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HNP Discussion Paper

INNOVATION TO STRENGTHEN SOCIAL PROTECTION AND NUTRITIONAL SUPPORT WITHIN A TUBERCULOSIS CONTROL PROGRAM

Evidence and Emerging Lessons from India

November 2022

Contents

ACRONYMS

Currency Equivalents:

1 million = 10 lakhs
10 million = 1 crore

ABHA	Ayushman Bharat Health Account
ASHA	Accredited Social Health Activist
CCT	Conditional Cash Transfer
CHAI	Clinton Health Access Initiative
CSC	Common Service Centers
CTD	Central TB Division
DAO	District Accounts Officer
DBT	Direct Benefit Transfer
DMC	Designated Microscopy Center
DPC	District Program Coordinator
DOTS	Directly Observed Therapy, Short-course
DSC	Digital Signature Certificate
GOI	Government of India
IFSC	Indian Financial System Code
JAM	Jan Dhan-Aadhar-Mobile Trinity
KYC	Know Your Customer
LMIC	Low- and Middle- Income Country
MOHFW	Ministry of Health and Family Welfare
NGO	Non-Governmental Organization
NPY	Ni-Kshay Poshan Yojana
NSP	National Strategic Plan
NTEP	National Tuberculosis Elimination Program
OOP	Out-of-Pocket Expenditure
PDS	Public Distribution System
PFM	Public Financial Management
PFMS	Public Financial Management System
PHU	Peripheral Health Unit Level
PMJDY	Pradhan Mantri Jan-Dhan Yojana
PPA	Print Payment Advice
PPC	Public Private Coordinator
QR	Quick Response
RNTCP	Revised National Tuberculosis Control Program
ROP	Record of Proceeding
SNA	Single Nodal Account
SAO	State Account Officer
STS	Senior Treatment Supervisor
TB	Tuberculosis
TU	Tuberculosis Unit
USD	United States Dollar
WHO	World Health Organization

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Abstract

Tuberculosis is one of the major global health problems and a leading cause of infectious disease, particularly in low-and middle-income countries (LMICs), where tuberculosis is hyperendemic because of increased exposure and transmission. As a result, tuberculosis control programs have been widely turning to social protection actions and monitoring systems for tuberculosis control. Cash transfers are one social protection action increasingly used in LMICs, and have proven their effectiveness in improving health outcomes and access to and use of health services. The more countries shift toward providing cash transfers and developing live monitoring systems of tuberculosis patients across public and private cohorts, the better the global tuberculosis response will be. India is leading with these reforms by providing direct benefit transfers and developing the Ni-Kshay Information System, segregated by tuberculosis units and public and private cohorts to increase treatment coverage, and provide monetary incentives for tuberculosis patients.

Using a mixed methods approach, this case study paper examines and documents early experiences and lessons learned from the implementation of the Ni-Kshay Poshan Yojana scheme. Findings indicate that with the considerable resources associated with Ni-Kshay Poshan Yojana, it is an important innovation to improve tuberculosis treatment and service delivery, payments and settlement system, and TB program management. The paper proposes policy recommendations for the Government of India to take the DBT innovation to the next level, further amplifying its impact, and areas for future studies.

Keywords

Tuberculosis, Direct Benefit Transfer, Ni-Kshay Poshan Yojana, Social Protection and Cash Transfers

Section I: Introduction

The Government of India (GOI) has taken innovative developmental, social protection, and policy measures by leveraging information systems to address the problems associated with TB through its National Tuberculosis Elimination Program. The government specifically provides direct benefit transfer (DBT) to TB patients and other stakeholders and utilizes the Ni-Kshay Information System to increase notifications, record patient treatment details, monitor treatment adherence, and transfer cases between providers.

This paper contributes to the operations research support of the Central TB Division (CTD) to inform programmatic and policy decisions, and to contribute to the "Lighthouse India" learning initiative toward best practice and learning exchange with other countries to benefit India and the world. More specifically, this paper presents evidence of DBT in Ni-Kshay Poshan Yojana (NPY) under the NTEP in India and seeks to:

1. Document early results and implementation lessons of DBT in NPY from 2018 to date.
2. Synthesize policy insights—based on the chosen case studies—that will allow improvement to the service delivery chain, payments and settlement systems, and human resources.
3. Document international experience to inform the policy makers, state and district government officials.

This paper documents several distinct pieces of literature and provides insights into three major areas. First, it contributes to the growing literature on conditional cash transfer for TB programs. The paper also recognizes that a system-based approach will enable the progressive adoption of social protection delivery system phases of:

Second, this paper contributes to the NPY's improvements to uptake and registration, payments and settlement system, and human resources. It is believed that the proposed improvements would yield lasting effects on the program, its stakeholders, and TB patients. Third, the nature of the knowledge highlighted in this paper builds on the existing literature plus case study knowledge of, or direct involvement in, diverse geographical regions.

A system-based approach will enable the progressive adoption of social protection delivery system phases

Figure 1:

Institutional Arrangement for TB Support Programs

Source: Authors Own.

Central TB Division, MOHFW, Government of India

Deputy Director General TB, Joint Secretaries (JS), WHO Consultants, DBT Expert(s) and Support Staff

State TB Cell

STO, Medical Officer, WHO Consultants, SAO, Epidemiologists and Support Staff

District TB Cell

DTO, Medical Officer, DAO, PPC, and Support Staff

Tuberculosis Unit (TU)

STS and Support Staff

DMC, PHC

Lab Technicians, Health Workers, NGO and Others

Ni-Kshay Information System Overview

To keep track of TB patients, the Ministry of Health and Family Welfare (MOHFW) first introduced the Ni-Kshay Information System in 2012. To facilitate TB notification, Ni-Kshay 1.0 was developed as a case-and web-based TB surveillance system (digitized notification register) and TB patient identification system.

In 2018, Ni-Kshay 2.0 modules made provisions for notifications from both public and private sector cohorts and merged the different silos which were created in the previous version for private sector notifications, TB, and DRTB registrations. Whenever a new TB patient is registered in Ni-Kshay, monitoring authorities receive notifications (alerts) on the number of patients registered in TUs, and peripheral health institutions (Figure 1).

Each district is given a target as well for notifying all TB public and private patients based on the previous month, quarter and year. The mandatory notifications and establishment of targets have played a pivotal role toward the national goal of TB elimination in India by 2025.

> The mandatory notifications and establishment of targets have played a pivotal role toward the national goal of TB eradication in India by 2025, ahead of the sustainable development goals by 2030

However, a notable change in policy required that patients would be notified at the time of diagnosis, versus the earlier policy of notification at the time of treatment initiation. To implement this policy change, major system-level changes were implemented to accommodate notifications to be recorded at the peripheral health unit level rather than at the TU level.

The information system now supports the digitization of up to 35,000 TUs at the block level, as opposed to the earlier 7,000 TUs. In the context of examining Ni-Kshay as an Information System, the MOHFW reported more than 1.47 crore (14.7 million) patient episodes recorded on the information system; more than 1488 crore (14.8 Billion) monetary incentives (entitlements) made to support TB patients; and more than 14,000 public and private health providers interacting with the information system (Everwell 2022).

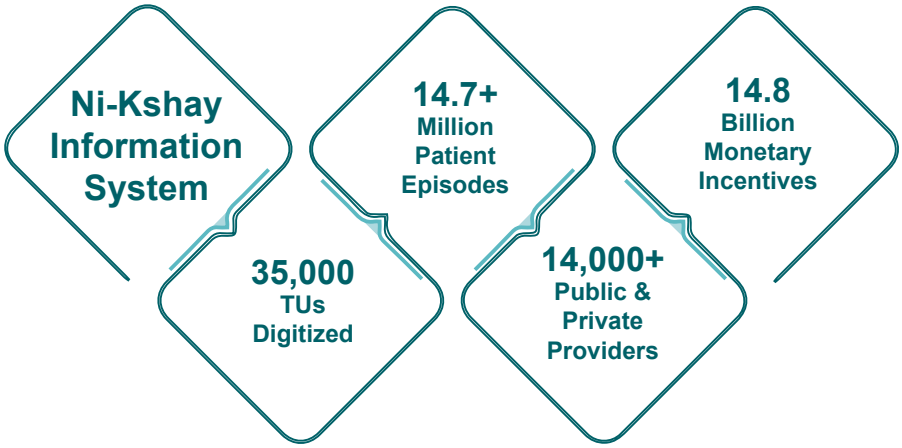
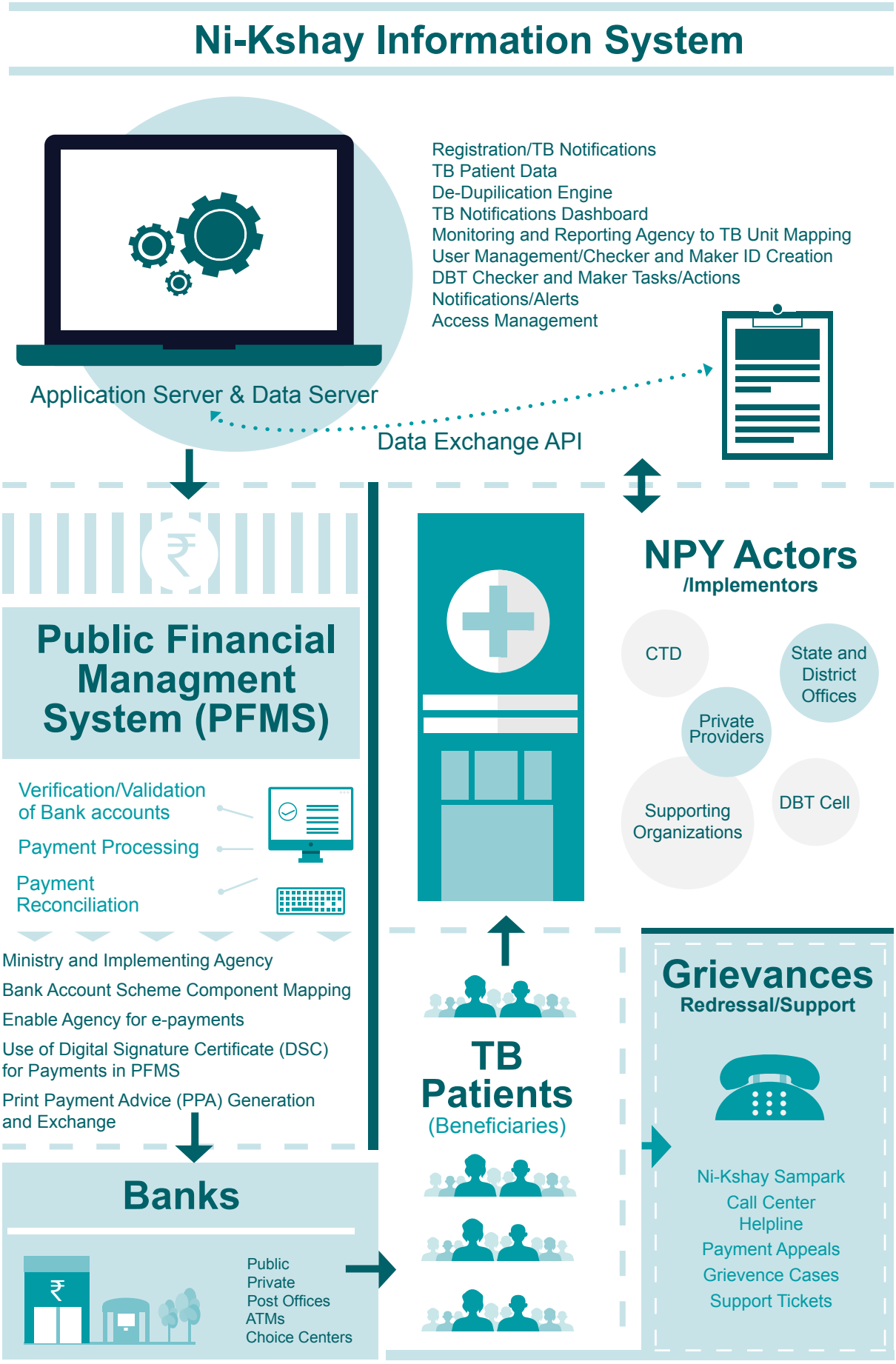


Figure 2:

Public Financial Management System (PFMS) Integration with Ni-Kshay Information System



As an information system, Ni-Kshay allows DBT linkages to TB patient accounts, ensuring validations and the payments are done through the Public Financial Management System (PFMS) (Ni-Kshay Patrika 2018; Direct Benefit Transfer Manual for National Tuberculosis Elimination Programme 2020) (Figure 2). The PFMS interfaces with the treasury systems of the states and union territories with legislatures.

As the backbone of the payment system, the PFMS plays an important role in the allocation and use of public resources and macroeconomic management and processes that support fiscal policy decisions

It is widely recognized that PFMS reforms are conducted to improve service delivery, which could lead to better social protection scheme outcomes. The PFMS includes both downstream functions including revenue management, accounting, reporting, monitoring, and evaluation; and upstream functions including annual budgeting, strategic planning, and medium and long term expenditure framework. The effectiveness of the PFMS, however, depends on the effectiveness of the transmission of monetary incentives (cash transfers) between different links in the service delivery chain of the assumed governance arrangement.

The GOI has implemented DBT for more than

300

welfare schemes

”

DBT in Ni-Kshay Poshan Yojana (NPY)

In the last nine years, the GOI has transferred more than Rs. 2,431,022 crore (24 trillion) to beneficiaries using digital payment modes under the DBT mechanism, which is influencing the discourse on service delivery in India.

The DBT system as a mechanism is allowing the transfer of digital payments directly to beneficiaries and low-income households through their bank accounts (entitlements) to reduce leakages, bring transparency, avoid delay, and terminate pilferage. The first phase of DBT was initiated in 43 districts and 78 districts were added later across 27 social protection schemes.

The quantum of DBTs grew from 2.8 trillion (2.8 lakh crore) transactions in 2019 to 3.9 trillion (3.9 lakh crore) transactions in 2020. Again, the quantum of DBTs increased from March 2020 to April 2021 by 140 percent (Sharma 2021).

All 28 states and 8 union territories have adopted DBTs

All 28 states and 8 union territories have adopted DBTs for the disbursement of entitlements, including subsidies.

DBTs is also about optimal utilization of limited fiscal resources with the aim of faster flow of information, allocation of funds, and accurate targeting of beneficiaries.

Table 1:

DBT Program Evolution Time lines

Year	In Kind (INR CRORE) Year Wise Fund Transfer	Number of Schemes (in kind)	Cash Transfer (INR CRORE) Year Wise Fund Transfer	Number of Schemes (cash)
2013–2014			7,367 crore	28
2014–2015			38,926 crore	34
2015–2015			61,942 crore	59
2016–2017			74,689 crore	142
2017–2018	20,579 crore	76	1,70,392 crore	361
2018–2019	1,15,704 crore	71	2,14,092 crore	369
2019–2020	1,41,902 crore	64	2,39,729 crore	362
2020–2021	2,55,949 crore	45	2,96,577 crore	271
2021–2022	3,62,125 crore	46	2,68,139 crore	267

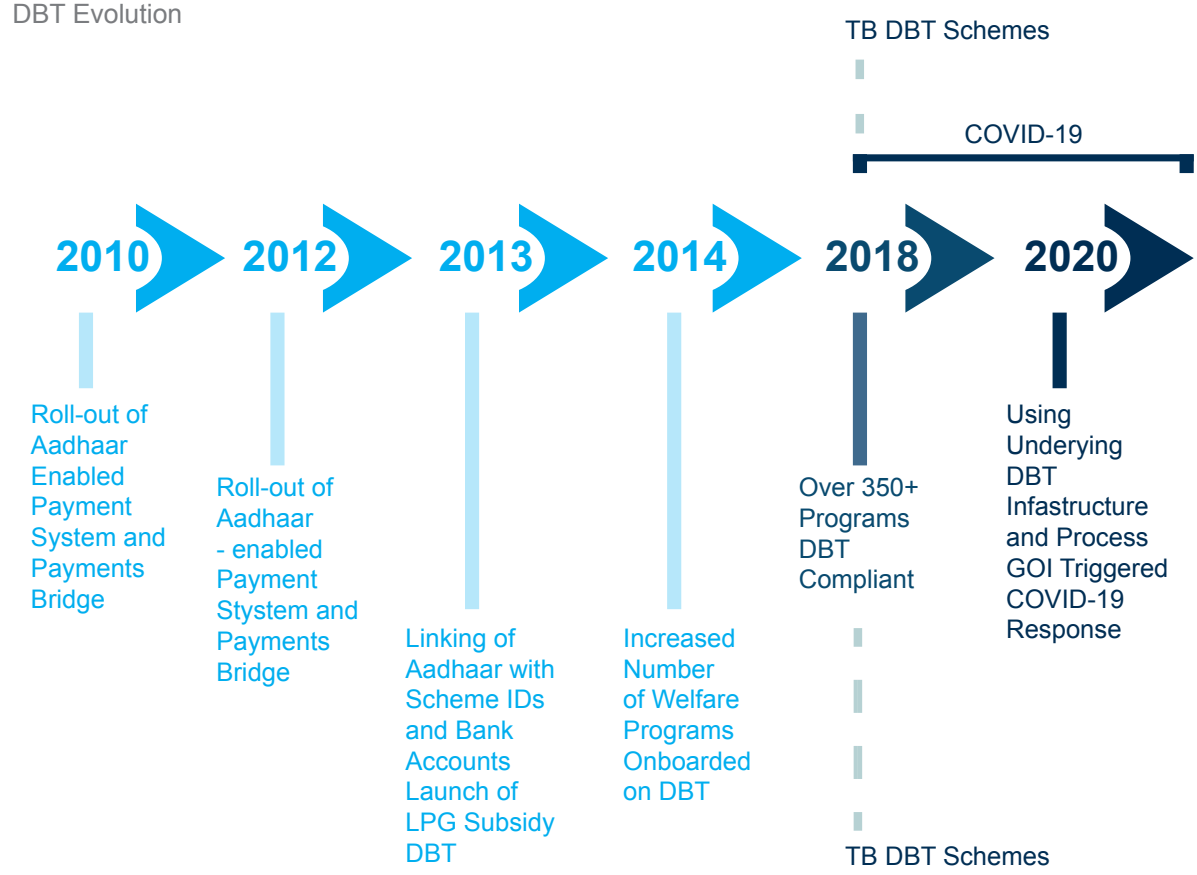
Source: Authors and Direct Benefit Transfer (DBT) Bharat Portal 2022.

The GOI has implemented DBT for more than 300 social protection schemes in other sectors, including eleven schemes from the health sector (Table 1 and Figure 3). Despite the coverage, there are gaps, and in India, even a small percentage of exclusion leads to large numbers in absolute terms. Beneficiaries still require assistance required with digital literacy to ensure access and enrollment. Current enrollment according to the eligibility is done through the Common Service Centers (CSC). The movement toward business correspondents would have better coverage as they are already connected to the financial institution.

At the district level, there exists 'zero-balance' bank account issues. Cardless withdrawal is available at only a few automated teller machines, and around Rs. 26,697 crore (266,970 million) lies in dormant accounts of the financial institutions (Business Standard 2021). At the state level, a multiplicity of social protection schemes have not achieved their targets. Some of the possible resources could be attributed to administrative blockages, and inclusion and exclusion errors. The risks and exogenous shocks faced by the poorest quintile are greater.

FIGURE 3:

TB DBT in the Context of GOI-Wide DBT Evolution



Source: Authors Own.

Janani Suraksha Yojana (previously the National Maternity Benefit Scheme) launched in 2005, for example, is implemented with the objective of promoting institutional delivery among poor pregnant women. Cash of Rs. 500 (~6.5 USD) is provided to a woman for every live birth. An additional Rs. 200 (~2.4 USD) is provided in urban areas and Rs. 100 (~1.2 USD) in rural areas if the delivery is in an institution. Besides maternal care, the scheme provides transport assistance for poor pregnant women to reach the institution. There are four DBT schemes for TB support programs. The CTD, Ministry of Health and Family Welfare (MOHFW), GOI is responsible for the technical implementation of the NTEP program nationwide and supports the DBT support TB schemes. The payments are processed for eligible beneficiaries through the Ni-Kshay Information System. The four DBT support TB schemes include Ni-Kshay Poshan Yojana (NPY) for TB patients, monetary incentives for private sector providers and informants, transport support for TB patients in notified tribal areas, and treatment supporters honoraria.

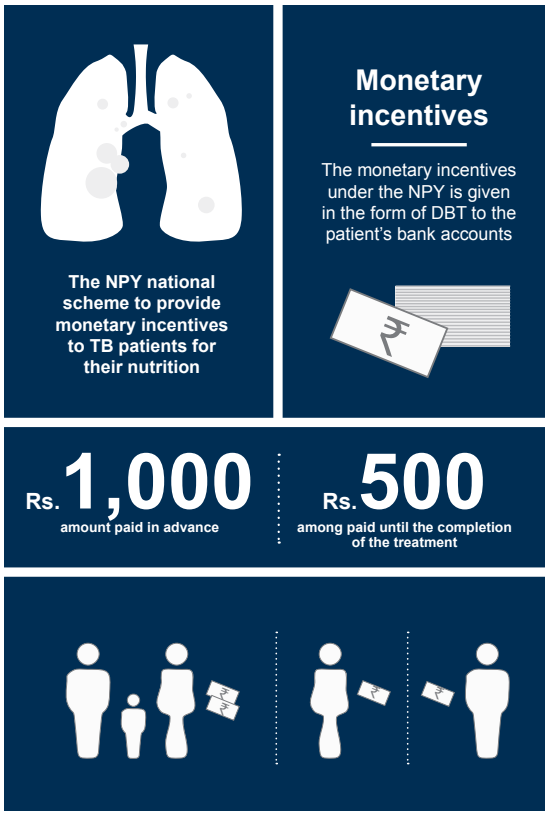
In 2018, the union government launched the NPY national scheme to provide monetary incentives to TB patients for their nutrition. The monetary incentives under the NPY is given in the form of DBT to the bank accounts of both the public and private notified TB patients. The DBT in NPY functions under the multilayer structure with relative ranks and formal communication channels, and recognizes the capacities relating to every stakeholder in the NPY scheme. This structure allows in charge of the general planning, determination of resources and supervision on standards in the NPY program.

The scheme was launched in 2018 and provides Rs. 1,000 (~13 USD) in advance and Rs. 500 (~6.5 USD) until completion of the treatment (Figure 4). The first incentive of Rs. 1,000 (~13 USD) is created on the date of diagnosis and notification. The subsequent monetary incentives are calculated from the treatment initiation and to the outcome date if available or when the benefit is created. In the case of the extension of treatment, if the extension is for one month then Rs. 500 (~6.5 USD) is paid, if the extension is for three months then Rs. 1,500 (~19.5 USD) is paid for each three-month extension.

FIGURE 4:

Communication Leaflet and Poster Developed for Ni-Kshay Poshan Yojana Highlighting Rs. 500 (~6.5 USD) Monetary Incentives until the Completion of the Treatment

Source: Coimbatore District, Government of Tamil Nadu.



