

RT-PCR App

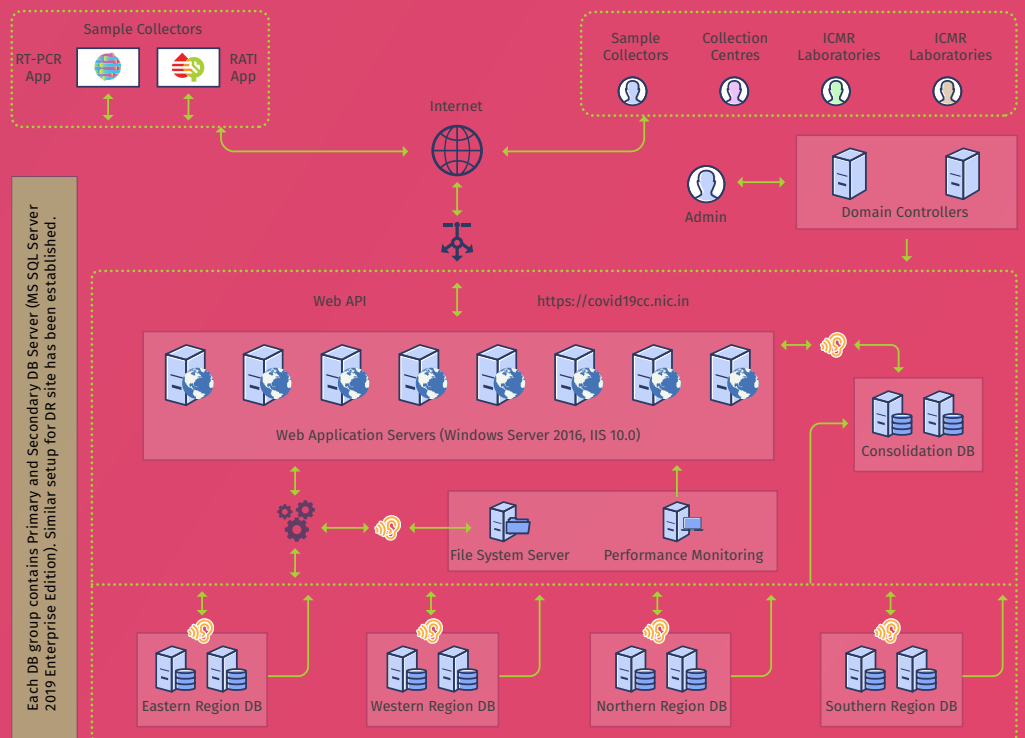
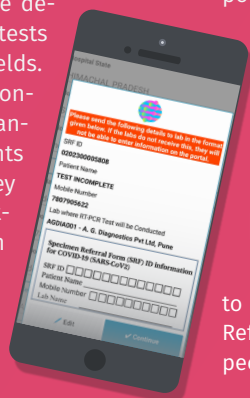
NIC's Mobile Application for Containment and Monitoring Covid-19 pandemic across the Country.

Covid-19 pandemic in India is part of the worldwide situation of coronavirus disease and a large number of people is likely to be affected by the coronavirus. The country has imposed initial lock-downs, supplemented by increased testing of people and contact tracing of patients as effective measures in its fight against Covid19. The United Nations and World Health Organization have praised India's response to the pandemic as 'Comprehensive and robust', for containing the spread and building necessary healthcare infrastructure.

Why RT-PCR: Increasing Number of Covid19 Tests

With just 13 ICMR authorized Laboratories for testing of Reverse transcription-polymerase chain reaction (RT-PCR) samples in the first week of February 2020, India now has more than 900 laboratories to meet the increased test load which crossed 1 lakh samples per day by end May 2020. A large number of tests has necessitated that correct patient identification, location and other data are captured during the sample taking the stage and this data is available for test result entry in ICMR authorized laboratories before the samples physically reach these labs. Quite a few asymptomatic people are testing positive for Covid-19 and another Rapid Antibody Test is being conducted, although in lesser numbers at present, to detect Covid-19 patients.

The delays in data entry, wrong data in Specimen Referral Forms (SRF) for RT-PCR tests, delay in the entry of test results in Laboratories were the reasons for Government's decision to quickly and correctly capture details of all Covid-19 related tests by sample collectors in the fields. This was important for the containment of the Covid-19 pandemic by identifying patients and isolating them before they infect others. NIC was entrusted to develop the solution and a dedicated team of officers working at different locations came up with the solution, in extremely dif-



icult circumstances during the first fortnight of April 2020. The NIC Himachal Pradesh State Centre developed the two mobile applications, namely RT-PCR and RATI, on Android and iOS (Apple) platforms with an authorization portal <https://covid19cc.nic.in> in a very short span of 10 days.

