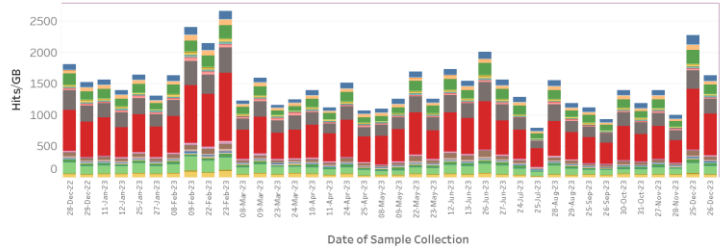
During the COVID-19 pandemic, wastewater surveillance became a critical part of the fight against the virus as an indicator not just at macro scale but also to understand micro neighbourhood patterns. The study and dashboard developed by PKC build onto that strength not just for the Covid virus but also against other indicators including antibiotic resistant bacteria etc which can go a long way in a city's monitoring and preparedness.

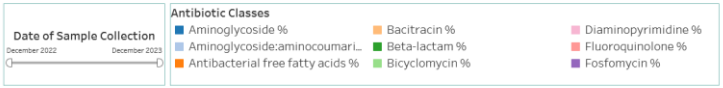
- Shri Shekhar Singh, IAS – PCMC Commissioner

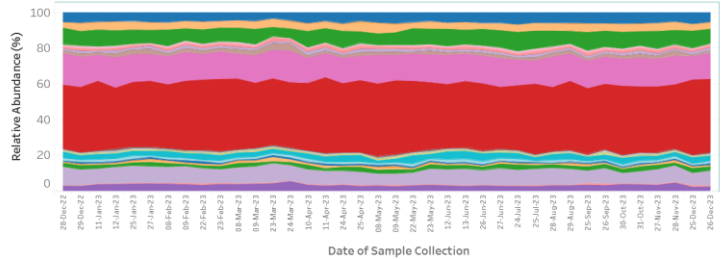
Wastewater surveillance (WWS) is not just about tracking contaminants; it's a powerful tool for early detection, providing insights that allow us to anticipate, respond, and protect against the unseen threats of infectious diseases." WWS uncovers a stream of invaluable data, a silent witness to the health of our communities

- Dr Suryakant Deokar, Assistant Medical Officer of Health, PMC

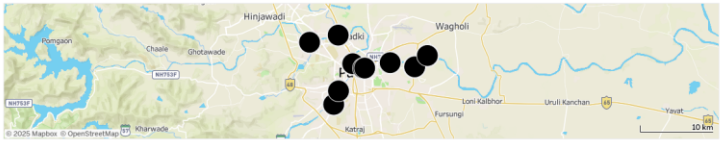
Environmental Surveillance for Anti-Microbial Resistance