Source: Authors Own.

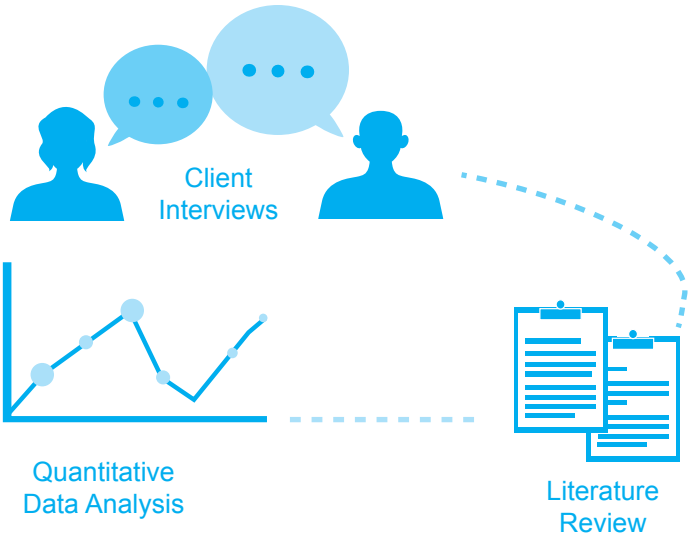
Case Selection

This paper used qualitative and quantitative methods of data collection and analysis within a diagnostic study approach. This involved:

01 | Interviews with key informants to collect information related to DBT in the NPY program (between February 2022 and April 2022). The authors collected and reviewed official documents, such as government policy documents, and official MOHFW reports;

02 | Systematic review of available published and unpublished gray literature; and

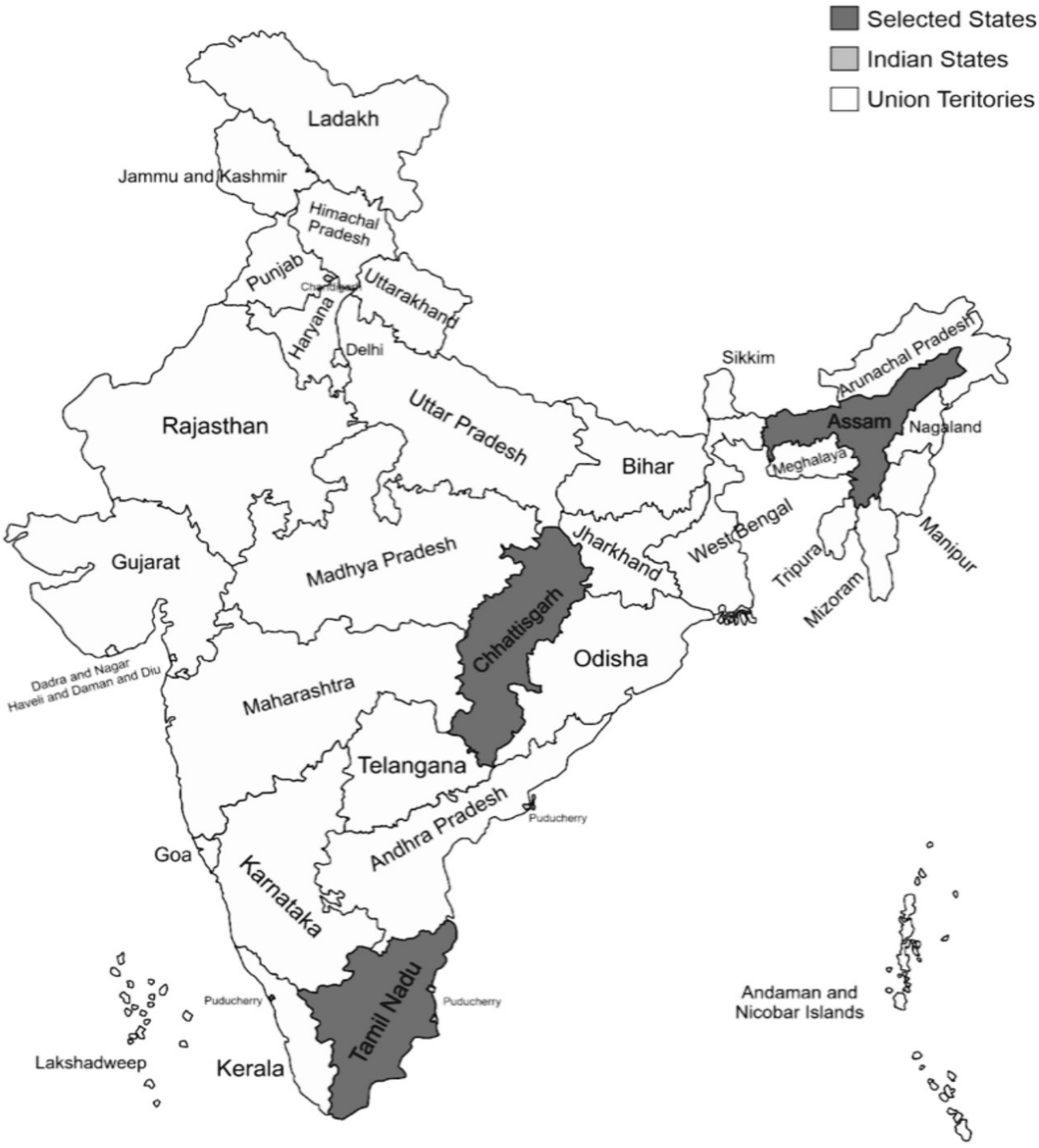
03 | Quantitative analysis of indicators (variables) reported in the Ni-Kshay information system. The Ni-Kshay information system indicators and secondary documents were the main sources of quantitative data.



To review the performance of the NPY delivery system, this paper conducted a comprehensive quantitative analysis of the dataset provided by the CTD and the state and district offices. The analysis covers three states: Assam, Chhattisgarh, and Tamil Nadu; and six districts: Tinsukia (4 TUs), Dhemaji (5 TUs), Salem (23 TUs), Vellore (21 TUs), Durg (4 TUs), and Surajpur (6 TUs) (Figure 5). After discussions with key informants, the authors identified several key indicators in the Ni-Kshay Information System; these indicators provide insights into how DBTs have taken place over the past years (Table 2).

Figure 5:

Chosen States and Districts (continued to page 23)



Source: Authors Own.

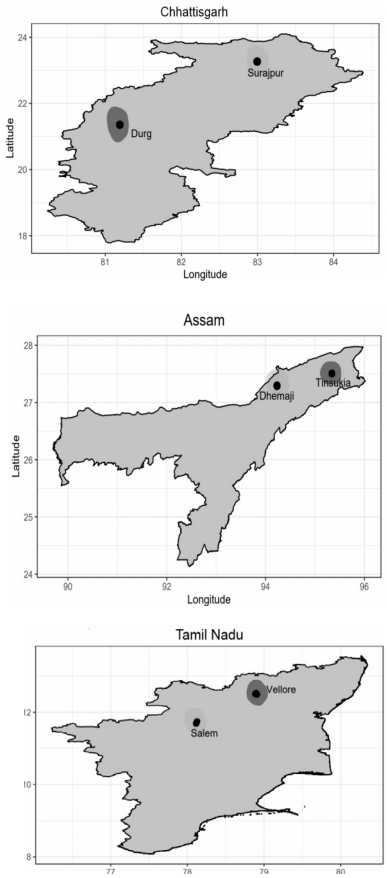
Table 2:

Performance Indicators (Variables) Used for Analysis

Indicator (Variable) Name	Indicator (Variables) Description
Total number of NPY TB patients	Total number of TB patients under the NPY program (year-wise)/total notified
Number of TB patients paid	Number of TB patients paid under the NPY program (account based/aadhaar based)/ paid at least once
Transactions failed	Transactions failed (account based/aadhaar based)
Bank details available	Percentage of TB patients with complete bank account information
Bank details validated	Percentage of TB patients with validated bank account information
Maker processing time	Processing time from notification to validating patient information
Checker processing time	Processing time to approve the benefit
PFMS acknowledgment time	Processing time for PFMS to accept or reject payment requests
Average benefit creation to credit time	Average number of days from notification to first payment
PFMS approval and credit TIme	Processing time from validating information to benefit received in bank account
Forgone benefits	Percentage of TB patients who have forgone their benefit

Source: Authors, CTD and Direct Benefit Transfer NTEP Manual.

Figure 5:
Chosen States and Districts



Source: Authors Own.

Study sites were purposely chosen in consultation with the CTD, MOHFW, GOI, and state governments. These states and districts:

(i) Allowed to identify indicators (variables) that best represent the theoretical concepts to measure and closer examinations of convergence and divergence cases discovered in the process of data generation;
(ii) Have an ample presence of DBT in NPY. Language also played a key factor, especially in capturing narratives, symbols, adages, and others;
(iii) Allowed for comparison of larger and smaller districts across the chosen states;
(iv) Are destinations for influx and outflux of migrants;
(v) Have both public and private notifications and benefits paid; and
(vi) Offered opportunity to explore both centralized and decentralized models of DBT payments for TB patients. In the centralized model, a centralized agency makes all DBT payments to patients. In the decentralized model, DBT payments happen from the district or block level.

Limitations

For the purpose of the analysis, aggregated data was chosen to address the objectives of the paper. Ni-Kshay data from 2018 to present, covering the national, state, and district-level information of the DBT in the NPY program, was obtained for the analysis. A limitation of this paper is that interpolation of findings may not apply to the other states and union territories. However, findings are still expected to provide key insights into programmatic requirements that will enable effective delivery of payments and settlement systems and caseload management in urban and rural areas.

Some indicator values in the different dataset slightly differ as all the data are aggregated figures and varying methods were used to calculate the means and averages. Data were aggregated over a yearly period in one dataset, while other dataset provided data on a quarterly basis. Another distinction between the two dataset is that the mean processing times in the CTD dataset are calculated based on the benefit and not the TB patient, which implies that one TB patient may have multiple benefits. Another limitation in the analysis is that data from 2018 and 2019 are not available for some districts, including Chhattisgarh. Where in-kind nutritional food basket benefits were the only payment modality used in 2018 and 2019. The analysis also uncovered some outliers for the mean processing days.

There are other limitations and considerations authors made for the analysis. These include some of the terminologies used for the processing times in the data requests, as they are not the same as the indicator names in the Ni-Kshay Information System. Also, the processing time variables in the dataset provided by CTD are not the complete set of indicators. For example, the credit response time indicator is not part of the dataset on which the analysis has been conducted. This indicator adds up to the processing times of the delivery chain to evaluate the average benefit creation to credit time.

Including this indicator would still not be a true reflection of the time it takes for a patient to be notified till they receive the benefit in their bank account. The credit response time comes from the banks to Ni-Kshay, and sometimes it may be delayed even though the benefit would still be credited and available to the patient.

In summary, this paper applies both quantitative and qualitative methods to meet the defined objectives. This paper also follows a standardized protocol that covers how to prepare for human resources for TB control. This paper is not meant to be representative of the Indian region as a whole. As with other short-term policy studies, this study is restricted by its limited fieldwork schedule. Data availability was the other main constraint, for which the authors compensated by consulting more than 50 key informants via semi-structured interviews and focus group discussions; systematically reviewing existing literature; and triangulating the data collected from qualitative interviews and focus group discussions with the secondary data.

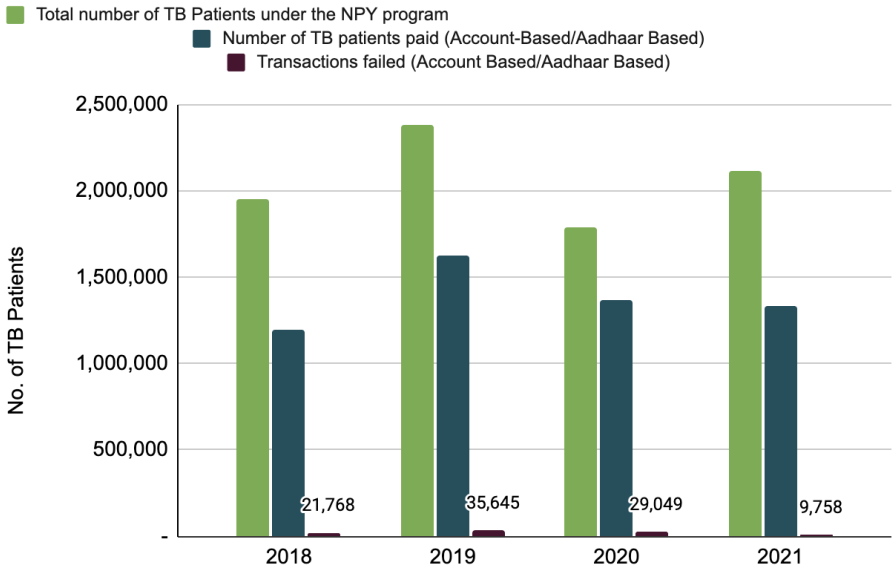
The remainder of the paper is structured as follows. Part II describes results and key findings based on the chosen states and districts for the paper. The final part concludes by providing policy-level recommendations, and also makes suggestions for future work.

Part II: Results And Key Findings

Figures 6, 7 and 8 provides the national level analysis on the NPY DBT performance with respect to the number of TB patients enrolled and paid, as well as on the processing times and the validation of bank account information of the patients. The number of patients under NPY has remained consistent through 2018 to 2021, with the highest number of enrolled and paid patients in 2019. The number of failed transactions has improved since 2020 and significantly dropped in 2021, which indicates improved processes in Ni-Kshay and PFMS.

Figure 6:

National Level NPY DBT Performance Analysis (TB Patients)

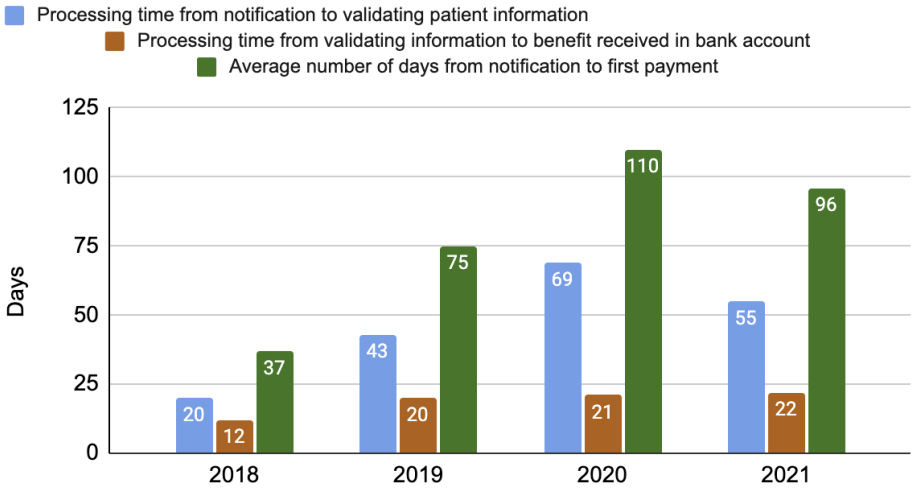


Source: Authors Calculations based on Ni-Kshay Data.

The national average processing times have increased over the observed years as 2020 saw delayed processing of payments due to COVID-19 pandemic. The overall processing times for the first payment to patients, that is, average number of days from notification to the first payment is on par compared with the three states data analyzed as part of this work.

Figure 7:

National Level NPY DBT Performance Analysis (Processing Times)

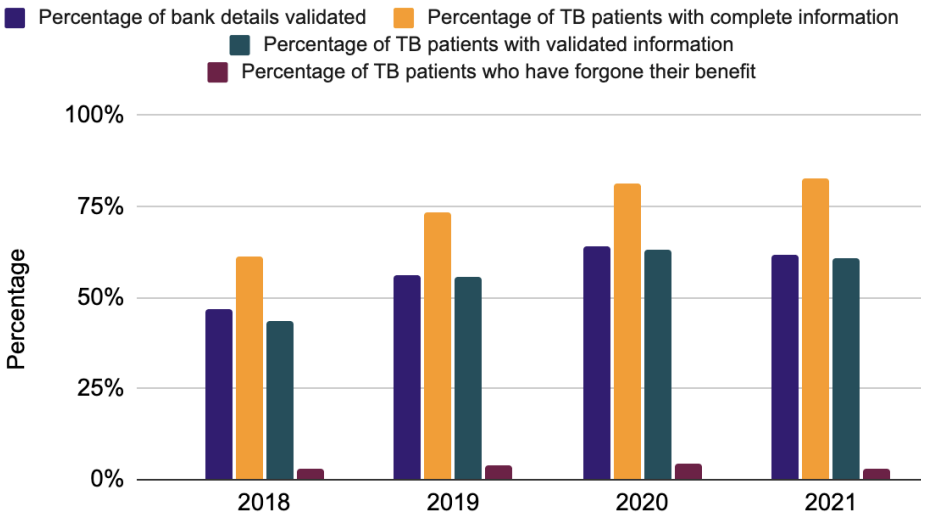


Source: Authors Calculations based on Ni-Kshay Data.

The percentage of patients with complete information has seen a consistent improvement since 2018 as over 85 percent of the patients had complete information in 2020 and 2021 compared to 65 percent in 2018.

Figure 8:

National Level NPY DBT Performance Analysis (Bank Details)



Source: Authors Calculations based on Ni-Kshay Data.

Comparative analysis of Assam, Chhattisgarh, and Tamil Nadu

Tamil Nadu is the southernmost and sixth most populous Indian state, with a population of 7.2 crore (72 million) (Census of India 2011). About 48 percent of Tamil Nadu's population resides in urban areas, and 52 percent of the population resides in rural areas. Tamil Nadu is one of the most urbanized states in India, and is identified as one among the top five states with largest migrant TB patients. The presumptive TB examination rate was 792/lakh (7,920/million) in 2020 and 1,121/lakh (11,210/million) in 2021. In Tamil Nadu, Uzhavar Pathukapu Thittam (farmers benefit scheme) provides monetary incentives to TB patients. The scheme provides Rs. 1,000 (~13 USD) monthly to small and marginal farmers until the completion of the treatment. Some non-profit organizations across districts offer food supplements to TB patients, coming from food insecure households.

The non-profit organizations provide essential commodities to TB patients and this has improved treatment and adherence results. Due to COVID-19, the state experienced a nearly 30 percent overall decline in TB notifications. Post the COVID-19 second wave, to improve notifications, new mobile diagnostic units for active and targeted case finding in all districts of the state will be introduced. In addition, the state is planning to implement a right to health bill that will allow for universal health coverage.

With a population of just above 3 crore (30 million) (Census of India 2011), Assam is the largest land-locked northeastern state and second in terms of area. About 14 percent of the population live in urban areas, and 86 percent live in rural areas (Assam at a Glance 2019). While the state of Assam appears to have adequate physical health infrastructure with primary and community health centers, the quality of health care and coverage is fragmented, particularly in the rural regions. This is partially compounded by the service delivery access as it continues to be a major challenge, arising from hilly terrain, limited efficiency, inaccessibility and infrastructure (key informants 2022). To improve access to services, the government continues to make notable progress to support digitization of service delivery. The presumptive TB examination rate was 354/lakh (3,540/million) in 2020 and 355/lakh (3,550/million) in 2021.

East central Chhattisgarh state is the ninth largest and seventeenth most populous state, with a little over 25 million people (2.5 crore) (Census of India 2011). About 23 percent of the population live in urban areas, while 77 percent live in rural areas; about one third of the population is scheduled tribes. Public health in Chhattisgarh has seen a transition over the years but still more improvements are required. For example, the pace of poverty reduction has been slower than in other states (India National Multidimensional Poverty Index Baseline Report 2021). Over the past two decades, the state has seen an increase of 16 district hospitals and 275 new primary health centers (Rural Health Statistics 2019). Chhattisgarh was one of the first states to provide “Right to Food” at a cost of 1.4 percent of GDP, and to guarantee nutrition security (Economic Times 2013). Under the Chhattisgarh Food Security Act, 23 million people are covered under the state. The presumptive TB examination rate was 585/lakh (5,850/million) in 2020 and 703/lakh (7,030/million) in 2021. In 2022, in the first three months, a total of 2,300 people were diagnosed with TB under the state TB control program via the door to door campaign (The Times of India 2022).

Data from Ni-Kshay reveals that Assam, Chhattisgarh, and Tamil Nadu have improved in terms of the number of beneficiaries paid since the initiation of DBT scheme. Table 3 shows the percentages for the three states, indicating that numbers of TB patients paid have gone up since the initial challenges faced by the program in 2018.

Table 3:

Percentage of Beneficiaries Paid out of Total Beneficiaries Notified

	2018	2019	2020	2021
Tamil Nadu	60.25%	74.59%	87.08%	82.58%
Assam	66.30%	78.19%	86.04%	73.08%
Chhattisgarh	46.14%	64.17%	76.98%	79.43%

Source: Authors Calculations based on Ni-Kshay Data.

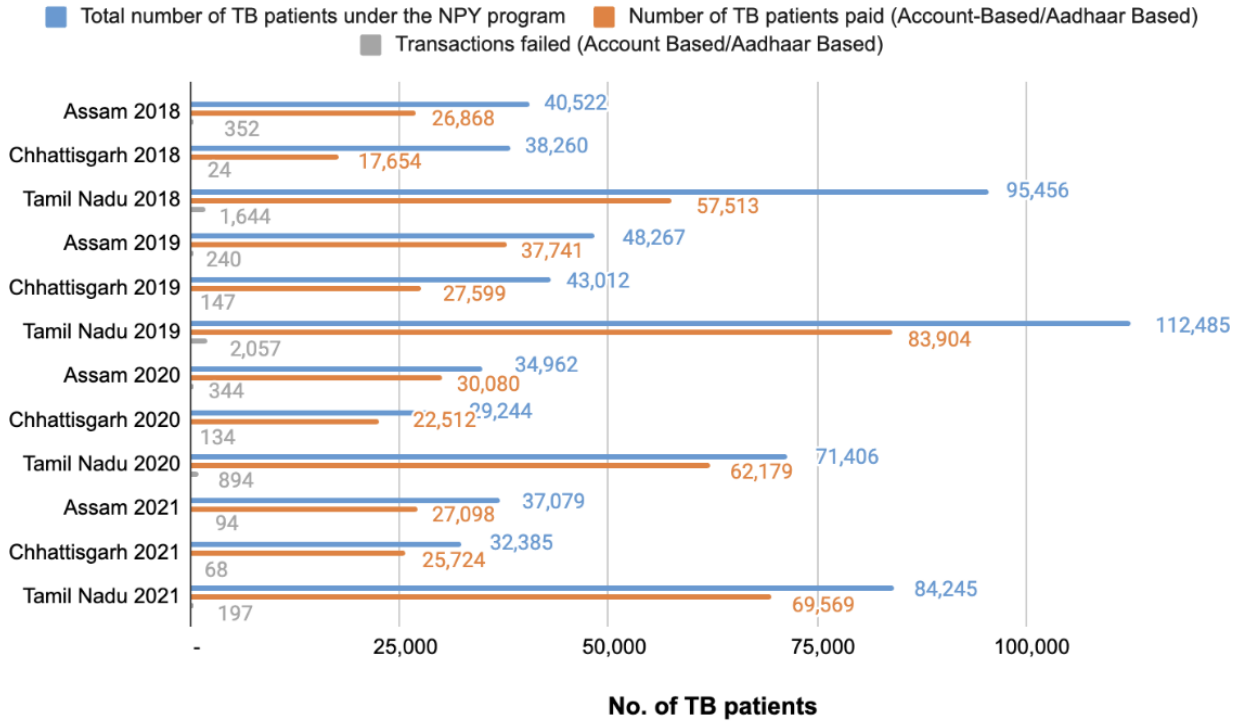
Figures 9, 10, and 11 illustrate the comparative analysis of the states of Assam, Chhattisgarh, and Tamil Nadu for 2018–2021. The divergence across the three states might have resulted from factors including state capacity, policy change, economic context, geographic region, human resources, pandemic-related disruptions, caseload management, bank mergers, and governance. Tamil Nadu has the highest burden of TB patients, paid monetary incentives, and the highest number of financial transactions that did not reach the intended patients among the three states from 2018 to 2021.