Considering the likely increase the number of tests to be conducted, the mobile apps and portal have been performance tested to meet a very high load of 50,000 concurrent users for the Apps and 20,000 concurrent users for the portal. Matching infrastructure was deployed in NIC Cloud set up in NDC Shastri Park, in New Delhi, by the NIC PFMS team and NIC HP team.

RT-PCR Mobile App

The RT-PCR mobile app has been developed to collect data being captured in the Specimen Referral Form of RT-PCR samples of Covid19 suspect patients in the country. The objective is to

ensure that the correct mobile number of patient is available along with location codes (Lat/Long) for contact tracing and identifying sensitive zones. The data is immediately made available to the ICMR portal through which ICMR authorized laboratories can enter Test results against these



Sl.No	State	Total Centres	Total Persons	Total Active	Sample Collected
1	ARUNACHAL PRADESH	853	3226	2072	464932
2	ASSAM	9223	3487	2459	499954
3	BHARATKHAND	488	4227	2764	256476
4	CHHATTISGARH	453	1794	1355	252004
5	GUJARAT	638	4033	2034	248000
6	HARYANA	1495	3150	2000	23993
7	HIMACHAL PRADESH	279	2071	1655	22547
8	JHARKHAND	1039	2524	1804	27020
9	KARNATAKA	329	1033	786	162807
10	KERALA	214	444	305	140077

SRF forms which are generated from the App and sent to the Labs with samples.

Benefits of using RT-PCR app at the national level

RT-PCR Features

- Authentication with User Mobile/ OTP
- Checking authorization of Users' mobiles
- Patient Mobile/OTP and Geo-tagging
- Less than 60 seconds to complete on Specimen Referral Form v.11
- Repeat Test data from ICMR
- Online access to ICMR for all collected data
- PDF print option of SRF form and SMS to Patient to view SRF
- Record saving option available after OTP
- Skip OTP Feature for patients without mobile and to enable offline entry
- Delayed data entry option after Mobile Verification
- Extensive Help manuals, FAQs, Movie, Presentations

Advantages of using RT-PCR App

Sample Collectors/ Collection Centres

- Easy to use, takes about 1 minute to fill 1 SRF form
- SR Form can be filled from Patient location or away from patient location
- SR Form can be partially filled at the location and completed later
- Avoids duplicity as data can be directly entered into App instead of writing on a paper
- SR Form can be printed in office for sending with Sample to Laboratory
- One Mobile App ensures that everyone is aware and can help other sample collectors
- Day wise data download facility in Excel or PDF, showing complete/ pending forms

Patients

- Patient mobile is verified
- Patient Geolocation is captured
- Patient gets SMS based information of SRF

ICMR

- Single solution for country-ensure uniformity
- Ease of Maintenance in case of SRF changes
- Single point of integration with ICMR data
- Data is available on a real-time basis to ICMR
- Helpful for ICMR to interact with single tech. team
- Contact tracing and identification of sensitive zone is possible

Laboratories authorized by ICMR for Test Results

- Laboratories can download day-wise lists of samples with SRF sent to them

Miscellaneous

- MIS for SSO and DSOs at State/District level
- Data download facility in Excel/ PDF
- Search data based on SRF ID or patient mobile
- NIC technical support in country up to District level
- Audit trail of authorized users & samples collected
- Robust Infrastructure to handle large loads with redundancy

Onboarding Process through Covid19 Collection Centre Portal at <https://covid19cc.nic.in>

In order to quickly set up a mechanism for authorizing users for RT-PCR and Rati mobile apps, a web portal <https://covid19cc.nic.in> has been developed. No separate user IDs are required to use this portal. All State Health Department officials, Deputy Commissioners, State/District Surveillance Officers, Chief Medical Officers, Nodal officers from State NIC offices and all DIOs have been onboarded in this portal through their official email Ids on existing NIC domains. The lists of these Power users are available in public do-



The RT-PCR Mobile app has helped the Himachal Pradesh Government in correct data capturing of all RT-PCR samples/ tests in the State, for further use in containment and contact tracing of Covid19 pandemic. The results are promising, considering the very few Covid19 cases in HP. I complement the DG, NIC and State NIC Team in developing the mobile app and Covid19cc.nic.in portal in a very short time under difficult and trying conditions. I am also happy to note that the entire country is using it for RT-PCR samples data.



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main so that the Collection Centres can check whom to contact in their State/District for getting their Collection Centre white listed along with the authorized list of sample collectors/testers with mobile phones, who will be using these mobile Apps. The task was completed in a record time of just 2 days for both the mobile apps all over the country.

The portal has been improvised over the two months and several reports have been provisioned based on the feedback of State Health Officials, Collection Centres, Sample Collectors and GoI requirements.

Portal features

- Responsive and simple interface
- Email-based User IDs/Passwords on NIC domain
- Role-based access for State/ District users
- MIS reports for National/ State/ District Administration and Health officials based on their role



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