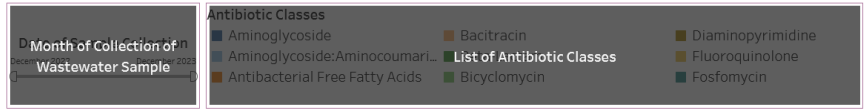


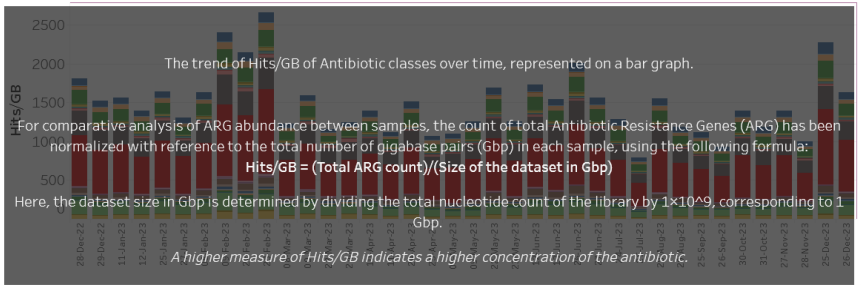


Geospatial distribution of sample collection locations

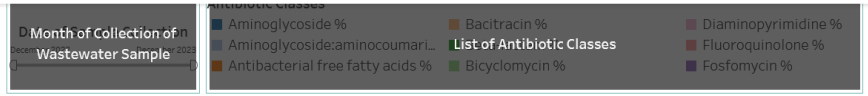


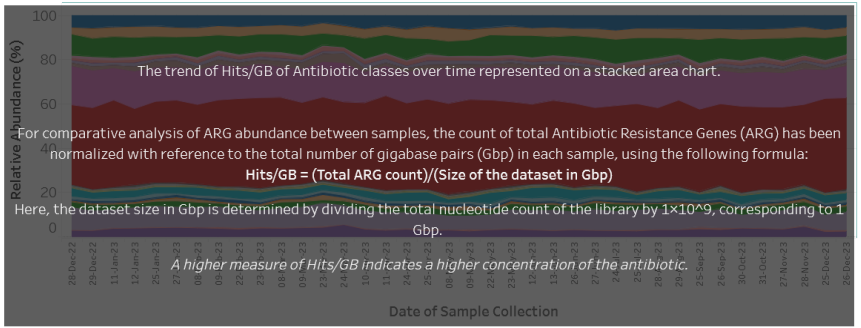
View on Tableau Public



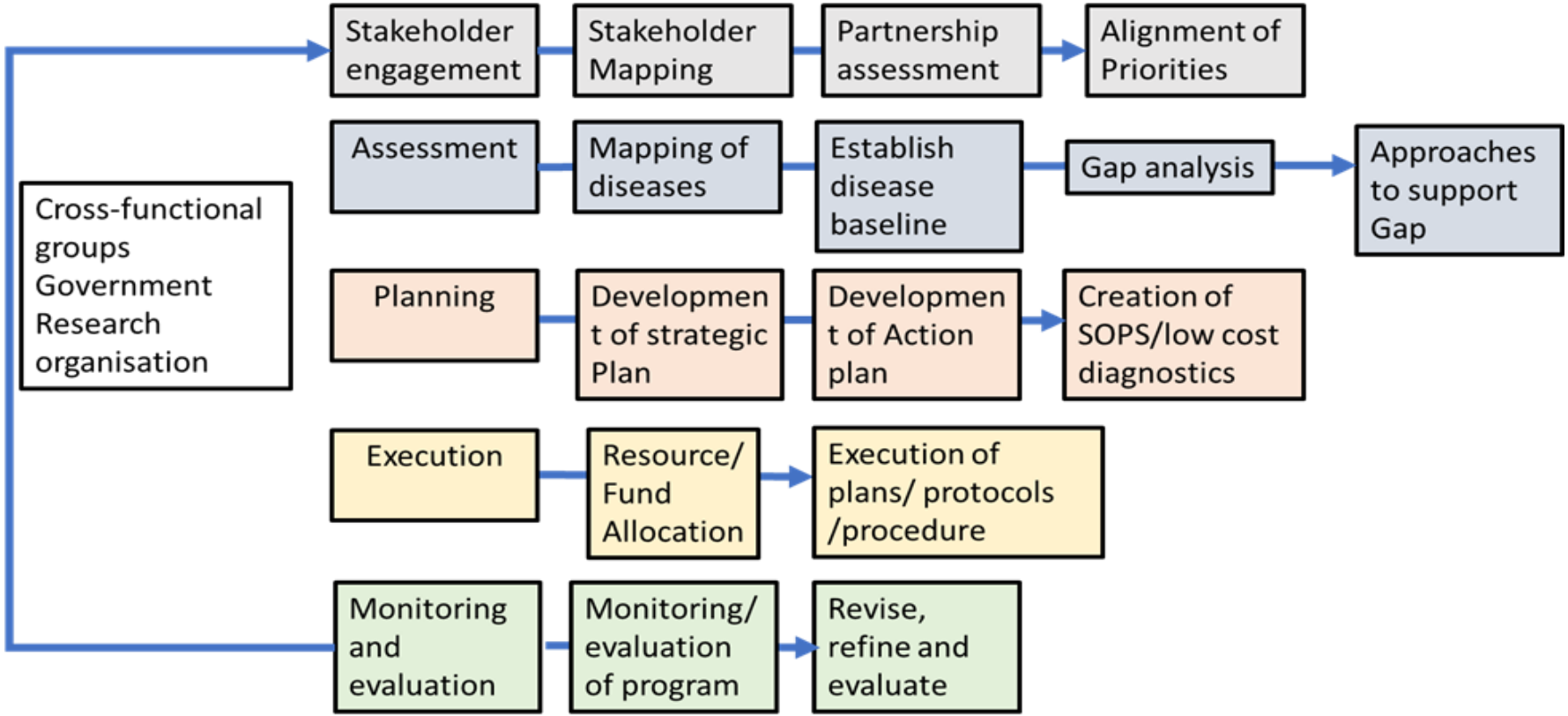


ICUS AREAS PARTNER WITH US EVENTS RESOURCES NEWSROOM OPPORTUNITIES





Disease Surveillance Approach



Targeted Disease Approach – Dengue

- Stakeholder meeting to understand disease gaps and support decisions on next steps
- Work with various stakeholders to address the gaps areas.
- Generate data to help support a larger pool of research
- Use the insights to support policy recommendations and suggestions

Dengue Policy Brief

PKC has prepared a Dengue Policy Paper which highlights potential lines of action to help fill existing gaps in dengue management policies. This document was appreciated by NITI Aayog.

Immediate goals

- Piloting synchronized data collection within the government and private sectors and ensuring representation of all data streams.
- Correlation of dengue testing data with hospitalization data to understand the rate at which dengue infections turn severe.
- Building awareness through public campaigns in collaboration with local municipalities to address specific issues that concern that geography.

Mid-term goals

- Framing policies to include multiple testing methods to account for all cases and collection channels into the official data count.
- Consolidating dengue data surveillance with social, behavioural, and environmental data, such as climate, urbanization, human activities, etc., to help build into predictive models of dengue incidence and severity.
- Building an early warning system based on retrospective and real-time disease data.

Long term goals

- Building an adaptable, structured, and interoperable data collection system that may be implemented across India.