In contrast, Chhattisgarh has the lowest number of patients, paid monetary incentives, and transactions failed among the three states from 2018 to 2021. In terms of processing times for payments, Assam has the lowest average number of days it takes from patient notification to them receiving the first payment from 2018 to 2021, except in 2019, Tamil Nadu recorded the lowest average number of days for the same variable. The reduction in processing times could possibly be due to the transfer of approval of the authority of payments from the district to the state level in 2019.

In Tamil Nadu, the state is dependent on funds available at a one state-centralized account and funds do not lie unused at district-level bank accounts. The state of Chhattisgarh recorded the highest average number of days from notification to first payment from 2019 to 2021.

Figure 9:

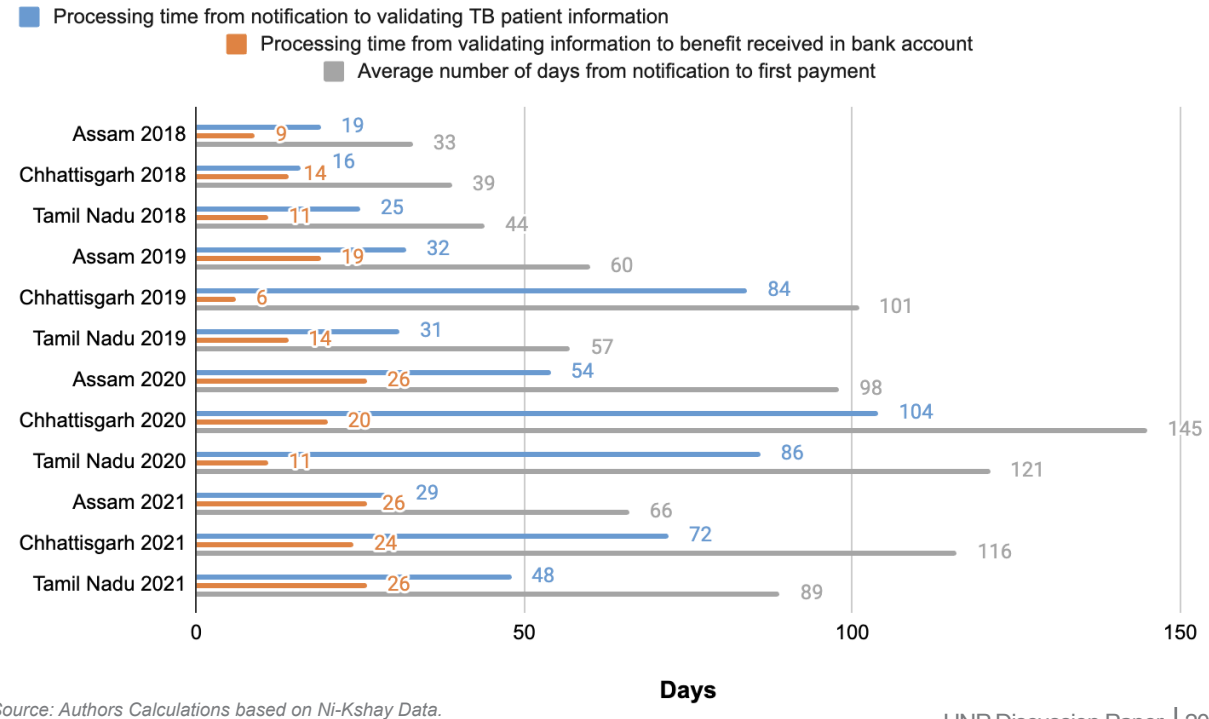
Comparative Analysis of the Total Number of TB Patients under the Ni-Kshay Poshan Yojana, Number of TB Patients [who got paid], and Transactions [that] Failed in Assam, Chhattisgarh, and Tamil Nadu



Source: Authors Calculations based on Ni-Kshay Data.

Figure 10:

Comparative Analysis of the Processing Times between Assam, Chhattisgarh and Tamil Nadu

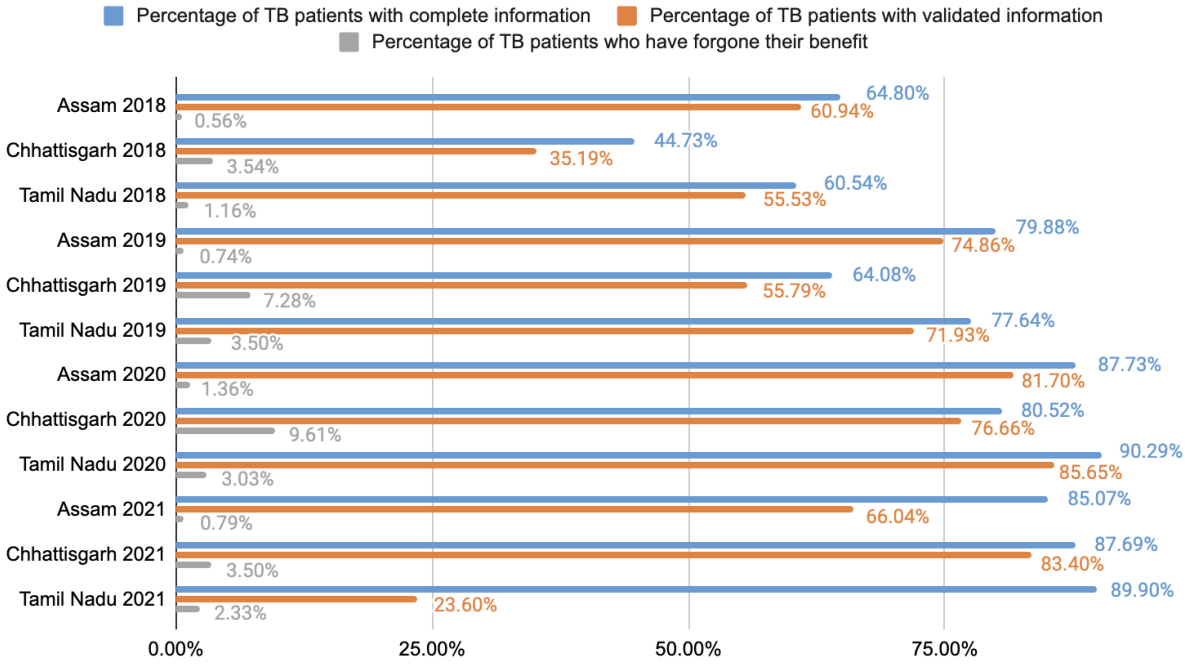


Source: Authors Calculations based on Ni-Kshay Data.

Chhattisgarh reported the highest percentage of forgone benefits, followed by Tamil Nadu and Assam from 2018 to 2021. Assam recorded the highest percentage of TB patients with complete information and validated information for 2018 and 2019. In 2020, Tamil Nadu recorded the highest percentage of patients with completed information and validated information. In 2021, Chhattisgarh recorded the highest percentage of patients with completed information and validated information.

Figure 11:

Comparative Analysis of the Percentage of TB Patients with Complete Information, Validated Information, and Forgone Benefits between Assam, Chhattisgarh, and Tamil Nadu



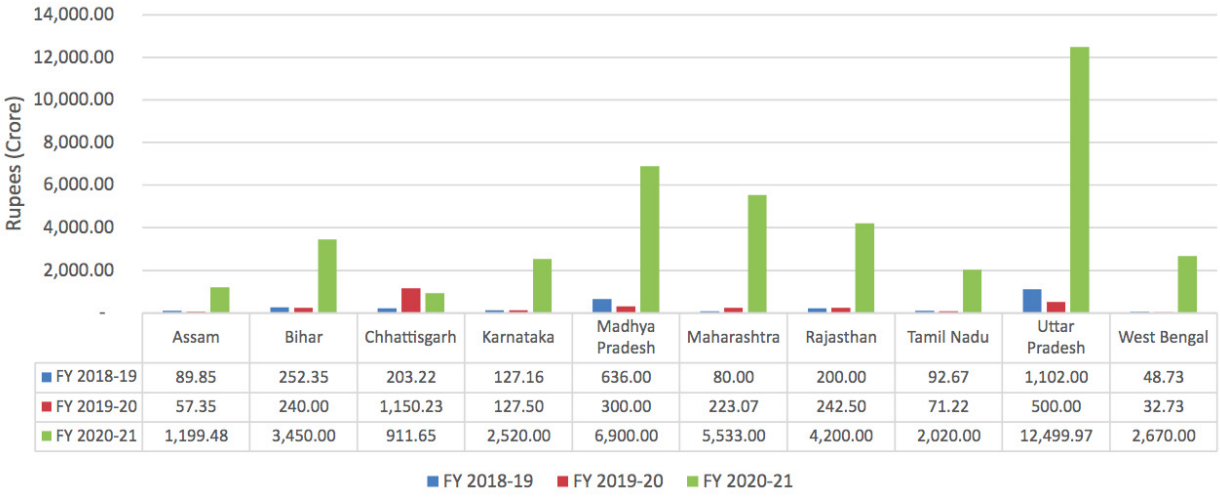
Source: Authors Calculations based on Ni-Kshay Data.

Under the National Health Mission (NHM), funds are released to states under flexible pools on a lump sum basis to provide greater flexibility to utilize the funds as per the state's felt needs and priorities

Figure 12 illustrates the Record of Proceeding (RoP) of the financial years from 2018 to 2021. It provides the financial information on ten states, and the allocation of the budget at the national level is carried out state-wise and not activity-wise. However, the RoP approvals and the associated numbers for the activity NPY are provided in the analysis. Under the National Health Mission (NHM), funds are released to states under flexible pools on a lump sum basis to provide greater flexibility to utilize the funds as per the state's felt needs and priorities. There is substantial variation in terms of the RoP approvals year on year for Assam, Chhattisgarh, and Tamil Nadu. In particular, for the financial year 2019–20, RoP approval for Chhattisgarh was nearly 20 times more than that for Assam and nearly 16 times more than that for Tamil Nadu. Between 2018 and 2019, Chhattisgarh also had more than double the RoP approvals for Assam and Tamil Nadu. However, for the financial year 2020–21, Assam and Tamil Nadu both have significantly higher RoP approvals than Chhattisgarh. The primary reason for this divergence is because of the additional tribal support for TB patients in Chhattisgarh, as the amounts for RoP approvals for 2018–19 and 2019–20 include patient support and transportation charges in addition to the nutritional support under NPY. While for 2020–21, the amounts only include the nutritional support under NPY.

Figure 12:

RoP Approvals for the Activity Ni-Kshay Poshan Yojana (NPY) under NTEP for the FY 2018–21



	Assam	Bihar	Chhattisgarh	Karnataka	Madhya Pradesh	Maharashtra	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal
FY 2018-19	89.85	252.35	203.22	127.16	636.00	80.00	200.00	92.67	1,102.00	48.73
FY 2019-20	57.35	240.00	1,150.23	127.50	300.00	223.07	242.50	71.22	500.00	32.73
FY 2020-21	1,199.48	3,450.00	911.65	2,520.00	6,900.00	5,533.00	4,200.00	2,020.00	12,499.97	2,670.00

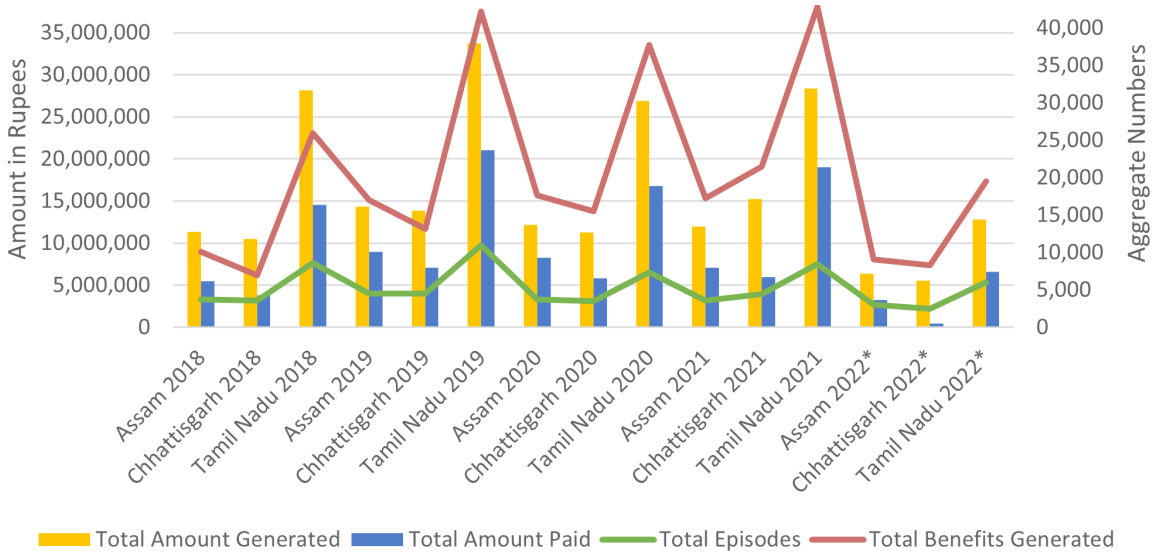
Source: Authors Calculations based on Ni-Kshay Data.

The analysis on the aggregated totals for episodes, benefits generated, amounts generated and paid reveals uniform patterns across the three states from 2018 to 2022*. In all three states, the variables maintain a consistent trajectory with increases from 2018 to 2019, and then a decline in 2020, likely due to COVID-19 pandemic, and then gradually increasing again for subsequent years. Among the three states, Tamil Nadu recorded the highest numbers for all the observed variables. In 2019, Tamil Nadu had a total of 10,978 episodes with a total amount of Rs. 33,774,000 (~USD 424,000) benefits generated and Rs. 21,029,000 (~USD 264,000) was the total amount paid to TB patients (Figure 13). The highest number of benefits generated was also in Tamil Nadu in 2021, with a total of 42,829. While Assam and Chhattisgarh have very similar numbers in terms of total episodes, total benefits generated, and total amount generated, the total amount paid to TB patients has variances between the two states. Chhattisgarh has a much smaller ratio 0.37 compared to Assam's 0.58 in terms of disbursement of funds to TB patients. In Tamil Nadu, on average over the five years, about 59 percent of the total amount generated is paid to the TB patients. Based on the available data, no correlation is found between the total number of episodes, total benefits generated, and total amount generated and paid.

Figure 13:

Aggregated Totals for Episodes, Benefits Generated, Benefit Amounts Generated and Paid from 2018–2022*

* The numbers and amounts for 2022 are for the first 8 months and not the entire year.



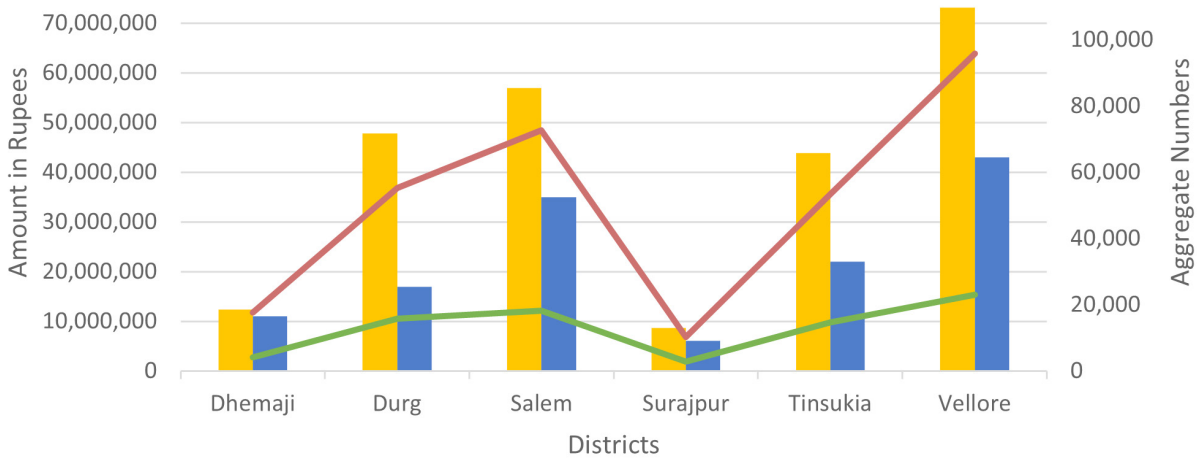
Source: Authors Calculations based on Ni-Kshay Data.

Figure 14 provides details on the monies generated and paid to beneficiaries along with the total number of episodes and the number of total benefits generated from 2018 to 2022* across the six districts in Assam, Chhattisgarh, and Tamil Nadu. In sum, Vellore represents the highest amounts and numbers for all variables, whereas Surajpur has the lowest numbers and amounts for total episodes, total benefits, monies payable and monies paid. For the six districts, the aggregate total number of benefits generated between 2018 and 2022* is 304,778 with about Rs. 134,026,500 (~USD 1.7 million) paid amount, which is 55 percent of the total amount generated. Out of the six districts, Dhemaji has the best ratio between total amount generated and paid, as the average disbursement percentage for the five years is 89 percent, whereas Durg represents the lowest average disbursement percentage, paying 35 percent of the total amount generated.

Figure 14:

Aggregated Totals for Episodes, Benefits Generated, Benefit Amounts Generated and Paid from 2018–2022*

* The numbers and amounts for 2022 are for the first 8 months and not the entire year.



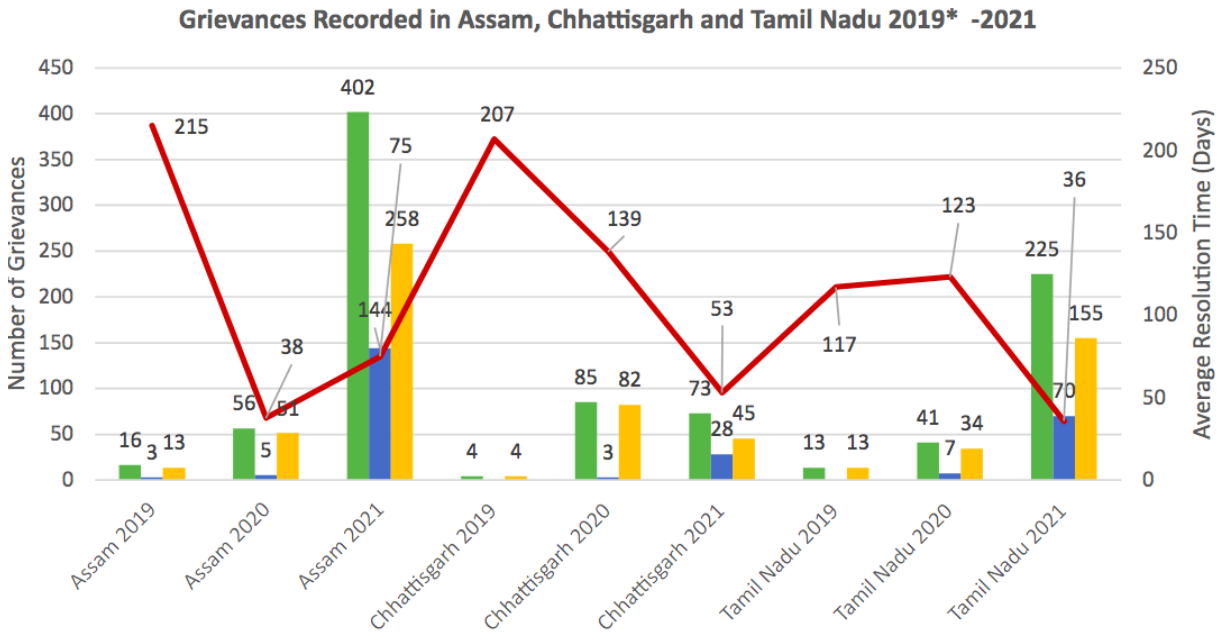
Source: Authors Calculations based on Ni-Kshay Data.

The grievances data from the Ni-Kshay call center represents recording of grievances from August 2019 to 2021 (Figure 15). The total number of grievances recorded in the three states from 2019*–2021 is 915, with about 72 percent of the cases resolved and closed in this period. Assam and Tamil Nadu saw a substantial increase in the number of recorded grievances in 2021 compared to the previous two years, however, the same is not observed in Chhattisgarh. The average resolution time for the grievances has also decreased in all three states over the years. The total number of grievances recorded in Assam over the observed period is 474, out of which 68 percent of the cases are resolved and closed. The grievance resolution percentage for Assam has declined over the last two years largely because of the increase in the number of grievances recorded. The average resolution time for the grievances has increased compared to 2020 but is still much improved compared to the first year of the grievance recording at the TB call center. The total number of grievances recorded in Chhattisgarh is 162, with a resolution percentage of 81 percent. Chhattisgarh also saw a decline in grievance resolution in 2021 after almost a 100 percent resolution of cases in 2019 and 2020. However, since 2019, the average resolution time of grievances in Chhattisgarh has significantly declined. The total number of grievances recorded in Tamil Nadu is 279, with 72 percent resolution of cases. Grievance resolution percentage has declined in the last two years as there has been a significant increase in the number of grievances recorded since the initial year. However, Tamil Nadu has also shown major improvement in resolution time of grievances in 2021, with about three and a half times faster resolution of grievances even with the increase in number of grievances.

Figure 15:

Grievances recorded in Assam, Chhattisgarh and Tamil Nadu 2019*–2021

*Grievance Management Process Started from August 1, 2019.



Source: Authors Calculations based on Ni-Kshay Data.

Table 4:

Illustrative Themes and Key Findings of the States and Districts

State District	Themes	Key Findings
Tamil Nadu Salem	Uptake and Registration	During early implementation of the program, deduplication was an issue. A lot of Ni-Kshay IDs were getting created and duplicated. Staff lacked training to generate episode IDs in the system. This was addressed later with proper focused training for the staff. Validation issues have been observed in Tamil Nadu over the years, especially in 2021, when only 24 percent of the bank accounts were validated in the state. This issue is unresolved as only about 5 percent of bank account details have been validated through the first quarter of 2022. Data discrepancies were observed in the number and percent of TB patients paid and the percent of bank accounts validated for 2021. For the entire state of Tamil Nadu, in 2021, the number of TB patients paid was 69,569 out of 84,245 notified patients, however, the percentage of bank account validations was only 24 percent (Ni-Kshay Data).
	Notifications	In 2020, the reporting and detection of TB cases came down due to the pandemic related disruption. In addition, the number of TB patients reported came down because of the outpatient department used for COVID-19 patients. As part of the REACH[1] initiative women in rural areas assist and promote TB detection. The identified women are trained as women TB leaders and the focal person to identify TB detection through an over the phone training. To increase notifications, senior treatment supervisors, health visitors and others use a social platform group to interact with private providers. This is followed up with reaching out to the TB patients to get their bank details and other information.
	Payment Delivery	Delays occurred due to mismatch in bank account details or other technical and non-technical issues. It was reported that the TB patients in Tamil Nadu had not been paid since December 2021. During this time, even valid bank accounts became invalid and entire batches were rejected by PFMS. Lack of correct, consistent, and complete information caused circuitous and inefficient processing, follow-up work, and payment delays. Some banks did not notify the beneficiary of the credit message receipt if the amount was less than Rs. 3,000. This missed notification led to patients believing they have not received their NPY incentive.

[1] A funding mechanism that aims to increase early tuberculosis detection in the bottom of the pyramid and low-income households.

State District	Themes	Key Findings
	Monitoring and Evaluation	Weekly reporting in terms of deliverables of the strategic plan and DBT process indicators. Staff are accountable to routinely report on the agenda items and tasks that need to be completed.
	Public and Private Providers	Mistrust of both the public sector and private sector providers exists with the tuberculosis patients. Shortage of human resources exists for influencing partnership between public and private providers.
	Monitoring and Evaluation	Mistrust of both the public sector and private sector providers exists among TB patients. Shortage of human resources exists for influencing partnership between public and private providers.
Tamil Nadu Vellore	Uptake and Registration	Issues related to deduplication, documentation errors, and rectification resulted in substantial delay of providing monetary incentives for TB patients. There were validation issues starting from the last quarter of 2021. In 2021, the percentage of bank account validations was almost nil (22), while the paid TB patients' percentage was 83 percent.
	Payment Delivery	Some of the TB patients had bank accounts in urban and district co-operative banks, postal payment banks, and Tamil Nadu Grama Bank (sponsored by Indian Bank amalgamation of Pallavan Grama Bank and Pandyan Grama Bank). These patients preferred Grama banks over the public sector banks because the process of opening accounts in rural areas was much easier. Initially the Grama banks were not available in Ni-Kshay to be mapped and to be sent to PFMS for validations. Patients had to open a new bank account, which delayed the process of receiving NPY incentives. Earlier IFSC code mismatches were observed due to the merger of private sector banks which delayed the payment for the TB patients. Single nodal account (SNA) under the public financial management system for release and monitoring flow of funds faced mapping issues and the release of funds and payments were delayed for NPY.
	Treatment Completion	Notifications of patients is an important first step. At the same time, the focus should be on the successful completion of the treatment. In the past, less than 60 percent of the TB patients used to complete their treatment. At present, we are seeing an increase of percentage in the completion of treatment.

State District	Themes	Key Findings
Assam Tinsukia	Uptake and Registration	Many TB patients faced issues with opening a bank account because of lack of relevant/needed documents. On an average around 5 percent to 8 percent bank accounts were opened with the assistance of the senior treatment supervisor for TB patients. In contrast to the public and private sector banks, the bank validation process for Gramin bank accounts takes around seven to ten days. Similar validation issues were faced as in Tamil Nadu; one incorrect TB patient record caused rejection of the entire batch.
	Payment Delivery	At times, bank accounts have become dormant, and staff had to find out about the bank account status in the Ni-Kshay Information System, which delayed payments to TB patients. Fund flow system and management were highlighted as being critical toward the success of the DBT program. Review and examination of how many months in a year the districts have observed fund availability and unavailability was deemed vital.
	Benefit Size	Most of the TB patients have requested to increase the monetary incentive from Rs. 500 to Rs. 800 or from Rs. 500 to Rs. 1,000. For example, a rural TB patient to purchase essential commodities spends Rs. 200 for transportation. Due to security reasons, there are no financial institutions in the rural areas. Most of the financial institutions are in the town or semi-urban neighborhood.
Assam Dhemaji	Uptake and Registration	There were issues with bank account opening in the past due to TB patients having no proper documentation. In the absence of an Aadhaar or PAN card, an authorized officer declaration could be used to open a bank account. The district office reported that they have assisted around 40 percent of TB patients to open a bank account. In short, advocacy and communication is critical for the improvement toward the NPY.
	Payment Delivery	Validation issues were observed as the backlog from 2021 moved to 2022. This affected the payment processing times as well. Patients have not received payments due to pending validations. Bank mergers affected the changes in IFSC codes, which resulted in bank accounts being rejected at validation causing payment delays.
Chhattisgarh Surajpur	Digital Signature Certificate (DSC) Implementation	Ongoing procurement processes are underway to procure DSC for the region. Currently, the district is continuing with PPA, which is valid only for ten days.
	Training on Ni-Kshay Information System	In the initial stages, there were issues related to payments as it was not clear in the Ni-Kshay Information System. Over time, the district received technical support and training to use the Ni-Kshay Information System. An informant suggested having interdepartmental coordination rather than vertical support to improve the process for the NPY.

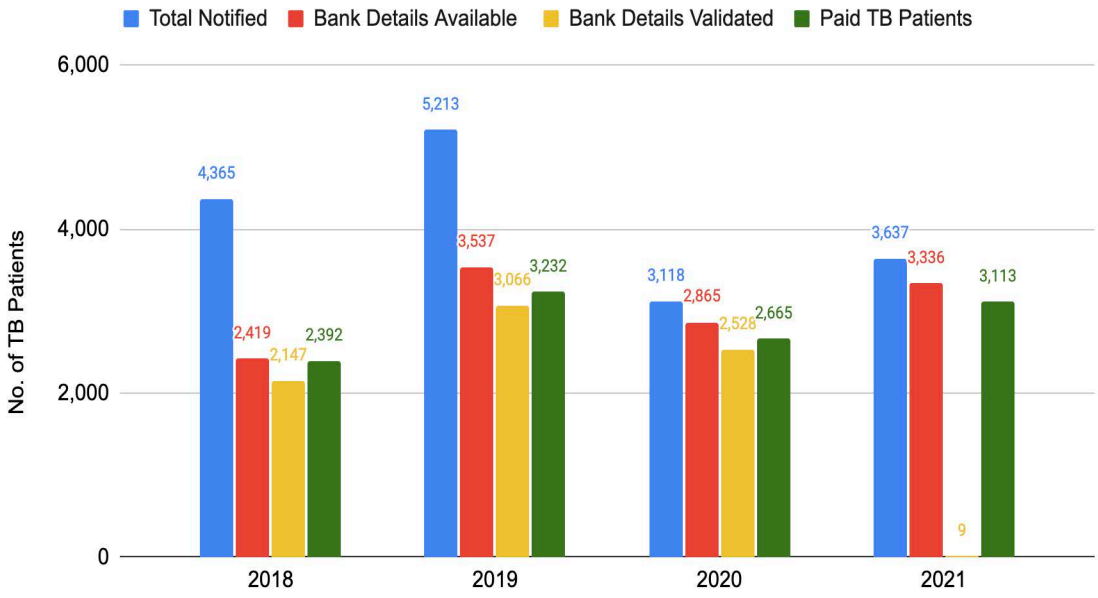
State District	Themes	Key Findings
Chhattisgarh Durg	Payment Delivery	SNA issues caused delays in payment processing for TB patients. In 2019–2020, the district transitioned from in-kind nutrition food basket to DBT to provide nutritional support for TB patients. After the transition, some of the challenges faced were in IFSC bank code (bank mergers) as well as on bank account information, wrong phone numbers and validation process rejection.
	Alternative Method for Grievance Redressal	The district maintains a separate manual registry of the TB patients and follows up with the patients who have issues in receiving benefits or whose bank accounts were not validated.

Salem

Figure 16 shows the total notified, bank details available, and validated as well as percent of paid beneficiaries for Salem. The total notified cases increased from 2018–2019 and decreased in 2020 and 2021. The number of TB patients paid through Ni-Kshay and validated bank details increased from 2018 to 2019 but decreased in 2020–2021. At the same time, available bank details saw a gradual increase from 2018 to 2019 but saw a gradual decrease in 2020. The highest percentage of TB patients paid was recorded in 2019.

Figure 16:

Comparison of Total Notified, Bank Details Available, Bank Details Validated, Paid TB Patients (Ni-Kshay) and Percentage Paid TB Patients across TUs in Salem

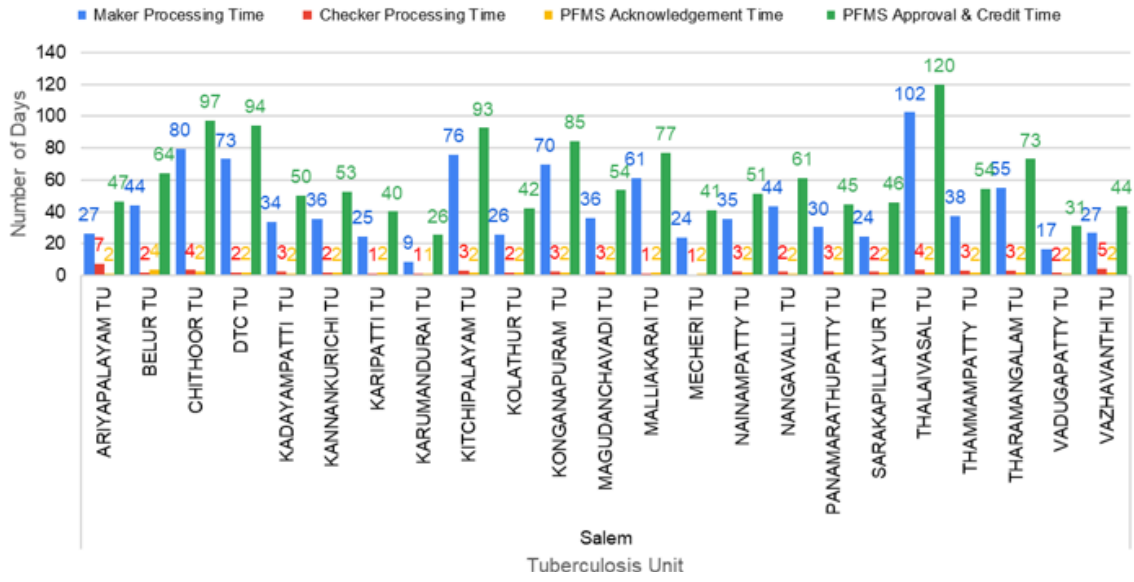


Source: Authors Calculations based on Ni-Kshay Data.

Figure 17 illustrates the comparison of maker processing time, checker processing time, PFMS acknowledgment time, and approval and credit time across TUs. The PFMS approval and credit time is mostly high for most of the TUs, with Thalaivasal TU taking the highest number of days from validation to benefit received in the bank account of the TB patient (Figure 10). The best performing TU in the district is Karumandurai TU as the average number of days for maker, checker and PFMS approval and credit time are the lowest among all the TUs in the district. The average checker processing time and average PFMS acknowledgment time are consistent in all the TUs with no anomalies or outliers. The performances vary widely among the different TUs in Salem, with half of the TUs depicting slow turnaround times (more than 50 days for maker processing and PFMS approval and credit times), and the other half showing better efficiency in terms of these two indicators, on average taking fewer than 50 days for processing.

Figure 17:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time and Approval and Credit Time across TUs in Salem



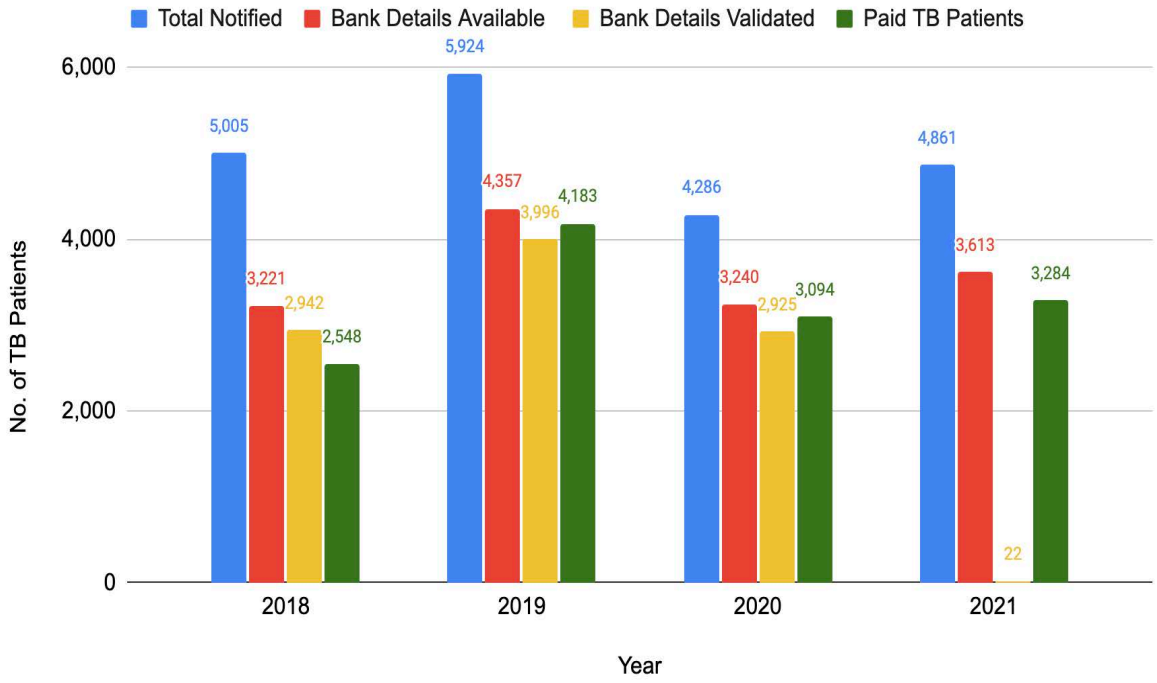
Source: Authors Calculations based on Ni-Kshay Data.

Vellore

Vellore experienced the highest number of TB patient notifications in 2019. Since then, there has been a decrease in the number of notifications (Figure 18). The available and validated bank details, as well as the number of paid TB patients, followed similar patterns. The percentage of paid patients was less than 50 percent in 2018, mainly because bank details were not available for a large number of notified patients. However, that percentage along with bank details availability and validation has improved in the subsequent years. Bank details available for the notified patients offer insight. Throughout the time period from 2018 to 2021, the percentage of bank details availability is still low, example, in 2021, only 74 percent of the notified patients had bank account details available in the Ni-Kshay Information System.

Figure 18:

Comparison of Total Notified, Bank Details Available, Bank Details Validated, Paid TB Patients (Ni-Kshay) and Percentage Paid TB Patients in Vellore Percentage Paid Tuberculosis Patients in Vellore

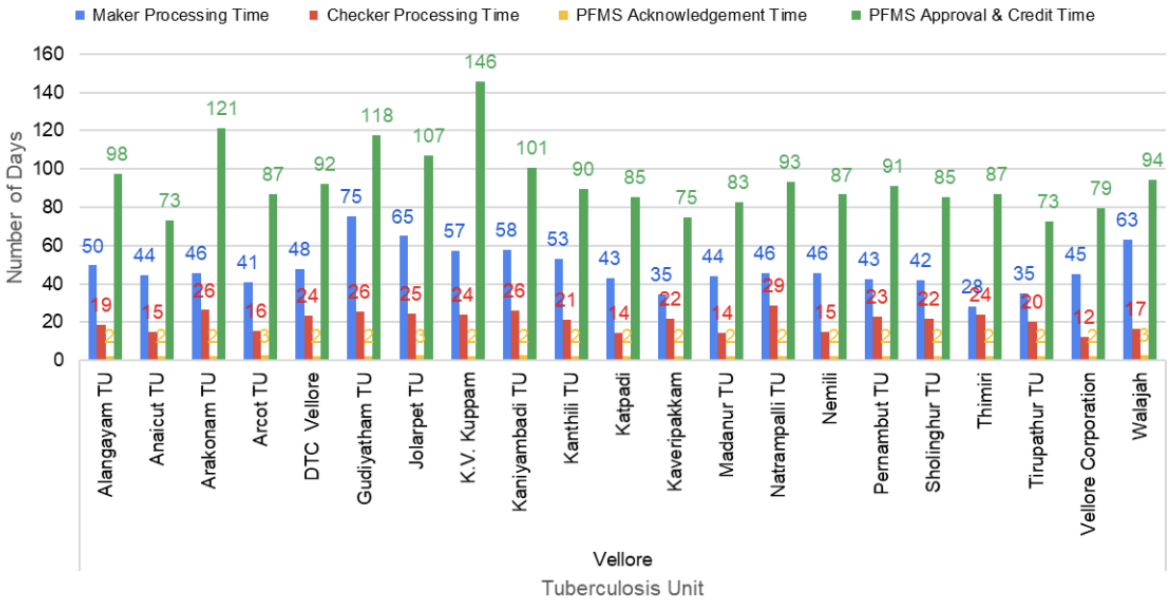


Source: Authors Calculations based on Ni-Kshay Data.

The processing times analysis paints a similar picture for all the TUs in Vellore. The PFMS approval and credit time, as discussed for the overall district, is quite high for all the TUs. K.V. Kuppam TU takes the highest number of days from validation to benefit received in the bank accounts of the TB patients (Figure 19). Thimiri TU has the best performance in terms of the maker processing time, while Vellore Corporation TU has the shortest average checker processing time. As with the data observed for the quarter-wise analysis of Vellore, there were several outliers observed in the data with some TUs for specific quarters. For example, the Gudiyatham TU in Q3 2021 had one benefit delivered to the patient after 815 days. For Arakkonam TU, in Q3 2021, the mean processing days for the patients to receive the benefit was 532 days. Both sets of observations were for private patients. These anomalies, along with the high number of processing days for the patients to receive the benefit in their bank account, point to underlying issues with the transfer of benefits for notified patients in Vellore.

Figure 19:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time and Approval and Credit Time across TUs in Vellore



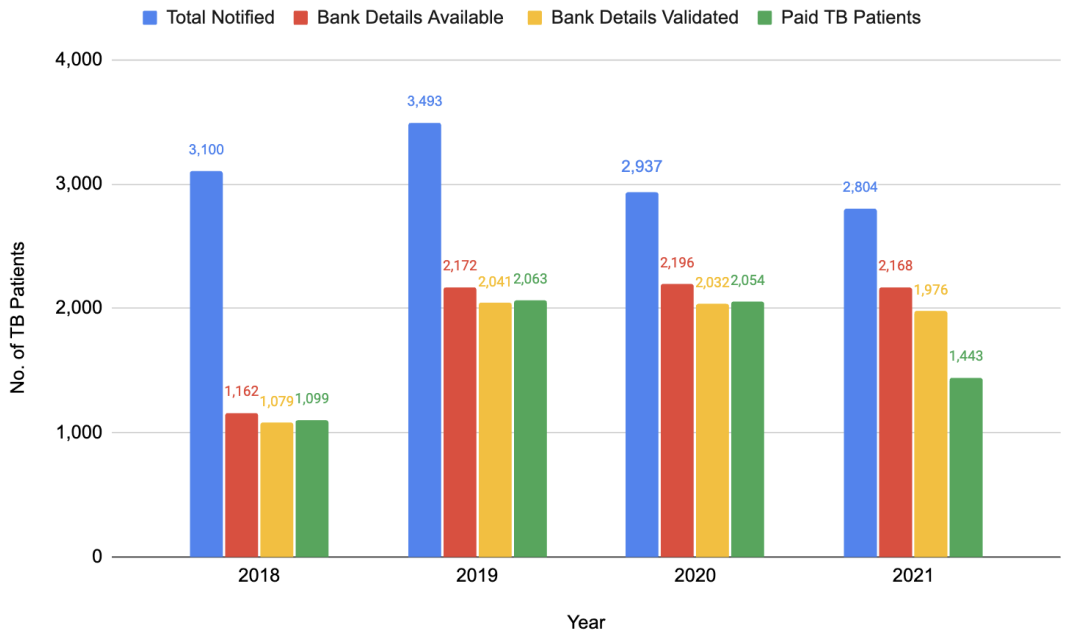
Source: Authors Calculations based on Ni-Kshay Data.

Tinsukia

Figure 20 shows that total notified TB cases increased from 2018–2019 and decreased in 2020 and 2021. The number of TB patients paid through Ni-Kshay and validated bank details increased from 2018 to 2019, but decreased in 2021. At the same time, bank details saw a gradual increase from 2018 to 2021, and 2020 recorded the highest percentage of the patients paid.

Figure 20:

Comparison of Total Notified, Bank Details Available, Bank Details Validates, Paid TB Patients (Ni-Kshay) and Percentage Paid TB Patients in Tinsukia

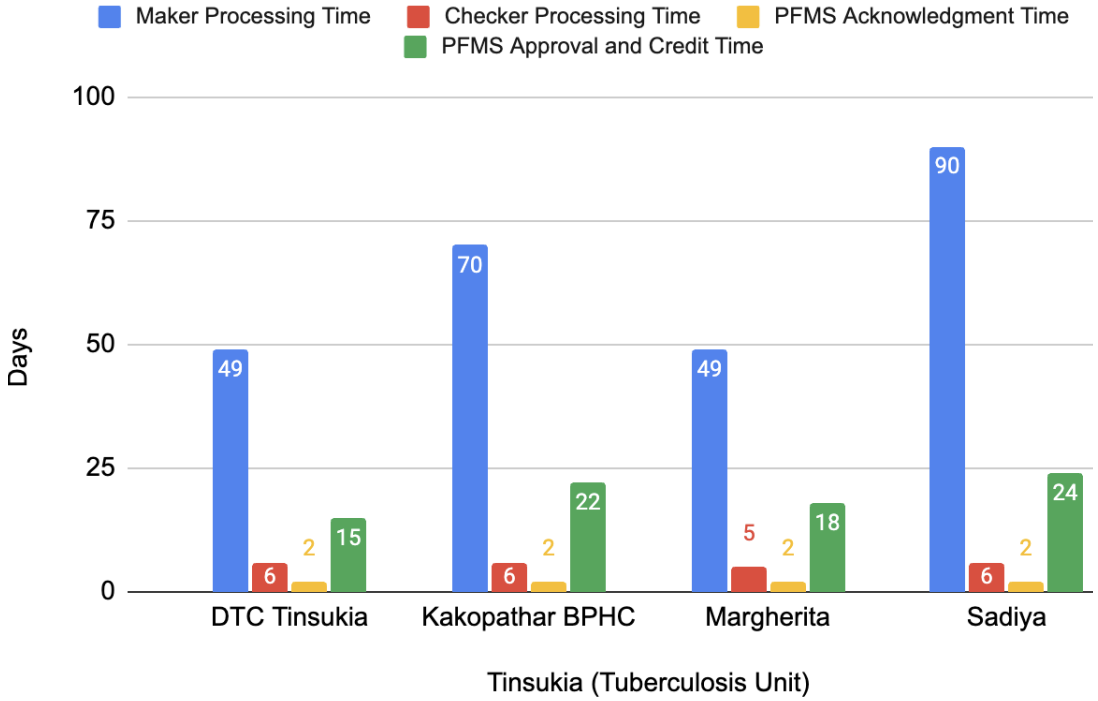


Source: Authors Calculations based on Ni-Kshay Data.