- Building a self-operating and real-time disease surveillance system.
- Enabling Local governments through capacity building to identify and target correlations between disease and non-disease factors such as climate, mobility, and urbanisation, that impact the spread of dengue.
- Integrating dengue research into the public health ecosystem by enabling crosstalk of academic, policymaking, public health, and governance bodies.

SAKSHAM Series of Workshops

Why	Data from the District Malaria Office, Pune show that in the past 10 years, Dengue incidence has risen sharply in Pune District
What	To combat this rising dengue load on the healthcare system, PKC has focussed on empowering the multipurpose field workers who carry out the breeding site surveillance and disease surveillance.
How	The pilot workshop held for the PMC field workers was hugely successful and drew the attention of the District Malaria Officer, Pune. Upon his request, PKC started the **SAKSHAM** workshop series to empower the field workers of all the **13 talukas of Pune, 12 talukas of Kolhapur and 15 talukas of Raigad** at the local Panchayat Samitis. The workshops comprise of refresher lectures on disease background, vector life-cycle and data collection, delivered by reputed academics, followed by activity-based learning.
Feedback	Feedback from the 13 workshops covering 41 talukas so far, has been extremely positive. The participants have expressed deep gratitude and appreciation for bringing such an exciting learning experience to their doorsteps.

No. of workshops	**Workshops held in**	Talukas covered	MPWs trained
1	Aug 2023	PMC	72
1	Oct 2023	1	33
3	Nov 2023	6	150
1	Jan 2024	2	80
3	Feb 2024	4	145
2	Jun 2024	12	470
2	Oct 2024	15	372
13	**1 year**	**41**	**1322**

Contact Information

http://www.pkc.org.in/
contact@pkc.org.in
+91-7823892474

Connect With Us