Figure 21 depicts the comparison of different processing times for the TUs in Tinsukia district. All the TUs have similar numbers for checker processing, PFMS acknowledgment, and PFMS approval and credit times. The main difference between the four TUs is in terms of the maker processing and average benefit creation to credit times. Sadiya TU has the highest and Tinsukia DTC TU has the lowest figures for these two processing times. This translates to faster payment to patients in Tinsukia DTC compared to the slowest payment process in Sadiya. Among the TUs, Sadiya has the highest average benefit creation to credit time and Tinsukia DTC has the lowest.

Figure 21:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time, PFMS Approval and Credit Time, Average Benefit Creation to Credit Time in Tinsukia



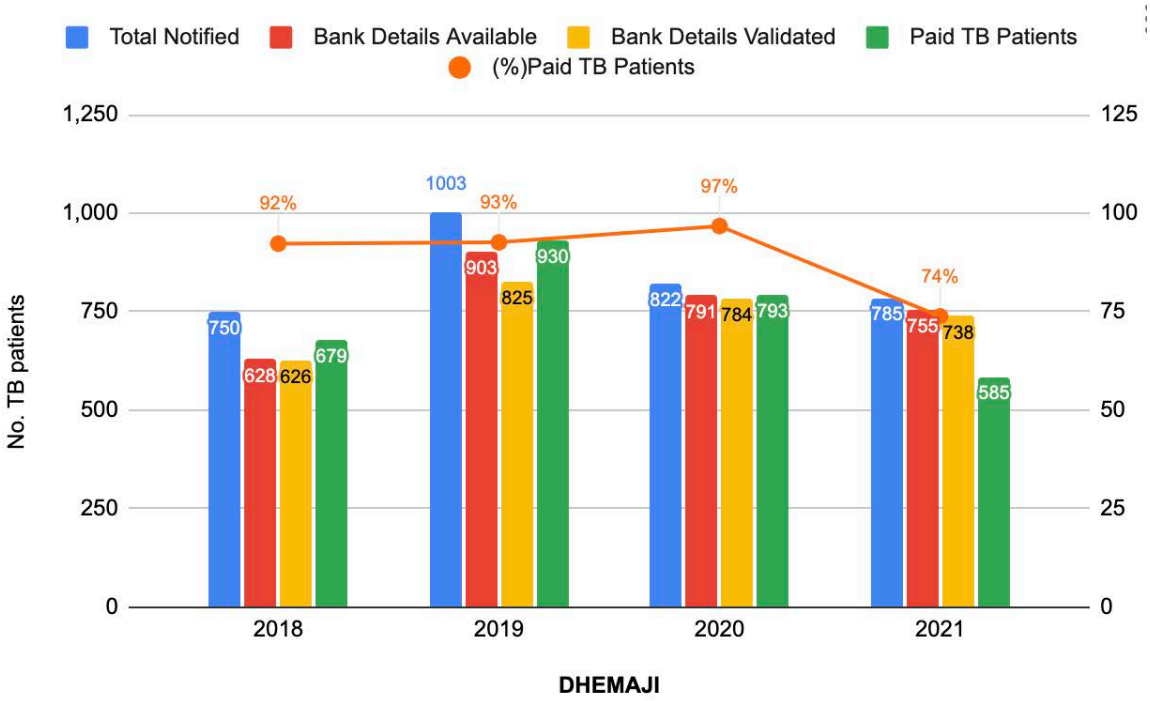
Source: Authors Calculations based on Ni-Kshay Data.

Dhemaji

In Dhemaji, the public sector has more TB patients than the private sector. Figure 22 shows there was an increase in the number of patients notified between 2018 and 2019 and a gradual decrease between 2019 and 2021. Through 2018 to 2020, the number of paid TB patients was higher than the number of TB patients who had bank details available and validated except in 2021. A high percentage is observed from 2018 to 2020 for patients who received NPY benefits, until 2021, where this indicator slumped to 74 percent.

Figure 22:

Comparison of Total Notified, Bank Details Available, Bank Details Validated, Paid Tuberculosis Patients (Ni-Kshay) and Percentage Paid Tuberculosis Patients in Dhemaji



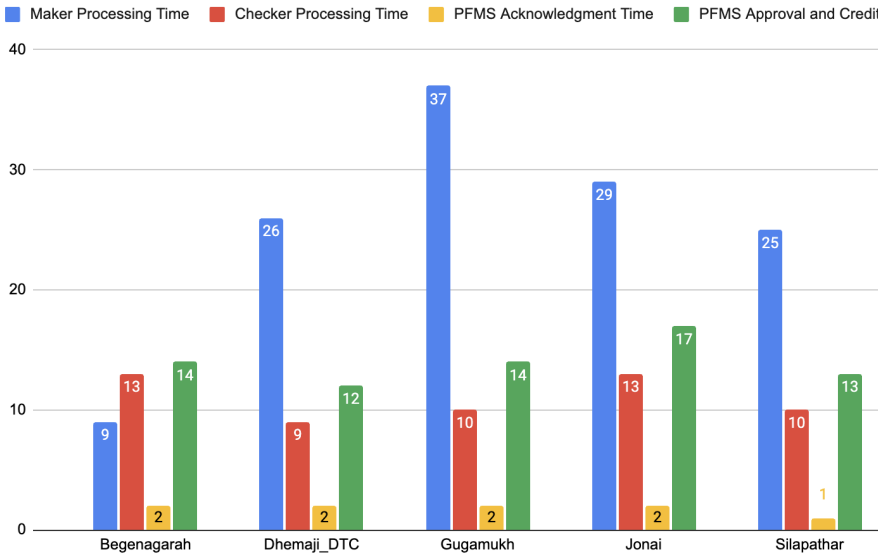
Source: Authors Calculations based on Ni-Kshay Data.

In Dhemaji, the longest maker processing times were observed in the Gugamukh TU and the shortest maker processing times were observed in the Begenagarah TU. The checker processing and PFMS acknowledgment times are consistent among all the TUs. Jonai has the highest average benefit creation to credit time (61 days) and Begenagarah recorded the lowest average benefit creation to credit time (37 days). Overall, Dhemaji outperforms Tinsukia in terms of the number of days to process the NPY benefits. As with observations from other states and districts, a higher count of notified patients results in a higher number of days for all benefit processing variables. As a comparison, the mean average benefit to creation to credit time for the five Dhemaji TUs is 50 days, whereas it is observed to be about 90 days for the four Tinsukia TUs. This translates to 80 percent additional time to process benefits in Tinsukia district.

> “Overall, Dhemaji outperforms Tinsukia in terms of the number of days to process the NPY benefits”

Figure 23:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time, PFMS Approval and Credit Time, Average Benefit Creation to Credit Time in Dhemaji



Source: Authors Calculations based on Ni-Kshay Data.

Surajpur

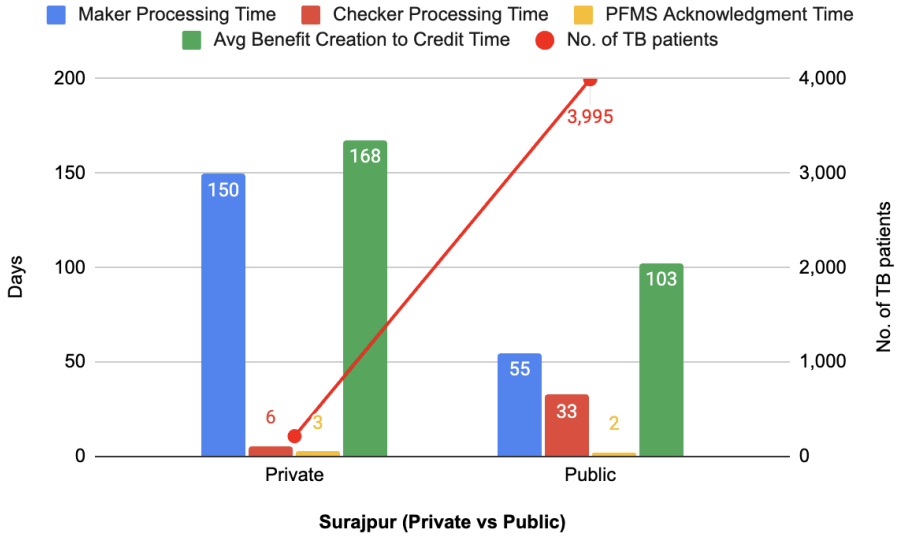
The analysis for Surajpur was conducted on the data received from the CTD, which contained indicators on the different processing times and the count of TB patients. The processing times in the dataset have been aggregated based on the benefit and not the TB patients on a quarterly basis for the different TUs in Surajpur. The indicators used for the analysis are mean maker processing days, mean checker processing days, mean approver processing days, mean processing days, and count of TB patients.

Between private and public TB patients in Surajpur, numbers of overall processing days are higher in private TB patients. The total count of patients for the private sector is also very low at 215 compared to 3,995 patients for the public sector (Figure 24).

The delays in payments even for a much lower number of patients elicit attention from the district and state offices to further investigate the reasons behind the low count of patients and poor performance in terms of processing times for the private health facilities in Surajpur. However, the low count may also be due to the low number of private sector patients in the district.

Figure 24:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time, Average Benefit Creation to Credit Time and Number of TB Patients in Surajpur



Source: Authors Calculations based on Ni-Kshay Data.

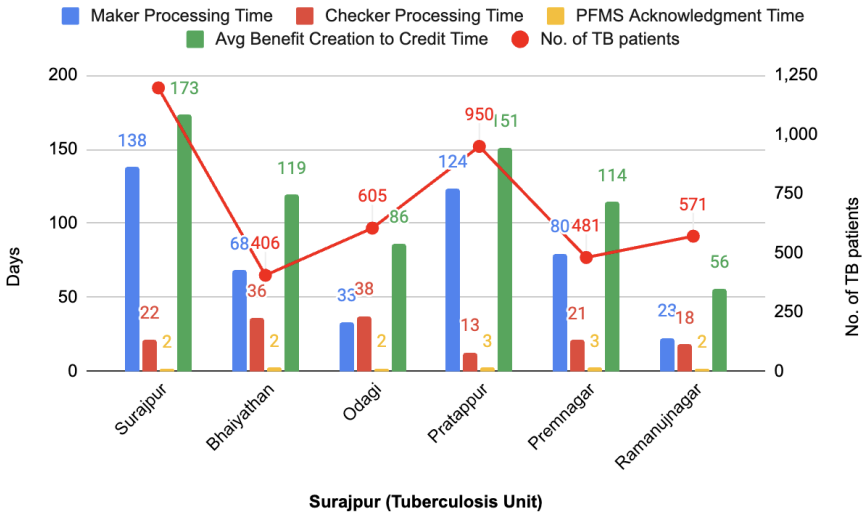
In the trend analysis graph by TUs, Surajpur TU has the overall highest processing days and Ramanujnagar the lowest (Figure 25). Surajpur TU takes the highest number of days for the benefit to be transferred into the patients account from the time of notification, while Ramanujnagar takes the least number of days. The analysis substantiates the argument that a greater number of notifications and case load results in longer processing times.

However, in the case of Ramanujnagar, even with an above mean count of TB patients in the district, the TU has significantly lower processing days, which further solidifies Ramanujnagar's position as a better performing TU with efficient operations for the NPY DBT. In contrast, a lower count of TB patients does not always result in fewer processing days. This is especially true in the case of Bhaiyathan, where despite having a lower count of TB patients than Odagi and Ramanujnagar, the processing days in this TU are much higher than the other two TUs.

Lack of human resources is a core area for policy-level discussions and is an identified gap. In all the TUs, the maker processing times are much higher than the checker processing times, which is also generally true for other districts and states studied for the paper. However, in Odagi, the checker processing days are slightly more than the maker processing days. This is not an anomaly as the maker processing time for Odagi is the second-best among the TUs, indicating the overall good performance of cash benefit transfer for this TU.

Figure 25:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time, Average Benefit Creation to Credit Time and Number of TB Patients across TUs in Surajpur



Source: Authors Calculations based on Ni-Kshay Data.

Durg

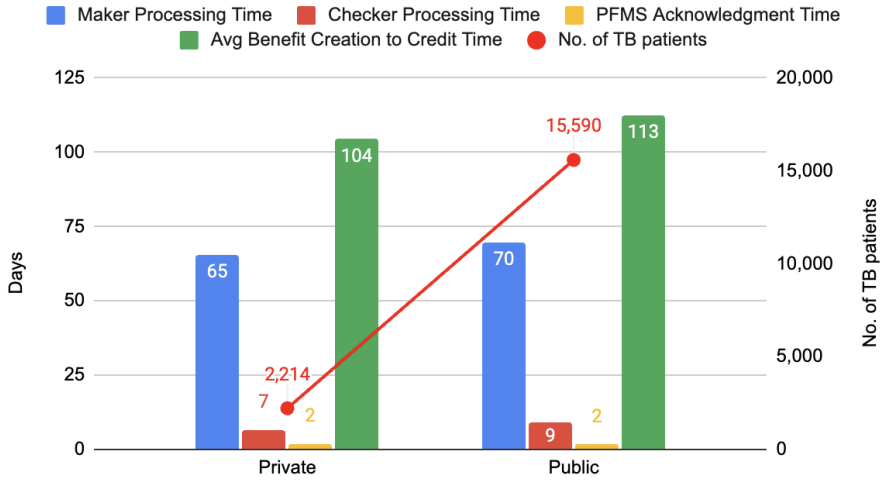
As shown in Figure 26, the public sector caters for a large percentage of notifications in Durg. The count of TB patients in the private sector is only about 13 percent of the total patients in the district. The processing times are quite similar for the two years studied and are at par with national averages for the processing time indicators.

In Durg, Dhamdha TU takes the highest number of days to process benefits and has the lowest count of TB patients in the district, which indicates poor performance of the benefits delivery operations for this TU.

Supela has the highest count of patients amoung the four TUs, while Durg DTC and Patan have similar numbers for the time it takes for the TUs to process the benefits (Figure 27). However, Durg DTC has almost double the count of patients, which indicates better and efficient operations for this TU.

Figure 26:

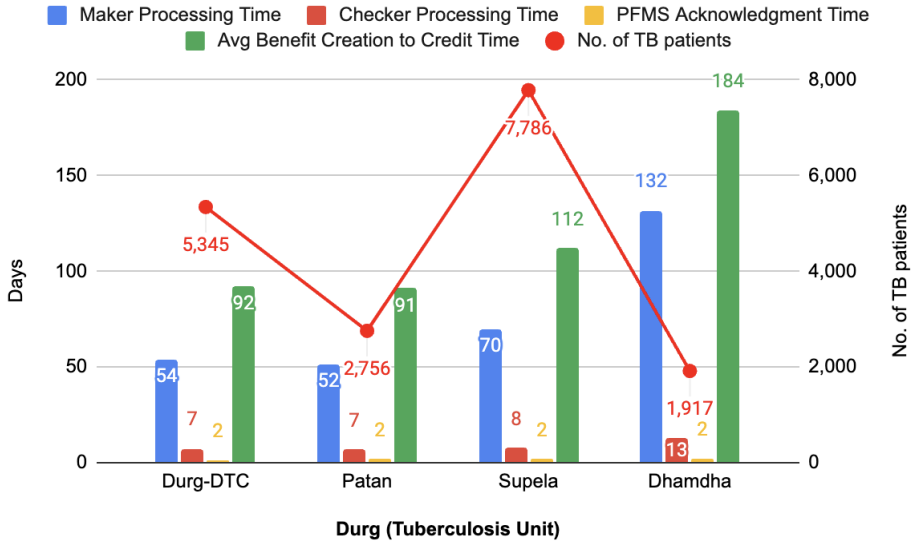
Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time, Approval and Credit Time and Number of TB Patients in Durg



Source: Authors Calculations based on Ni-Kshay Data.

Figure 27:

Comparison of Maker Processing Time, Checker Processing Time, PFMS Acknowledgment Time, Number of TB Patients and Average Benefit Creation to Credit Time across TUs in Durg



Source: Authors Calculations based on Ni-Kshay Data.

Bank accounts validation issues are a major theme for NPY across the three states. In Tamil Nadu, entire batches of beneficiary bank accounts were rejected by PFMS if there was only one rejection. Normally, after a batch rejection, it takes about one and a half weeks for the files to be returned to the district office, and additional time is required to identify the issues. The system sends notifications about the rejections, but often does not state the reason why the batch is rejected.

A key informant reported, however, that this has not been the case since December 2021, as the system is now citing a reason for batch rejections, marked as, "PFMS is merging new codes; there is a time delay." Key informants noted that the error was due to the Single Nodal Account (SNA) implementation, which has affected TB patient, purpose, and state program management codes in the Ni-Kshay system. The district offices would have to remap these codes to start the process to validate accounts. Another issue highlighted was that the Ni-Kshay Information System notifies and marks some TB patients as paid, even when they have not received payments in their bank accounts. This was observed for even those patients who had valid bank accounts and had received one installment. However, while the system marked the second and third installments as paid, the patients did not receive these payments in their accounts.

There were cases where patients did not render their account number for Ni-Kshay because they were beneficiaries in other government schemes, including Jan Dhan Account, e-Shram, old age pension, and widow pension. Patient perception was that if they linked their account with Ni-Kshay, they would not receive the other benefits. This view was developed based on some past experiences for these patients, where if the monetary incentive (cash transfers) was transferred under any of the schemes, others got rejected. This issue was addressed through communication and sensitization of patients.

Within the broader financial environment, many bank mergers have happened over the past few years, which is ensued by changes in the IFSC codes for the respective banks. This required TB patient information to be changed in Ni-Kshay to reflect the new IFSC code. In cases where these codes were not changed for the beneficiary, PFMS validations resulted in rejections.

Other reasons for PFMS invalidations may be due to a wrong bank account or a changed phone number. It was noted that when an entire batch was rejected, there was no reason provided by PFMS on why the rejection happened. This created issues for staff and caused delays as an entire batch needed to be rechecked to identify the record or records which resulted in the batch rejection. This increased the processing time and delayed providing monetary incentives to the patients.

This study's evidence is consistent with the challenges observed in Madhya Pradesh related to IFSC codes. There were mismatches through incorrect IFSC codes, which needed to be resolved. In 2020, Gramin Banks went through a merger, which resulted in the change of IFSC codes (key informants 2022). Second, mergers, and acquisitions of banks have not shown positive spillovers or reduced the transaction costs for patients.

Evidence from the three states and six districts suggests that the introduction of Ni-Kshay 2.0 has added value; Ni-Kshay 2.0 has become an important tool for decision-making among stakeholders and has been integrated with a variety of TB control activities. These include monitoring patient notifications, diagnosis, treatment management, and adherence as well as private provider information. There is clear empirical evidence that the introduction of Ni-Kshay 2.0 in 2018 has had substantial impact. From the field visits, four dimensions emerged relevant to Ni-Kshay 2.0: user-driven flexibility, process capability, data standards, and interoperability and governance. In terms of user-driven flexibility, the system design requirements have to start technologically at the lowest level to enable all stakeholders to become engaged with the information system.

Improving process capability is important to implement and foster collaborative service delivery. Patient-centered care is an evolving concept and is still maturing. Interoperability across different environments and the development of formal data standards to enable extraction and analysis of data are important. The more social protection objectives that are integrated into part of the service delivery, the greater the governance complexity in the form of information sharing and the need to integrate different types of procedures. Overall, a comparison among the three states reveals that Ni-Kshay 2.0 has been a supportive information system for stakeholders; states and districts have gradually adopted it through an incremental process.

Overall, a comparison among the three states reveals that Ni-Kshay 2.0 has been a supportive information system for stakeholders; states and districts have gradually adopted it through an incremental process

Social Information Systems in Chile, Peru, Namibia, Kenya, and South Africa

A national identification system serves many key roles in supporting social protection programs, example, verification of information of potential beneficiaries at the time of registration; deduplication of multiple registrations; authentication at the time of payments; interoperability with other administrative public and private databases; and in some cases, even targeting of beneficiaries. Leveraging foundational identification systems also allows scaling up quickly to increase coverage, reaching hard-to-serve populations, dynamic inclusion and updates, and quick response to shocks.

Chile

In Chile, the social integrated information system (SIIS), combines numerous elements such as the integrated inventory of social programs, integrated beneficiary registry, and integrated social information system (Berner and Van Hemelryck 2021). The overall information system integrates with other social information systems for data exchange and a social household registry that brings together the databases of different social protection programs and initiatives, with a continuous online exchange of information in many cases. The SIIS also provides significant cooperation and coordination with the other Ministries that provide information for standardizing data-processing criteria (Rapid Account Opening in a Pandemic. COVID-19 BRIEFING: How to Meet AML/CFT Rules for Social Assistance Payments 2020).

Peru

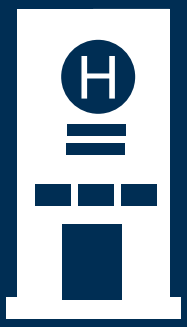
During COVID-19, the Government of Peru channeled government-to-person payments through widespread retail agent networks to old and new beneficiaries including private sector banks and mobile money providers (Rutkowski et al. 2020). Peru's system is equipped with digital identification systems that uniquely identify recipients, allowing the system to determine eligibility and deposit directly to the beneficiary accounts linked to their unique identification numbers.

Namibia

Namibia's advanced decentralized social information system integrates civil registration and identity management systems. The system ensures that births and deaths are recorded frequently and accurately. The system also assists in reducing late notifications, which are common. The system offers better interoperability data exchange between the National Population Registry System, permitting users to pull and validate identity information and data. A memorandum of understanding exists between different agencies to regulate the use and exchange of information. But manual operations are still involved in the validation process.

Kenya

In East Africa, Kenya has developed a robust national identification infrastructure and uses the national identification number to link with various social programs for effective service delivery, such as through the National Hospital Insurance Fund. This also allowed the Kenyan government to quickly respond to the COVID-19 shock and the Social Registry (linked to the national identification number) was used for targeting, verification, and deduplication checks against the Integrated Population Registration System (IPRS).



South Africa

In South Africa, the unique national identification number is linked to several social protection programs and network operators. Beneficiaries can submit multiple applications to register for social protection programs through a single mobile phone linked to the client's national identification number.

Empirical evidence on caseload management revealed complex processes of managing workloads and priorities and making decisions. Field visit observations revealed that the caseload management for the senior treatment supervisors in some of the TUs was more than the required achievable targets. Taken all together, evidence suggests that caseload management is one of the most important factors in vastly expanding the cascade of care at the TU level. Proposing a set of principles that will support senior treatment supervisors and district program coordinators and guide district TB officers can be considered. The principles might consider patterns of demand in the TUs, involving private providers and other stakeholders, suggesting the importance of regular caseload reviews.

The use of Aadhaar was mandatory at the start of the NPY DBY rollout, however, it is now optional to enroll into the program. In 2018, the Supreme Court cleared Aadhaar as a mandatory identification for the government social protection schemes. Aadhaar remains the preferred national unique identification for opening of bank accounts, to avail entitlements and subsidies from the social protection schemes and even for COVID-19 vaccination. Aadhaar numbers generated are unique and there is no second number assigned to the same resident based on the resident's demographic and biometric information. The current deduplication algorithm is based on the patient's mobile number and gender, which is not foolproof. The program would benefit from using a unique ID linked to other social protection, health, and administrative databases to form a more robust deduplication engine built into Ni-Kshay.

A major system-level intervention has been the implementation of the digital signature certificate (DSC) in Ni-Kshay

In Tamil Nadu, the shift in policy focus in 2021 away from Print Payment Advice (PPA) to the DSC (single centralized procurement process) for payments has unduly superseded the main motivation for payments. For PPA approvals, a minimum of two organizational approvals must be obtained. At the same time, the digital signature certificate has allowed for a gradual process of endogenous adaptation. This shift has not only allowed the signing process to be digital but also strengthened the fulfillment of the properties of authentication, data integrity, and non-repudiation. One key informant also noted that with PPA, it used to take 10 to 20 days for the process to complete and PPA also had a validity period before which it had to be submitted to the bank. Other constraints with PPA were that signature approval from multiple physical agencies had to be obtained, which caused additional delays. DSC improved this process resulting in faster turnaround times. Overall the evidence suggests that the decision to implement DSC will vastly expand payments, and the provision of benefits and services.

Since the beginning of the program, the cumulative total number of TB patients notified is around 8.5 million, out of which 5.5 million are classified as paid TB patients. The Ni-Kshay Information System has also gone through numerous updates during this time. The service delivery has not been standard for all TB patients receiving the benefit under the program. The patient journey is dependent on various factors including the time period of notification, the location of the patient, the type of health facility chosen by the patient, and the availability of beneficiary information in the system. As such, various cohorts of these patients could be classified, and each would have its own pathway to receiving the benefit. Making an inference solely based on processing times data within Ni-Kshay is not justified to gauge the performance of the NPY service delivery.

The DBT in NPY is a beneficiary management and digital payment solution, yet it is not fully automated, and requires several manual operations from the point of patient notification to receiving the benefit in their bank account. The variance in processing times in states, districts, and TUs over different time periods has been affected by operational, technical, and external factors like the COVID-19 pandemic and mergers of IFSC codes. The NPY operates in a relatively complex environment within the digital and financial ecosystem, and the efficiency of the service delivery is influenced by policy and structural changes outside the control of the program administrators.

The efficiency of service delivery is the time it takes for a TB patient to receive the benefit in their bank account after they have been notified. Looking at the NPY delivery system performance in isolation, without external factors, the system has seen several operational and technical level interventions. The processing times recorded within Ni-Kshay, that is, maker, checker, PFMS acknowledgment, approval and credit, and benefit creation to credit times are all relevant indicators to measure the service delivery performance. While Ni-Kshay as an information system has evolved with version updates, the process flow has not changed much since its inception.

The Ni-Kshay Information System uses the PFMS as its payment engine, and it was observed by one key informant that the PFMS has been inconsistent at times with the validation of accounts. Some accounts are validated within a day, but others don't get validated even after months. Some TB patients have their information with PFMS pending for validation even for over a year, while others have validated accounts but are still not paid. This directly affects the delivery system performance and the processing times for patients. A key informant noted that a feature in Ni-Kshay, which aids in quicker DBT processing, is the auto retrigger of benefits. However, issues were observed with the retrigger functionality; it did not function consistently, and some benefits, even after proper validation, were rejected, causing delays and longer processing times.

Many patients take time to provide this information, and some are lost to follow-up

Many key informants engaged affirmed that operational and policy-level interventions have been effective in improving the efficiency of the manual operations within the delivery system. Observations were made about the manual aspects of the delivery system, like latency in getting the documents from patients after they were notified in the system. Many patients take time to provide this information, and some are lost to follow-up. This delay adds up to the average processing times of the delivery system. To mitigate these operational bottlenecks, several interventions have been taken within different states through streamlining the processes and capacity building. In this regard, under the leadership of the respective state TB programs, Clinton Health Access Initiative (CHAI) has contributed with regular reviews of the state operations, along with weekly monitoring of the DBT in NPY and frequent meetings with the stakeholders. They have driven to improve the performance through this monitoring and control mechanism and introduced a reward and recognition initiative in the state of Gujarat for the best performing district TB officer in NPY.

Empirical evidence does not support the view that the grievances redressal has improved in NPY. It was observed through the key informants interviews that grievance redressal has not improved due to the COVID-19 pandemic, bank mergers, and single nodal account issues. The increase of grievances can also be attributed to the batch rejections in some of the states, use of print payment advice for payments, deduplication, portability, and interoperability issues. District stakeholders exercised some pressure at the regional level through raising tickets via a prudential channel approach for handling grievances. This does not support that the use of Ni-Kshay Sampark has improved grievance redressal as part of the NPY.

From the field visits it was observed the private patients incurred high cost of care, catastrophic expenditures and delayed diagnosis under the NPY program. The overall out-of-pocket (OOP) expenditure breakdown for the TB patients in the private providers comprises 50 percent for the hospitals and clinical care, 10 percent for the diagnostics, insurance, and equipment accounts for about 15 percent, and pharmaceuticals over 25 percent. While taking treatment, the TB patient often has limited knowledge about their own treatment outcomes. Private providers act as an agent on behalf of the TB patients, which can cause information asymmetry between the private providers and TB patients. Reduction of information asymmetries is an important first step because the private providers might have considerable market power and imply a lack of existence of an equilibrium (adapted from Arrow 1963; Peterson 2001 and Akerlof 1970). The private sector is projected to grow to $372 billion by 2022 and the majority of the private providers are own family-run businesses (Sarwal et al. 2021).

Some of the patients and key informants suggested improving TB care access and quality of care for patients seeking care in the private sector. To provide access standards for TB care in the private sector, district-level initiatives can be considered. In Coimbatore, pilot initiatives such as Find Access Support Treat (FAST) centers provide standards of TB care for patients seeking care in the private sector. A coalition of professional medical associations and a consortium of fourteen private hospitals is established for TB patients seeking care in the private sector. Two members (a nodal officer, a physician, and a coordinator) are responsible for improving notifications seeking private care in the particular region.

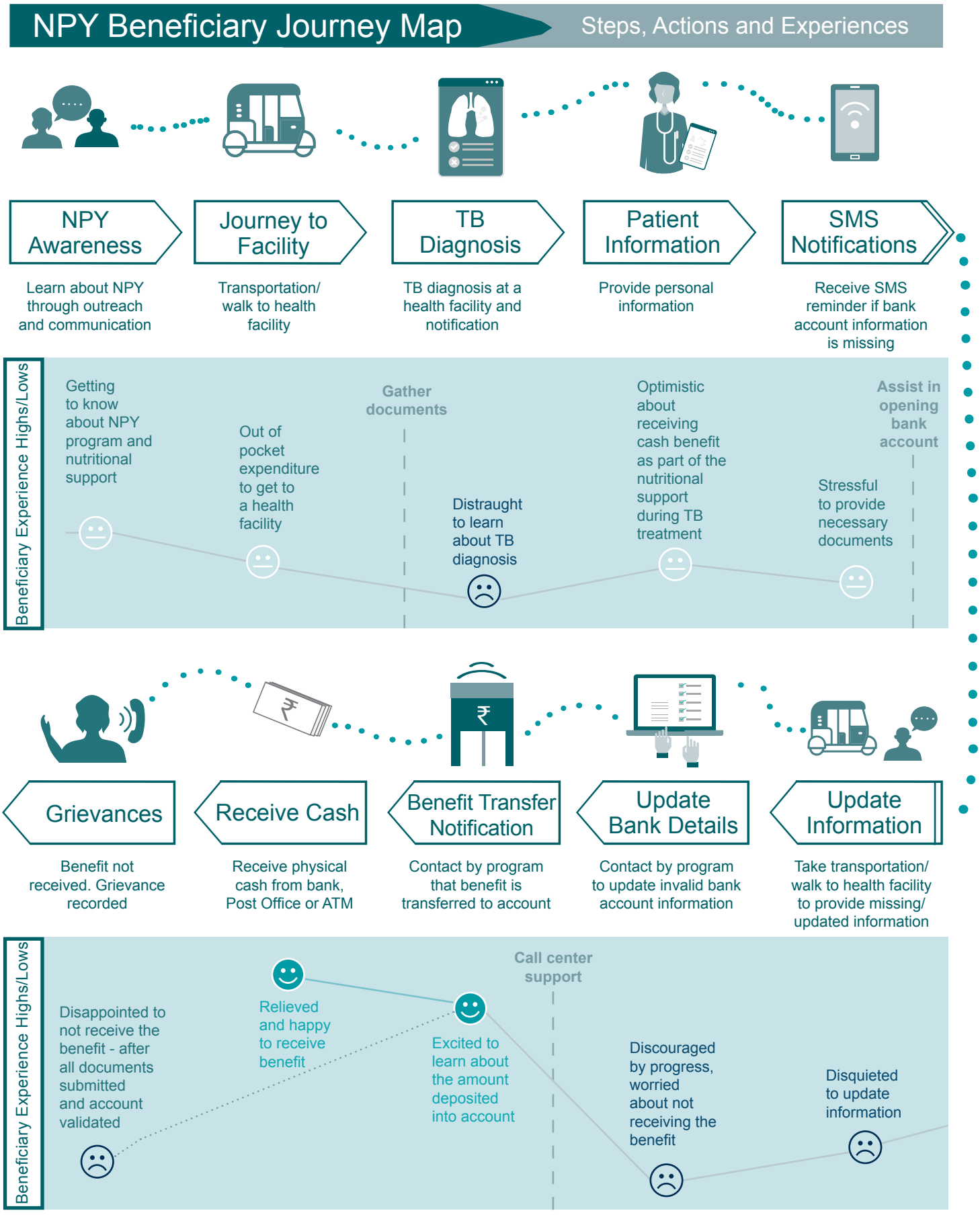
Cash transfers serve to reduce poverty and OOP in the short term (through cash to low-income households) and in the long term (increasing beneficiaries or low-income household human capital) (adapted from Baird et al. 2011). Based on the empirical evidence from the districts of Salem and Vellore, OOP expenditure was diverse among TB patients; some TB patients were faced with huge costs. For the OOP expenses, the private TB patients spent the highest OOP expenditure. It was confirmed that the bottom-of-the-pyramid patients were protected from some OOP expenses by national and state policies. However, these patients were not protected from time costs. The number of healthcare visits before treatment initiation was homogenous across the patients, in such of time costs and travel.

During their treatment journey, TB patients go through different pathways and experiences to access DBT in different states. The beneficiary journey map (Figure 28) captures the TB patient's experience of applying for and receiving the NPY benefit, highlighting the process involved at each step. Below, are some of the patients feedback.

Tuberculosis **patient 1**	"I spent most of the monetary incentive for doctor visits instead of buying nutritious food. I have not received monetary incentives for the last few months." (male, technician, private sector)
Tuberculosis **patient 2**	"I have completed the full treatment. The cash transfers allowed me to take my diet regularly and now I am recovered." (male, jewelry sales associate, public sector)
Tuberculosis **patient 3**	"I spent the monetary incentive to purchase fruit and vegetables each month until the completion of the treatment. At times, receiving the monetary incentives was delayed." (female, homemaker, private sector)
Tuberculosis **patient 4**	"Initially I used the cash for purchasing essential commodities. Thereafter, I saved the cash and gave it to my son as he lost his job due to COVID-19." (female, homemaker, public sector)
Tuberculosis **patient 5**	"The doctor suggested a nutritious diet during treatment. Today, nothing much can be bought for Rs. 500 (~6.5 USD). Even milk and pulses cannot be bought daily for just Rs. 500 (~6.5 USD) a month. Even for a week around Rs. 500 (~6.5 USD) is required then how Rs. 500 (~6.5 USD) rupees will be sufficient for one month. If the government can increase the monetary incentives to Rs. 1,000 (~13 USD) a month, some essential commodities can be purchased for nutritional support. My OOP expenditure to complete the full treatment was Rs. 42,000 (~540 USD) in the private sector." (female, homemaker, private sector)

Figure 28:

The beneficiary journey map captures the TB patient's experience of applying for and receiving the NPY benefit.



Source: Authors Own.

In Chhattisgarh, most TB patients prefer receiving monetary incentives (cash transfers) over nutrition food baskets. The patient's preferences are also influenced by the choice and flexibility that cash transfers afford them and allow them to expand their dietary diversity. In Durg, the empirical evidence suggests that patients reported receiving cash from other social protection programs, as well. On balance, the other patients preferred to avail of cash transfers in lieu of nutrition food baskets through the NPY. The combination of preferences will allow stakeholders to better understand patient preferences, as well as the nutrition impact of cash versus nutrition food baskets for nutritional support. Empirical evidence also suggested that TB patients were not receiving any monetary incentives despite being eligible for the program. There is also a degree of social stigma prevalent among the patients and their expectations exceeded the entitlements mostly by Rs. 500 (~6.5 USD) per household. This is also the main grievance noted by the TB patients. This was followed by patients reporting that they received different amounts each time and a majority of the patients reporting that they have not received any payment over the past few months. It is important to understand whether the gaps are in the processing of payments, PFMS errors, or in the level of awareness and knowledge of the transfers.

Over the course of the treatment, patients also spend more OOP expenses on meeting the nutritional diet in the market

Adding the time costs and OOP expenditure incurred in nutritional diet, travel, and additional OOP spending for treatment by private patients. It can be estimated that the monetary incentives received may be perceived as insufficient for the patients. The transfers per beneficiary have to be of an order of magnitude not too far from the average poverty gap. Ultimately, it will be critical to ensure alignment among that has been based on fiscal capacity, service availability, and the social information system. Moreover, some of the patients do not seem to know a clear way to report their grievances in the TB Aarogya Sathi mobile application or via the toll-free number. For example, when asked, "Have you heard of TB Aarogya Sathi mobile application for reporting your grievances? Are you aware of this application as part of the NPY program?"

Chhattisgarh and Tamil Nadu offer mixed evidence:

- First, there is little to no empirical evidence that providing cash transfers (monetary incentives) to patients has improved nutritional support in the medium or long term. Proposals to integrate the DBT into the NPY program with the Public Distribution System (PDS) can be considered to improve patients nutritional support and increase the efficiency of the NPY.

PDS is probably the largest food subsidy scheme with the aim to improve the nutritional support of the targeted beneficiaries and low-income households. The current policy holds food subsidy grains (essential commodities) as the key to nutrition and food security. The PDS not only aims to improve nutritional support but also provides the essential commodities at subsidized prices. The PDS provides assistance to over 800 million people and the union government allocation is Rs. 215,960 crore (2.15 trillion) under the 2022-2023 union budget expenditure (Expenditure Budget, Union Budget 2022–2023).

- Second, although TB care is provided free of charge in the public health care system, some patients incurred some direct and indirect expenses to access the treatment; at the same time, patients experienced reduced income if they cannot work.

- Third, empirical evidence revealed cash transfers offered a positive incentive to complete TB treatment, but there is little evidence to evaluate the effectiveness of socioeconomic support interventions in TB.

- Finally, in the urban regions, the district stakeholders noted providing cash transfers has reduced stigma among patients. Yet, TB patients noted stigma issues prevalent in the community. The patients were worried as the community might spread more misinformation and may do more harm than good. In sum, providing cash transfers and considering the synergies between social protection interventions and TB control programs are effective.

Giving beneficiaries the choice of multiple payment modalities not only adds to the beneficiary experience by empowering them; it also stimulates competition among financial service providers, resulting in lower transaction and administrative costs, and adds scalability and transferability to other G2P payment programs. Innovative mechanisms, as well as digital implementation, allowed for reducing the risk of digital exclusion.

Digital payments and improved beneficiary experience might allow the opening of more gateways for financial inclusion for low-income households

Under the ADITYA-TB Durg, Chhattisgarh initiative, the Durg District provides access to gratuitous quality diagnostics, quality consultation, quality care, drugs, and improved case detection. Private providers, pharmacists, and x-ray centers play an important role in this project.

In 2021, the district started providing free x-ray vouchers in private registered x-ray labs for presumptive TB patients. In this case, when a presumptive patient sees the doctor and certain tests are prescribed, an x-ray has been prescribed for the patient. The patient's mobile number is taken; a one-time password (OTP) is generated and the Quick Response (QR) code is sent to the patient's number, which gets authenticated from the provider's side. Thereafter, the TB patient is in a position to utilize the QR code or SMS string-based voucher of characters, which is shown on the phone. This feature is supported even in the feature mobile phones and the patient does not need to have a smartphone. Second, the patient does not need to have a bank account.

The mobile number which is taken for TB patient adherence and for other follow-ups and visits acts as the authentication for the TB patient. It is expected that with the x-ray voucher in hand, the TB patient is more likely to increase TB notifications and early diagnosis, and to ensure initiation of treatment. Under the project ADITYA, there are 15 x-ray private registered labs and the private registered lab owners receive Rs. 200 (~2.4 USD) for every digital x-ray from the district.

Based on the similar principles of the x-ray vouchers. In 2023, the government is planning to pilot e-RUPI (digital vouchers) in Durg, Chhattisgarh for NPY. The introduction of digital vouchers offers the potential for lowering infrastructure costs in the welfare delivery space to curb leakages. It might be delivered by a QR code or SMS string-based voucher and might not require a card or net banking. e-RUPI is not interchangeable with cash or currency and can be redeemed only for the specific welfare case (secure welfare payment infrastructure) that it has been created for without a bank account or internet (adapted from Muralidharan et al. 2016). The introduction of e-RUPI is envisioned to be considered as the alternate cashless and contactless digital payment mechanism of entitlements for TB patients.

Payment Mechanisms in Brazil, Mexico, Mozambique, and Zambia

Brazil & Mexico

In Brazil, the Bolsa Família (formally ended on Dec 30, 2021) used a digital payment system operated by Caixa bank to deliver cash benefits to enrolled families. The program gave out the program branded cash card to beneficiaries upon enrollment. The program has enrolled 13.8 million families, or about 48 million people, and the payment modality employed is inexpensive to operate. Brazil's Bolsa Familia program reduced its transaction costs of total payments when it bundled several benefits onto a single electronic payment card (Cull et al. 2014). In Mexico, the use of digital payments (debit cards) increased the savings by 2 percent of annual income (Bachas et al. 2018). In addition, 75 percent of the beneficiaries feel receiving payment by debit card is more satisfactory than the prior methods of transfer.

Mozambique

In Mozambique, payment mechanisms occur through smartcards and mobile automated teller machines (ATM), transfers through mobile money wallets, digital payments through the automated payment system, and cash delivered through an offline payment application (Arboleda et al. 2019; Chimal et al. 2022). Further, by allowing integration with the e-INAS (National Institute of Social Action) social information system with the banks and mobile money organizations, beneficiaries can choose the most convenient service provider for them. Initial results indicate cost savings up to 20 percent of the average cash transfer is achievable compared to other payment mechanisms.

Zambia

In Zambia, the Girl's Education and Women's Empowerment and Livelihoods (GEWEL) program offered choices of a bank, mobile wallet account, or a prepaid card to women, who would then decide the provider and the type of account for their social protection benefit transfer (Baur-Yazbeck et al. 2019). Providing beneficiaries with multiple payment modalities from which to choose empowered them. It also enabled an environment for competition in the private sector to provide better services at lower rates, resulting in more money for the recipients. The program also set a precedent for G2P payments for other social protection and government cash transfer programs in Zambia.

Projecting Into the Future

Alternate Institution

Movement toward e-RUPI allows for an alternative institution solution and might allow the government to function more efficiently and effectively by supporting policymaker coordination. e-RUPI in this context could power functions needed by policymakers to fulfill their mundane tasks and to increase flexibility and agility in response to ever-changing financial conditions. The introduction of e-RUPI digital vouchers could depend on the properties of technological artifacts and allows better theorizing of the role of information and communication technology in e-governance reforms. The use of information and communication technology could offer a new set of structured sequences and interdependencies, and offers a new way to frame how the government welfare schemes and processes are executed (adapted from Kallinikos 2005; Ciborra and Hanseth 1998; Cordella and Tempini 2015).

Regulations

There might be specific concerns on how the point of the finality of a transaction would be defined in an e-RUPI digital voucher environment. In addition, there might be concerns in terms of the jurisdiction of different states and union territories of the underlying data and transactions. In many jurisdictions, policymakers are best at making their own decisions about their investments, and social and cultural choices. However, understanding the regulations is critically important as it provides the required synergies between state, law, and people, and on how the economy and society should run (Majone 1994; Phillips 2013). Joskow (2000) contends that regulations should be considered as a political instrument to redistribute income rather than correcting market imperfections. In Black's terms, regulation is "the sustained and focused attempt to alert the behavior of others according to defined standards or purposes with the intention of producing a broadly identified outcome or outcomes, which may involve mechanisms of standard-setting, information-gathering, and behavior-modification" (Black 2002). As Black postulates, understanding regulations from a decentered perspective can facilitate an understanding of how regulations do and might occur in societies. Understanding regulations from a point of reference may be seen more than as law and allows policymakers to consider different configurations of state, market, and society to deliver public policy goals.

Infrastructure Requirements

Digital infrastructure might be understood as technical facilities with a collection of hardware and software components and networks that are required to enable interoperability and communication among different parties. However, prior to the implementation of the e-RUPI digital vouchers for NPY scheme, both the government and policymakers might have to give due regard to the underlying infrastructure requirements, especially in the low-income states.

Toward Upscaling

Upscaling is recognized as means for "expanding, adapting, and sustaining successfully implemented policies, programs, and projects in diverse locations and over time to reach a wider population" (World Bank 2005). In this context, the shift toward digital vouchers needs to be strategically planned in a social and technical context. Upscaling requires an innovation process that aims to accomplish a better service delivery chain for the patients, rather than imposing additional burdens on the existing direct benefit transfer in NPY.

More than anything else, upscaling might run into constraints because the policy, fiscal, regulatory and legal framework are not supportive in the other regions. Another limitation that might arise is that other regions might be unwilling or lack the capacity to create new institutions to operate the program on a larger scale. Understanding these institutional characteristics would be important as different regions might reinforce different rules of the game. As noted by North (1990) (1994), institutions consist of formal rules, informal constraints (norms of behavior, trust, culture), and the enforcement characteristics of both.

An equal limitation might occur if there might be no clear guidance on whether to go with existing institutions. This is important as policymakers might emphasize the need to create new institutions, as those involved in the initial development of pilot regions might be unwilling to adjust and carry out the required upscaling process with the existing institutions. The process of upscaling might require learning by doing culture, one that values adaptation, flexibility, and openness to change.

Cash transfers have become an increasingly essential form of social protection for low-income households across LMICs. Estimates have shown that social protection programs that include in-kind transfers, cash transfers, vouchers, and others cover over more than two billion people in LMICs and have allowed the poorest quintile to escape from poverty (World Bank 2015; World Bank 2018). Bhattacharya and Roy (2021) find that approximately 40 percent of the low-income households received both food and cash transfer in India. Likewise, Drèze and Sen (1991) point out that cash transfers can also assist if aggregate food availability cannot be increased. There has been a big surge in the number of cash transfer programs during the COVID-19 pandemic, with social protection seeing an increase in spending of nearly 270 percent since December 2020 (Gentilini 2020; Gentilini 2021; Gelb and Mukherjee 2020a and Gelb and Mukherjee 2020b).

The pandemic has also contributed to the way cash transfer programs have evolved in lieu of registration and delivery of benefits, with considerations around minimal contact in providing these benefits to vulnerable populations. There is no standard prescription or a common formula that is crucial in making a social information system implementation successful. However, there are several factors and themes which have emerged in social protection delivery systems that are major contributors to the effectiveness and efficiency of benefits delivery to the intended populations.

As social transfers expand, it is important to understand the kinds of transfers (in-kind, cash, and others) in particular which could have important implications for their effectiveness and distributional impacts. Chhattisgarh is the first state in India to have allocated funds for providing nutritional food baskets to TB patients in 2015. After the implementation of DBT in the NPY in 2018, the state of Chhattisgarh, however, preferred continuing with providing nutritional food baskets for TB patients. The package included Rs. 500 (~6.50 USD) as the monetary incentive provided by the national government and Rs. 250 (~3.25 USD) in the form of nutritious food basket provided under the state budget, Government of Chhattisgarh.

A total in-kind nutritious food basket transfer of Rs. 750 (~9.75 USD) was provided to TB patients. However, the nutritious food basket deliveries to the TB patients faced delays due to the disruption in the food supply chain and tender (procurement) process. As well as the quality of the food basket commodities was par below for the TB patients. As a result, DBT was introduced for TB patients in 2019–2020. The state of Chhattisgarh now is in consideration of increasing the cash transfer size (that is through the state government funds) along with the current monetary incentives of the National government. It is expected that the change toward increasing the cash transfer size and continuing to provide direct benefit transfer will allow the patients to choose their own consumption basket as well as avoid procurement delays to provide in-kind food baskets by the stakeholders. In Chhattisgarh, the senior treatment supervisors along with TB health visitors and TB champions conduct the required follow-ups with the patients. Senior treatment supervisors, TB health visitors, and TB champions also inform the patients of the monetary incentives credited to their bank accounts.

The development community remains divided on the merits of cash transfers, in-kind transfers, and vouchers for the beneficiaries. Baird et al. (2011, 2012, 2014) and Rawlings and Gloria (2003) are persuasive in arguing that cash transfers improve the odds of low-income household children being enrolled in and attending school compared to the non-cash transfer program. Fiszbein et al. (2009) argue that providing conditional cash transfers (CCT) has improved the lives of low-income households. They also point out that CCT allow redistribution of income to low-income households. Glassman et al. (2007) emphasized on providing conditional cash transfers reduced out-of-pocket expenditures for low-income households. Das et al. (2005), however, point out that the use of CCT exhibits tensions between the efficiency and equity objectives. Bellows et al. (2009) find the potential of voucher programs appears positive with the beneficiaries. Obare et al. (2013) go further and argue that births occurring after the introduction of vouchers for low-income household women received better-skilled care during delivery, and more deliveries at health facilities, compared to the communities that had not been exposed to the program. Banerjee et al. (2021) point out that the movement from in-kind transfers to vouchers allowed concentrated beneficiary assistance and considerable impacts on poverty reduction. Svedberg (2012) advocates in favor of in-kind food nutritional baskets for the beneficiaries. Alderman et al. (2018) and Gentilini (2016) point out that context matters in the selection of cash transfers or in-kind food nutritional baskets. Along these lines, field visits and discussions with the key informants revealed that TB patients have experienced losses with both cash transfers and in-kind nutritional food baskets.

The Case of Bolivia

Since late 2008, Bolivia has been making efforts to expand its coverage for the Renta Dignidad, a non-contributory universal pension social protection program. As part of the program, monetary incentives are provided to all people over the age of 60. The Renta Dignidad program makes one of the most significant transfers in terms of expenditure, more than Bolsa Familia in Brazil and Progressa in Mexico. This program makes the payment made in cash or in-kind, and beneficiaries may voluntarily accumulate monetary incentives for up to 12 months, beyond which obligations cease to be valid. Escobar et al. (2013) and Bottan et al. (2020) in their studies present that Renta Dignidad reduced the poverty incidence and had positive impacts on resilience and food security for low-income households.

At a broad level, the purpose of human resources is to manage the workforce in such a way that the NPY goals are addressed through a collaborative approach. At least ten areas of added attention for policy makers emerged relating to human resources, financing, and infrastructure at the district level. These areas of added attention represent the different needs and goals of the NPY:

- There are insufficient numbers of senior treatment supervisors in the high burden TUs. There was also an expressed need for more public private coordinators, district program coordinators and DBT experts in some of the states and districts.

- Most district contractual staff, such as the senior treatment supervisors, district program coordinators, district accounts officers, and public private coordinators, are paid meager salaries; have little to no opportunity for professional advancement; and are not covered by health insurance. District contractual staff are overworked as they support an increasing number of TB patients in high burden private and public TUs. For example, one of the senior treatment supervisors reported that as his caseload increases, the number of grievances also increase due to SNA issues, deduplication of bank accounts, and incorrect phone numbers, however, remuneration stays the same.

- Different stakeholders will have different values; participatory techniques can help create a shared vision of NPY outcomes and processes.

- There is a need to maintain and develop senior treatment supervisor capability for current and future caseload management; and improve the capacity of district stakeholders.

- The introduction of mobile applications for route planning and activity scheduling for senior treatment supervisors will allow to improve efficiency in the short, medium, and long term.

- Improving district officials staffing patterns might influence patient care and service delivery in the NPY. Future exploration of district-level-part time staffing might be considered to understand both positive and negative effects for patient experience of care and service delivery in the NPY, in particular to examine if the results line up with positive effects. Part-time employment at the district level offers advantages in terms of specialized skills, possibly because such arrangements might contribute to a more positive environment. Future exploration might examine the multiplicative and nonlinear effects for part time staffing at the district level. As such, district officials need to carefully examine the staffing flexibility, staffing levels and skill mix in ways to examine how part time staff perform their roles and responsibilities. In addition, district officials might need to consider the staffing levels and skill mix ratios that are already at points of diminishing returns suggesting further investments in human resources.

- Mechanisms to enhance accountability would not only allow improved human resources in the NPY; they also offer an entry point for more meaningful patient care experience in shaping the nature of provision and enhancing service responsiveness to the state and district needs. The use of these accountability mechanisms might strengthen the capabilities to respond to new accountability mechanisms. However, this brings with it an important governance question. What kind of better governance tools may be employed which may allow to regulate answerability between the different levels of the health system?

- Some key informants suggested changing the prevalent recruitment policies from contractual to open full time to enhance job security and motivation.

- Most district contractual staff-such as the senior treatment supervisors, district program coordinators, district accounts officers, and public private coordinators-are paid meager salaries; have little to no opportunity for professional advancement; and are not covered by health insurance. District contractual staff are overworked as they support an increasing number of TB patients in high burden private and public TUs. For example, one of the senior treatment supervisors reported that as his caseload increases, the number of grievances also increases due to SNA issues, deduplication of bank accounts, and incorrect phone numbers, but not remuneration.

- Improving the contractual staff workforce situation is critical. The need to keep salaries consistent for the contractual staff across the states under the various health programs was proposed. For example, one key informant reported that remuneration for staff with seventeen years of professional experience under the TB program is less than for staff with six years of experience under other health programs. Moreover, the key informant noted that the salary structure of the senior treatment supervisor in Chhattisgarh is lower than the senior treatment supervisor salary structure in Madhya Pradesh.

States and districts can experiment with results based financing to improve motivation and performance among the contractual staff. Results based financing can be based on the achievement of intermediate outcomes and implementation performance, that are aimed at increasing efficiency among the contractual staff. Building this capacity and knowledge might fully leverage the human resources in health, ensure aggregate fiscal discipline and strategic allocation of resources and efficiency in the health sector (Adapted from Gurazada et al. 2022). Results-based financing programs in the health sector have seen a rapid expansion across LMICs (Mutasa et al. 2021; Fritsche et al. 2014; Dong 2019; Smith and Nguyen 2013). Gertler and Vermersch (2012) in their study examined the effect of providing performance based incentives for health providers in Rwanda. Gertler and Vermersch results suggest that providing performance-based incentives increased the marginal return to the effort of the health providers. The results based financing programs have also been pioneered in the education sector, with a proportion of more than 40 percent education sector results based financing programs specifically in South Asia.

Before implementation, it is essential that the states and districts officials are committed to the results based financing scheme for TB support programs. Implementation is of little use without the officials willingness and empowerment to act on results. And without specialized managerial and statistical skills, and to understand the local formal and informal norms.

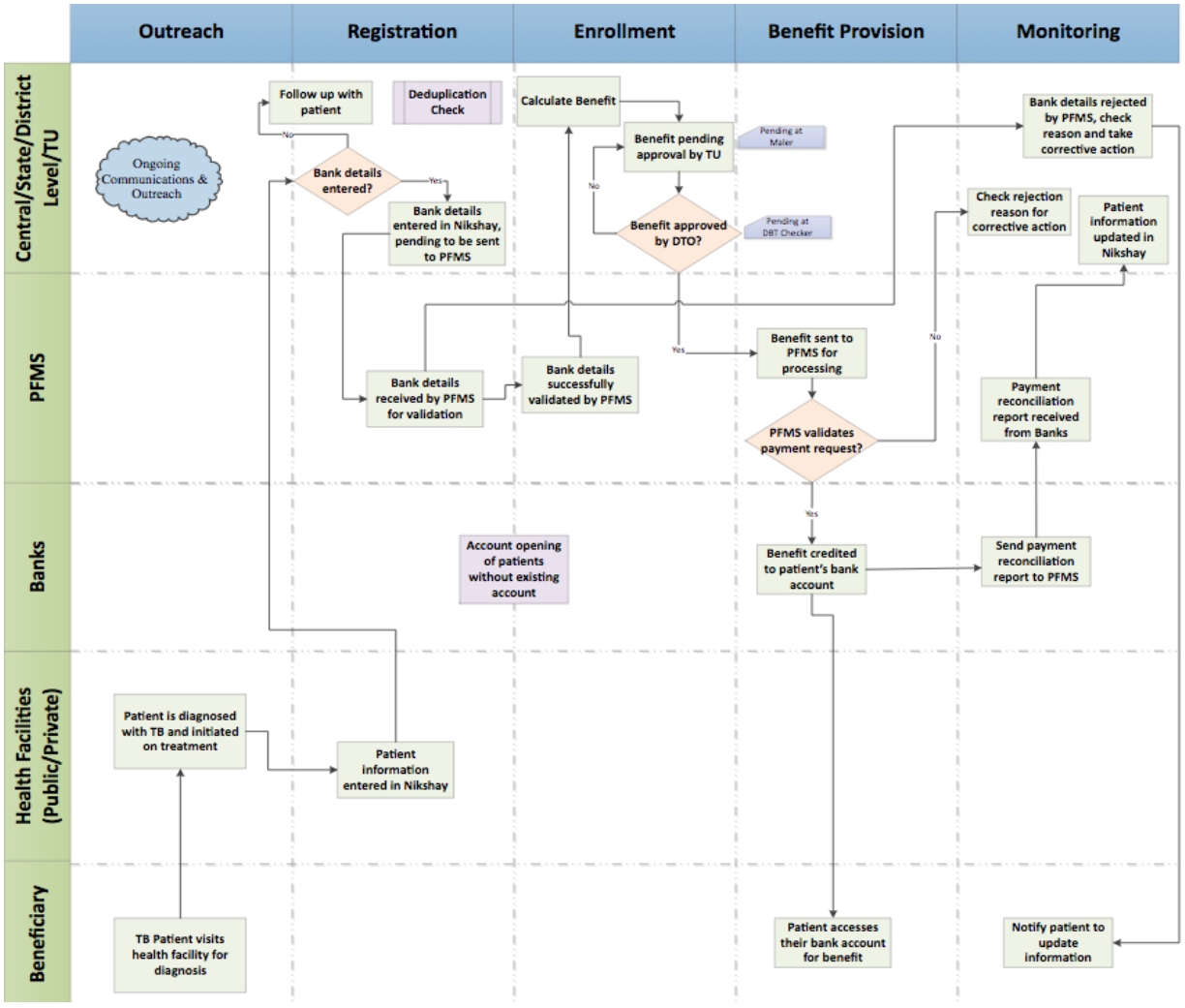
The duplication engine in the Ni-Kshay Information System is based on the TB patient's gender and phone number. At times, this becomes a challenge in multiple ways, as patients could use a different mobile number to register again, and the genuine patients may not be able to get notified if they only have one mobile number, that is, in the case of a family with multiple TB patients. When the same mobile number is used to register in Ni-Kshay, the system marks it as a duplicate. This issue may be resolved through an additional layer of authentication, such as through a one-time password-based approach for validating patients through one mobile number.

A patient may also miss out on a benefit or not get notified in Ni-Kshay, in case, there is only one bank account available for a family with multiple members diagnosed with TB, for example, if a parent and child are both diagnosed with TB, and the family only has one bank account. This specifically becomes a problem for marginalized groups, where opening a new bank account is a hassle or not feasible. However, the program does offer a provision to take the consent of the patient and transfer the benefit to a bank account in the name of a blood relative. Another issue observed is multi-dose shopping, where a patient may purchase medicine, example, schedule H1 drug, from a pharmacist, but if they are not cured, they will go to public sector hospitals to get notified again.

NPY benefits are delivered through the GOI's well-developed DBT scheme. The DBT architecture has gone through major interventions over the past several years to improve the overall experience for the program implementation agencies and ease for beneficiaries (Figure 29). The NPY DBT scheme has the potential to improve further and move toward a more TB patient-centric design through policy level and operational level enhancements. The empirical evidence and analysis conducted based on the chosen case studies present the current gaps and shortcomings in the different components of the NPY DBT delivery system and provide recommendations for each component for policy-level interventions, and operational level implementation.

Figure 29:

Direct Benefit Transfer (DBT) Workflow for Patient Enrollment and Benefit Creation and Credit in Ni-Kshay



Source: Authors Own.

For example, there is a need for effective communication and sensitization of vulnerable and marginalized groups (example TB patients who are migrants). The lack of effective communications outreach is backed by the Ni-Kshay data as, on average per year, 20 percent of the notified patients have incomplete details in the Ni-Kshay Information System.

Portability promotes the capability of the social information system with little or no modification to be executed in different environments. In the Ni-Kshay Information System, the transfer in and transfer out channel allows for the transfer of patients within the same and other districts as well to another state for the continuity of the medical care. Follow-up of transfer patients is important to the continuity of care for the patient. Some districts, however, face challenges with the influx and outflux of migrants, particularly given that some migrants provide old mobile numbers and incorrect residential addresses. The transfer of patients usually occurs after weeks or a month in the Ni-Kshay Information System. These contributors, at times, have led to an increase in the payment processing times and discontinuation of care.

Low-income TB patients opened zero balance bank accounts to receive monetary incentives for nutrition support. Observations from the field visits revealed that some patients preferred DBT to in-kind transfers. Satisfaction in the NPY and trust in the financial institutions were more if the first and second monetary incentive arrived on time. For some patients, the financial institutions were less than two km away. Distance to a financial institution reduces the net savings on health visits on average. Previous studies also have found that a 1 km reduction in road distance corresponds to a 28 peso increase in net savings (Bachas et al. 2018).

SUMMARY

In conclusion, differences across the three states can be attributed to service delivery, processing times, adaptation of new technologies, and failed transactions. These results are consistent with the findings from other regions (Bharti 2021; Ernst and Young 2019; Joshi 2021; News18 2021; Sathish 2021; Thevar 2021; TNN 2021; The New Indian Express 2021; Pandey 2021; Patel et al. 2019; Nirgude et al. 2019; Kumar et al. 2018; Yasmeen 2018). Further, the results suggest that an increased processing times may hurt welfare support and dilute its general equilibrium effects for low-income households, especially the poorest quintile. Consequently, this might underscore the importance of building state capacity for better implementation of social protection programs in low-income states.

SECTION III: POLICY-LEVEL RECOMMENDATIONS

This paper bridges the evidence related to social protection and health systems for NPY. The identified gaps are categorized under existing gaps in knowledge with regard to human resources, service delivery, and social information systems (Table 5). A range of stakeholders and development partners can jointly commit to addressing the identified gaps and document the best practices for policy diffusion across different regions to improve the service delivery, and human resources in NPY.

This paper also provides recommendations on system-level changes that overlap with policy-level interventions, such as:

(i) Reassessing and improving the deduplication methodology;
(ii) Creating a more integrated information system through interoperability with other health, social protection, and administrative systems;
(iii) Devising an integrated grievance redressal mechanism for better case handling of TB patients; and
(iv) Incentivizing district staff to regularly update and log complete information of TB patients in Ni-Kshay for better monitoring.

Other important policy-level recommendations include:

(i) Providing TB patients with multiple options to receive their benefit; and
(ii) Surveying the consumption of benefits by TB patients and establishing the benefit is being utilized for the appropriate purpose, that is, on nutrition.

> A range of stakeholders and development partners can jointly commit to addressing the identified gaps ”

Table 5:
Recommendations

Key Area	Identified Gaps	Recommendations	Responsibility
Human resources (contractual staff)	Some districts require more senior treatment supervisors (STS) to handle the caseload management of tuberculosis patients Some districts require more lab technicians for the diagnosis of tuberculosis	Initiate policy discussions and processes to complete discussions	MOHFW, States, Districts
Payments system	TB patients do not have the option to choose how they will receive their benefit. Patients can only use their bank accounts to receive the NPY benefit	Introduce multiple payment modalities to make payments to TB patients. These may include e-RUPI, cash cards, mobile money, and vouchers	MOHFW, GOI
Communications	There is a lack of awareness about the program requirements, as per year on average about 20 percent of notified TB patients have incomplete details in Ni-Kshay Information System	Sensitize TB patients to increase understanding about the program requirements and advantages. Effective outreach and communications campaigns to reduce the stigma attached to TB and for TB patients to be aware of the NPY benefit	MOHFW, States, Districts
Intake and registration	The deduplication methodology is not based on biometrics and hence is not foolproof. The DBT program has recently integrated Ayushman Bharat Health Account (ABHA) number with Ni-Kshay, but it is not mandatory	Linking the ABHA number with Ni-Kshay is a positive direction. Initiate discussions and plans to move toward a biometrically driven verification and deduplication methodology	MOHFW, Software Vendor(s)

Key Area	Identified Gaps	Recommendations	Responsibility
Eligibility and enrollment	Tuberculosis patient adherence, tuberculosis patient follow up, tuberculosis patient drug refill are optional checks and not mandatory, which may contribute to increases in tuberculosis patient dropouts and loss to follow-up	Regular and periodic updates of the patient's treatment details in Ni-Kshay, incentivizing the staff to make these updates for better monitoring; similar to the treatment supporter scheme	States, Districts
Benefit (cash transfer) size and service package	The Rs. 500 (~6.5 USD) benefit was determined at the start of the program in 2018 and has not changed since. Empirical observations observed through this paper will allow conducting a formal evaluation to determine if the benefit amount suffices the need of the tuberculosis patient for adequate nutritional support (demand-side policy intervention)	Conduct a review of the benefit size and a survey of tuberculosis patients and revisit the benefit amount determined for the program	MOHFW, States, Districts
Notification and onboarding	The onboarding modalities include SMS only to tuberculosis patients. It does not include in-person or printed mail notifications	Incorporate additional modalities of updating/notifying tuberculosis patients. Orientation sessions for beneficiaries to get them acquainted with an operational understanding of the program, benefits, payment, and service provision schedules, their rights and responsibilities, and how to file grievances	MOHFW, States, Districts
Beneficiaries compliance, updating, and grievances	Need for integrated case management (grievance redressal) system in Ni-Kshay to effectively log all patient grievances and communications and to escalate them to the appropriate department/office for follow up	Integrate Ni-Kshay Sampark with the Ni-Kshay Information System for an effective grievance redressal mechanism. Appropriate training is required for the state and district staff	MOHFW, Software Vendor(s)

Key Area	Identified Gaps	Recommendations	Responsibility
Eligibility and enrollment	TB patient adherence, patient follow up, patient drug refill are optional checks and not mandatory; this option may increase TB patient dropouts and loss to follow-up	Regularly and periodically updates of the patient's treatment details in Ni-Kshay, incentivizing the staff to make these updates for better monitoring (similar to the treatment supporter scheme)	States, Districts
Benefit (cash transfer) size and service package	The Rs.500 (~6.5 USD) benefit was determined at the start of the program in 2018 and has not changed since. A formal evaluation can determine the benefit amount suffices the need of the TB patient for adequate nutritional support (demand-side policy intervention)	Conduct a review or research on benefit size and revisit the benefit amount accordingly to improve participation and impact	MOHFW, States, Districts
Notification and onboarding	The onboarding modalities include SMS only to TB patients. It does not include in-person or printed mail notifications	Incorporate additional modalities of updating/ notifying TB patients. Orientation sessions for beneficiaries can acquaint them with an operational understanding of the program, benefits, payment, and service provision schedules, their rights and responsibilities, and how to file grievances	MOHFW, States, Districts
Beneficiaries compliance, updating, and grievances	Need for integrated case management (grievance redressal) system in Ni-Kshay to effectively log all patient grievances and communications and to escalate them to the appropriate department/ office for follow up	Integrate Ni-Kshay Sampark with the Ni-Kshay Information System for an effective grievance redressal mechanism. Appropriate training is required for the state and district staff	MOHFW, Software Vendor(s), States
Consumption patterns	Lack of a study and overall perspective of how the nutritional benefit is being consumed by TB patients. Also, because payments are transferred directly into a personal bank account, it is not possible to track consumption patterns for the NPY benefit	Conduct surveys at the state and district levels of beneficiaries to identify consumption patterns and how the NPY benefit is utilized by TB patients	MOHFW, States, Districts

Key Area	Identified Gaps	Recommendations	Responsibility
Governance	Tracking of budget allocation is presently implemented across states. Creating mechanisms for more accountability is required	Ensure stakeholders on all sides are accountable	Ministries, States
Capacity building of district stakeholders (DPC, PPC, DAO, STS)	More training is required to resolve errors in the Ni-Kshay Information System	Organize appropriate training programs related to PFMS, SNA, Ni-Kshay Information System and budgeting with clear and adequate examples	States, Districts
Transfer of funds without delay	Delay in the transfer of funds led to the increase in grievances cases; in particular, fund release processes are not well understood by district stakeholders	Conduct effective training with regard to Ni-Kshay Information System on fund disbursement processes (district level)	MOHFW, States, Districts
Payment and settlement systems	The incentives credited are specified using the transaction ID. Patients, at times, find it difficult to recognize the entitlements credited in their bank account	Consider crediting incentives in the name of the district or state health society rather than via the patient's transaction ID	Software Vendor(s), MOHFW, States, Districts

Financial inclusion is a structural challenge that must be addressed. Despite the increase in the opening of accounts in financial institutions among low-income households thanks to the Jan Dhan-Aadhar-Mobile (JAM) trinity, Pradhan Mantri Jan Dan Yojana (PMJDY), and the proliferation of small finance banks and micro-finance institutions, financial institutions are still often inaccessible to low-income TB patients. Nimble and specialist non-bank business models catering to the first and last mile in North-east and low-income states must be nurtured, albeit in ways that keep the overall accessibility of financial institutions reachable to TB patients.

The Ni-Kshay Information System has limited interoperability, and the database is not connected to other cash transfer programs for data exchange. The system is integrated with PFMS, however, it is not integrated with other external platforms, example, mobile network operators to verify mobile numbers in real-time. Exploring the possibility of integrating with other social protection databases for sharing of information, example, health programs and other cash transfer programs like Jan Dhan Account, e-Shram, old age pension, and widow pension. With ABHA integration in Ni-Kshay, this would pave the way for the sharing of program information with other databases connected with ABHA. Interoperability with other databases could provide real-time verification to improve efficiency of the delivery system, and to inform program administrators on the holistic health details of the patients. Integration of different databases would help drive data standardization across programs.

For further exploration, analysis of additional indicators, for example, such as benefits payable vs. benefits paid, single benefits paid vs. all benefits paid, received benefits vs. those who forfeited benefits with demographics and epidemiological characteristics; and treatment outcomes would be beneficial (at the national, state and district level). It would be beneficial to include this and other indicators from the Ni-Kshay Information System as part of the assessment and data analysis for future exploration, which will provide additional insights into the delivery system performance. There is another additional indicator logged in the Ni-Kshay Information System, the benefits credit date, which is not part of the dataset analyzed. The benefit credit date differs for each patient in the Ni-Kshay Information System and extracting the data requires further investigation.

Cash transfer (that is, benefit) size is strategically important to service delivery and reducing food insecurity gap in social protection programs. Determining the appropriate cash transfer size is important, and will need to be defined, sized, and cost in relationship to supply-side readiness and availability of funds. A cash transfer that is overly generous but cannot be delivered due to insufficient funds might lead to a delay in the delivery of monetary incentives for beneficiaries. Likewise, if there are additional funds but the social protection program is not equipped to channel the funds for beneficiaries, the program will run into a problem of poor absorptive capacity. A key reform will be to undertake system and financing reforms in tandem with one another, such that reforms in multiple areas such as service delivery, human resources, governance, financing, and information system infrastructure will support each other rather than create unintended disconnects across the other pillars of the health system.

Cash Transfer (Benefit) Size and Structure

There is no one-size-fit solution to setting the cash transfer (benefit) size, since most social protection measures are anchored to the program objectives. One solution aims to provide households with at least one meal per person per day and links to the benefit size accordingly. Other approaches have been to reduce the poverty gap or food insecurity gap. Since most social protection programs have nutrition improvement or food security as one of the key objectives, the cost of a meal or the poverty line is the most standard reference point used to set the benefit size. Policy makers also need to ensure a meaningful benefit transfer size that should be sensitive to the size of transfer as a share of consumption among the patients households. Varying the transfer size according to patients household size or a flat increase in the transfer size is another key element that can be considered.

After over a decade, India is proposing changes in its data and information technology laws. The GOI acknowledges that data protection law must not create fractures in the development of the Indian economy. The Indian healthcare system presents a series of spectrum landscapes, and there is huge potential to collect more accurate and complete patient information. Access to individual TB patient data will allow for program evaluations to compare the effectiveness of locally targeted strategies against nationally standardized ones.

Access to individual patient data will allow policymakers and researchers to examine holistic views of patients and patient journeys, cash transfer methods, and advanced treatment methods, as well as to personalize treatments, improve private sector engagement, and enhance health outcomes. Using machine learning algorithms, analysis of patient data will further contribute to a better understanding of the correlation, causal factors, and indicators in the Ni-Kshay Information System.

Public and private sector decision-makers will also get a chance to assess risk factors, trends across different geographical regions and population groups, and the quality of provided services that might lead to stronger institutions. This might also lead to further improvements in service delivery, validation, and verification of patients, payment processing times, authentication of payments, and last mile connectivity in the NPY program.

“Access to individual patient data will allow for further improvements in service delivery, payment processing times, and enhance health outcomes”

REFERENCES

Akerlof, G. (1970): "The Market for Lemons: Qualitative Uncertainty and the Market Mechanism," Quarterly Journal of Economics, 84, 488-500.

Alderman, H., U. Gentilini and R. Yemstov (2018): "The 1.5 Billion People Question: Food, Vouchers, or Cash Transfers?", Washington D.C., World Bank.

Arrow, K. J. (1963): "Uncertainty and the Welfare Economics of Medical Care," The American Economic Review, 53, 941-73.

Arboleda, V., R. Vicente and L. Pellerano (2019): "Best Practices, The Case of e-INAS in Mozambique, Development of Management Information System for Social Protection," International Labour Organization.

"Assam at a Glance 2019" (2019): Directorate of Economics and Statistics, Government of Assam, India.

"Assessment of Institutional Arrangements and Human Resources of the National Tuberculosis Elimination Program (NTEP)," (2021): Ministry of Health and Family Welfare, Government of India, World Bank, and NSHRC.

Bachas, P., P. Gertler, S. Higgins, and E. Seira (2018): "Digital Financial Services Go a Long Way: Transaction Costs and Financial Inclusion," AEA Papers and Proceedings, 108, 444-48.

Bachas, P., P. Gertler, S. Higgins, and E. Seira (2021): "How Debit Cards Enable to Save More," The Journal of Finance. Volume LXXVI.

Baird, S. J., R. S. Garfein, C. T. McIntosh, and B. Özler (2012): "Effect of a Cash Transfer Programme for Schooling on Prevalence of HIV and Herpes Simplex Type 2 in Malawi: A Cluster Randomised Trial," The Lancet, 379 (9823),1320–1329.

Baird, S. J., H. G. F. Francisco, B. Özler, and M. Woolcock (2014): "Conditional, Unconditional and Everything in Between: A Systematic Review of the Effects of Cash Transfer Programmes on Schooling Outcomes," Journal of Development Effectiveness, 6 (1), 1-43.

Baird, S. J., C. Mcintosh, and B. Özler (2011): "Cash or Condition? Evidence from a Cash Transfer Experiment," Quarterly Journal of Economics, 126, 1709-1753, 10.1093/qje/qjr032.

Banerjee, A., H. Rema, B. A. Olken, E. Satriawan, and S. Sumarto (2021): "Food vs. Food Stamps: Evidence from an At-Scale Experiment in Indonesia," National Bureau of Economic Research Working Paper, No. 28641.

Basinga, P., P. J. Gertler, A. Binagwaho, A. L. Soucat, J. Sturdy, and C. M. Vermeersch (2011): "Effect on Maternal and Child Health Services in Rwanda of Payment to Primary Health-care Providers for Performance: An Impact Evaluation," Lancet, 377(9775), 1421-28.

Baur-Yazbeck, S., C. Kilfoil, and I. Botea (2019): "The Future of G2P Payments: Expanding Customer Choice in Zambia," Consultative Group to Assist the Poor, Washington, DC.

Bellows, B., M. Hamilton, and F. Kundu (2009): "Vouchers for Health: Increasing Utilization of Facility-Based STI and Safe Motherhood Services in Uganda. Maternal and Child Health P4P Case Study," Health Systems 20/20 project, Abt Associates Inc, Bethesda, Maryland.

Berner, H. and T. Van Hemelryck (2021): "Social Information Systems and Registries of Recipients of Non□contributory Social Protection in Latin America in Response to COVID-19," Project Documents (LC/TS.2021/56), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).

Bhattacharya, S. and S. S. Roy (2021): "Intent to Implementation: Tracking India's Social Protection Response to COVID-19," Social Protection and Jobs Discussion Paper. No. 2017. Washington D.C., World Bank.

Bharti, V. (2021): "Covid Pushes TB Patients to Brink," Tribune News Service, India, January 8, 2021.

Black, J. (2002): "Critical Reflections on Regulation," Configuration Audit Readiness Review Discussion Papers, DP 4, Centre for Analysis of Risk and a Regulation, London School of Economics and Political Science, London, United Kingdom.

Bottan, N., B. Hoffman, and D. A. Vera-Cossio (2021): "Stepping Up during a Crisis: The Unintended Effects of a Noncontributory Pension Program During the COVID-19 Pandemic," InterAmerican Development Bank Working Paper Series, 1153.

Business Standard (2021): "Rs 26,697 cr Lying in Dormant Accounts of Banks: FM Sitharaman," Press Trust of India, New Delhi, India.

Cangiano, M., A. Gelb, and R. Goodwin-Groen (2019): "Public Financial Management and the Digitalization of Payments," Center for Global Development Policy Paper, 144.

Census of India (2011): "2011 Census Data", Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, New Delhi.

Central Tuberculosis Division (2017): "National Strategic Plan for Tuberculosis Elimination 2017-2025," Ministry of Health and Family Welfare, Government of India.

Chirico, M. C., A. B. Kuriger, M. H. Etchevarria, E. Zerbini, and M. L. Casamajor (2011): "Economic Subsidies for Patients with Tuberculosis and their Relationship with Treatment Adherence," Salud i Ciencia, 17, (8), 798–801.

Ciborra, C. and O. Hanseth (1998): "From Tool to Gestell: Agendas for Managing the Information Infrastructure," Information Technology and People, 11 (4), 305-327.

Cordella, A. and N. Tempini (2015): "E-government and Organizational Change: Reappraising the Role of ICT and Bureaucracy in Public Service Delivery," Government Information Quarterly, 32, 279–286.

Das, J., Q. Do, and B. Özler (2005): "Reassessing Conditional Cash Transfer Programs," World Bank Research Observer, 20(1), 57–80.

"Direct Benefit Transfer Portal," (2022): Government of India. (https://dbtbharat.gov.in/)

"Direct Benefit Transfer Manual for National Tuberculosis Elimination Programme," (2020): Central TB Division, Ministry of Health and Family Welfare, Government of India. New Delhi, India.

Dong, D. (2019): "Health Financing in Fragile, Conflict and Violence Situations: Five Key Questions to be Answered," HNP Knowledge Brief. Washington, DC: World Bank.

Drèze, J. and A. Sen (1991): "Hunger and Public Action," Oxford University Press, New York, USA.

Ernst and Young (2019): "Independent Verification Agency for Information Communication Technology (ICT), Ni-Kshay 2.0. Inception Report."

Escobar, F., S. Martínez, and J . Mendizábal (2013): "El impacto de la Renta Dignidad: Política de Redistribucion del Ingreso, Consumo y Reduccion de la Pobreza en

Hogares con Personas Adultas Mayores," Unidad de Análisis de Políticas Sociales y Económicas, La Paz, Bolivia.

Everwell (2022): "A Comprehensive Digital Platform to Support the Patient Journey and Cascade of Care for Tuberculosis Treatment and Support", https://www.everwell.org/nikshay (Accessed on March 31, 2022).

Expenditure Budget, Ministry-wise Summary of Budget Provisions, Union Budget 2022-23, Government of India, India.

Fiszbein, A., N. Schady, F. H. G. Ferreira, M. Grosh, N. Keleher, P. Olinto, and E. Skoufias (2009): "Conditional Cash Transfers: Reducing Present and Future Poverty," World Bank Policy Research Report. Washington, DC: World Bank.

Fritsche, G. B., R. Soeters and B. Meesen (2014): "Performance-Based Financing Toolkit," Washington, DC: World Bank.

Gelb, A. and A. Mukherjee (2020a): "COVID-19: How Countries Can Use Digital Payments for Better, Quicker Cash Transfers," Center for Global Development, April 6, 2020.

Gelb, A. and A. Mukherjee (2020b): "Digital Technology in Social Assistance Transfers for COVID-19 Relief: Lessons from Selected Cases," Center for Global Development Policy Paper, 181, Washington, DC.

Gentilini, U. (2016): "Revisiting the 'Cash versus Food' Debate: New Evidence for an Old Puzzle?," World Bank Research Observer, 31, (1): 135-67.

Gentilini, U., M. B. A. Almenfi, P. Dale, R. J. Palacios, H. Natarajan, R. Galicia, A. Guillermo, Y. Okamura, J. D. Blomquist, M. Abels, G.C. Demarco, and I. V. Dos Santos (2020): "Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures," COVID-19 Living Paper Washington, D.C, World Bank Group.

Gentilini, U., et al. (2021): "Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures "Living paper" version 15." Open Knowledge World Bank, Washington, DC.

Gentilini, U., S. Khosla, M. Almenfi, and et al (2021): "Cash in the City: Emerging Lessons from Implementing Cash Transfers in Urban Africa," Social Protection & Jobs, Discussion Paper No.2101.

Gertler, P. and C. Vermeersch (2012): "Using Performance Incentives to Improve Health Outcomes." Policy Research Working Paper WPS6100, World Bank, Washington, DC.

Glassman, A., J. E. Todd, and M. Gaarder (2007): “Performance-based Incentives for Health: Conditional Cash Transfer Programs in Latin America and the Caribbean,” Center for Global Development Working Paper, (120).

Gronbach, L. (2020): “Social Cash Transfer Payment Systems in Sub-Saharan Africa,” Centre for Social Science Research, Working Paper No. 452.

“Guidelines for Programmatic Management of Tuberculosis Preventive Treatment in India,” (2021): Central TB Division, Ministry of Health and Family Welfare, Government of India, New Delhi, India.

Gurazada, S., M. Piatti and T. Poulsen (2022): “Performance Based Financing: Inspiring New Approaches to Public Financial Management in Health and Education”, World Bank Blog, Washington, DC.

“India National Multidimensional Poverty Index Baseline Report 2021,” (2021): NITI Aayog, Government of India, New Delhi, India.

Jain, A., N. Dhingra, N. Johns, and R. Rautela (2021): “A Review of the Effectiveness of India’s Direct Benefit Transfer (DBT) System During COVID-19: Lessons for India and the World,” MicroSave Consulting.

Joshi, V. (2021): “TB Patients Not Getting Nutritional Support for Seven Months,” The Hindustan Times, July 20, 2021.

Joskow, L. P (2000): “Deregulating and Regulatory Reform in the U.S Electric Sector,” Michigan Institution of Technology Center for Energy and Environmental Policy Research, USA.

Kallinikos, J (2005): “The Order of Technology: Complexity and Control in a Connected World,” Accounting, Management, and Information Technologies, 15(3), 185-202.

Kumar, R., K. U. Khayyam, N. Singla, T. Anand, S. B. Nagaraja, K. D. Sagili, and R. Sarin (2018): “Ni-Kshay Poshan Yojana (NPY) for Tuberculosis Patients: Early Implementation Challenges in Delhi, India,” Indian Journal of Tuberculosis, 67(2), 231-237.

Lindert, K., T. G. Karippacheril, I. R. Caillava, and K. N. Chávez, et al. (2020): “Sourcebook on the Foundations of Social Protection Delivery Systems,” World Bank, Washington, DC:. doi:10.1596/978-1-4648-1577-5.

Majone, G. (1994): “The Rise of the Regulatory State in Europe,” West European Politics, 17(3), 77-102.

Muralidharan, K., P. Niehaus, and S. Sukhtankar (2016): “Building State Capacity: Evidence from Biometric Smartcards in India,” American Economic Review, 106 (10), 2895-2929.

Mutasa, R., S. Baird, F. Takavarasha, A. Markus, J. Friedman, and W. Zeng (2021): “Exploratory Study Estimating the Impact of Performance-Based Financing (PBF) on Quality of Care and on the Contextual Factors Mediating the Effectiveness of PBF in Improving Quality of Care in Zimbabwe,” Journal of Hospital Management and Health Policy, 5(14), 2523-2533.

News18 (2021): “India’s TB Elimination Programme Goes Beyond Medical Interventions, Says Minister of State for Health,” News18, India, October 26, 2021.

North, D. C. (1990): “Institutions, Institutional Change and Economic Performance,” Cambridge University Press, United Kingdom.

North, D. C. (1994): “Economic Performance Through Time,” American Economic Review, 84(3), 359-368.

Ni-Kshay Patrika (2018a): “Quarterly Publication of Central TB Division,” Ministry of Health and Family Welfare, Volume 1, Government of India.

Ni-Kshay Patrika (2018b): “Quarterly Publication of Central TB Division,” Ministry of Health and Family Welfare, Volume 2, Government of India.

Nirgude, A. S., A. M. V. Kumar, T.Collins, P. R. Naik, M. Parmar, L. Tao, K. M. Akshaya, P. Raghuveer, S. K. Yatnatti, N. Nagendra, S. B. Nagaraja, S. Habeena, B. Mn, R. Rao, and S. Shastri (2019): “‘I Am on Treatment Since 5 Months but I Have Not Received Any Money’: Coverage, Delays and Implementation Challenges of ‘Direct Benefit Transfer’ for Tuberculosis Patients - A Mixed-Methods Study from South India,” Global Health Action, 12(1), 1633725.

Obare, F., C. E. Warren, T. Abuya, I. Askew, and B. Bellows (2013): “Population-Level Impact of Vouchers on Access to Health Facility Delivery for Women in Kenya: A Quasi-Experimental Study,” The Lancet, 381: S100.

Pandey, P. (2021): “TB-free India by 2025 An Aspirational Goal, but Paying Attention to Nutrition Key to Beating Disease,” First Post, October 21, 2021.

Patel, B. H., K. Jeyashree, P. Chinnakali, et al. (2019): “Cash Transfer Scheme for People with Tuberculosis Treated by the National Tuberculosis Programme in Western India: A Mixed-Methods Study,” British Medical Journal Open, 9, e033158. doi:10.1136/ bmjopen-2019-033158.

Peterson, M. A (2001): “Kenneth Arrow and the changing economics of health care,” Journal of Health Politics, Policy, and Law, 26, (5), 823-8. doi: 10.1215/03616878-26-5-823. PMID: 11765266.”

Phillips, P. (2013): “Chapter 2: The Provincial Regulatory State in Governance and Public Policy in Canada: A View from the Provinces,” University of Toronto Press, Canada.

Rawlings, L. and R. Gloria (2003): “Evaluating the Impact of Conditional cash Transfer Programs: Lessons from Latin America,” World Bank Working Paper, Washington D.C., The World Bank, USA.

“Rapid Account Opening in a Pandemic. COVID-19 BRIEFING: How to Meet AML/CFT Rules for Social Assistance Payments,” (2020), Consultative Group to Assist the Poor, Washington, DC., The World Bank, USA.

Rural Health Statistics 2018-2019. (2019): “National Health Mission,” Ministry of Health and Family Welfare, Statistics Division, Government of India.

Rutkowski, M., A. G. Mora, G. L. Bull, B. Guermazi, and C. Grown (2020): “Responding to the Crisis with Digital Payments for Social Protection: Short-term Measures with Long-term Benefits,” World Bank Blogs, March 31, 2020.

Sarwal, R., U. Prasad, K. Madangopal, S. Kalal, D. Kaur, A. Kumar, P. Regy and J. Sharma. (2021). “Investment Opportunities in India’s Health Sector,” NITI Aayog, March 2021.

Sathish, D. (2021): “Covid Cases Down, TB on Rise in Coimbatore,” The New Indian Express, India, October 28, 2021.

Sharma, A. (2021): “Exclusive I Aadhaar-Enabled Cash Transfer Scheme Helped Save Govt Rs. 45,000 Cr in Pandemic Year,” The News18, India, November 28, 2021.

Simcoe, T., M. Catillon, and P. Gertler (2018): “Who Benefits Most in Disease Management Programs: Improving Target Efficiency,” Health Economics, (2), 189-203.

Singh, R. (2013): “How Chhattisgarh Managed to Achieve and Look Beyond Roti, Kapda, and Makaan,” The Economic Times, India, September 09, 2013.

Smith, O. and S. N. Nguyen. (2013): “Improving Health System Outcomes in Europe and Central Asia. Europe and Central Asia Reports,” Washington D.C., The World Bank, USA.

Svedberg, P. (2012): “Reforming or Replacing the Public Distribution System with Cash Transfers?,” Economic and Political Weekly, 47(7), 53-62.

The Deutsche Gesellschaft für Internationale Zusammenarbeit (2021a): “Towards a Shared Understanding of Digital Social Protection: What are the Lessons from the COVID-19 Crisis and the Implications for the Future?,” Report from a regional workshop in Africa.

The Deutsche Gesellschaft für Internationale Zusammenarbeit (2021b): “Towards a Shared Understanding of Digital Social Protection: What are the Lessons from the COVID-19 Crisis and the Implications for the Future?,” Report from a regional workshop in Latin America and the Caribbean.

The New Indian Express (2021): “Thriving Through Tuberculosis,” The New Indian Express, India, March 24, 2021.

The Times of India (2022): “2.3k Patients Infected with TB in 3 Months in CG,” The Times of India, India, March 5, 2022.

Thevar, S. (2021): “Reporting of Tuberculosis Cases in PMC Down in Last Two Years,” Hindustan Times, India, October 20, 2021.

TNN (2021): “Rajasthan Government to Ramp up Tuberculosis Testing to Eradicate Ailment by 2025,” The Times of India, India, September 3, 2021.

World Bank (2005): “Reducing Poverty, Sustaining Growth: Scaling up Poverty Reduction,” Case Study Summaries, A Global Learning Process and Conference in Shanghai, May 25-27, 2004.

World Bank (2015): “The State of Social Safety Nets,” World Bank, Washington D.C, USA.

World Bank (2018): “The State of Social Safety Nets,” World Bank, Washington D.C, USA.

Yasmeen, A. (2018): “Direct Benefit Transfer Scheme for TB Makes Slow Progress,” The Hindu, India, December 17, 2021.

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