

**Factors influencing the Joint TB – Diabetes Collaborative activities of NP-NCD at
CHC Chomu, Jaipur, Rajasthan.**

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Capstone Report

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Table of Contents

Aspect	Page No.
Background	4 -6
Schematic Illustration depicting Program design and service delivery	7
Capstone work area with objectives of the Capstone Project	8
Field visit documentation (Activity description)	9-10
Findings	12-16
Final Recommendations	17
References	18-20
Annexures	21-23

Background

The National Programme for Prevention and Control of Diabetes, Cardiovascular Disease and Stroke (NPDCS), now renamed as National programme for Prevention and Control of Non-Communicable Diseases (1), was launched in 2010 with the following objectives (2)

- Health promotion through behavior change with involvement of the community, civil society, community-based organizations, media, etc.
- Opportunistic screening at all levels in the health-care delivery system from sub-centre and above for early detection of diabetes, hypertension, and common cancers. Outreach camps are also envisaged.
- Prevent and control of chronic Noncommunicable Diseases (NCDs), especially cancer, diabetes, cardiovascular diseases (CVDs) and stroke.
- Build capacity at various levels of health care for prevention, early diagnosis, treatment, Information, Education and Communication (IEC)/Behavior Change Communication (BCC), operational research and rehabilitation.
- Provide support for development of a database of NCDs through a surveillance system and monitor NCD morbidity and mortality and risk factors.

With a goal to reduce mortality and morbidity due to TB & Diabetes, a Joint framework for joint TB-diabetes collaborative activities has been instituted. The implementation strategy lists the following activities under NPCDCS(2):

- intensified detection of active TB disease among diabetes patients.
- Ensuring TB infection control measures in healthcare settings where diabetes is managed.
- Ensuring TB treatment and management and diabetes patients.

The framework also lists a set of roles and responsibilities for the NPCDCS (NCD clinic) staff. They are.

Role of Medical Officer:

- Assist in training of NCD clinic staff and other staff involved in the management of NCDs for TB–diabetes co-morbidities.
- Collaborate with district TU for the implementation of TB–diabetes activity.
- Ensure screening of TB symptom complex at NCD clinic and its report sharing with district TB officer
- Ensure submission of accurate and timely reporting of TB–diabetes formats to the District NCD Cell along with feedback about the progress of TB–diabetes collaborative activity
- Ensure other NCD staff are appropriately involved in the collaborative activity.
- Collaborate with relevant stakeholders to strengthen TB–diabetes activity in the district.
- Prepare action plan for implementation of framework.

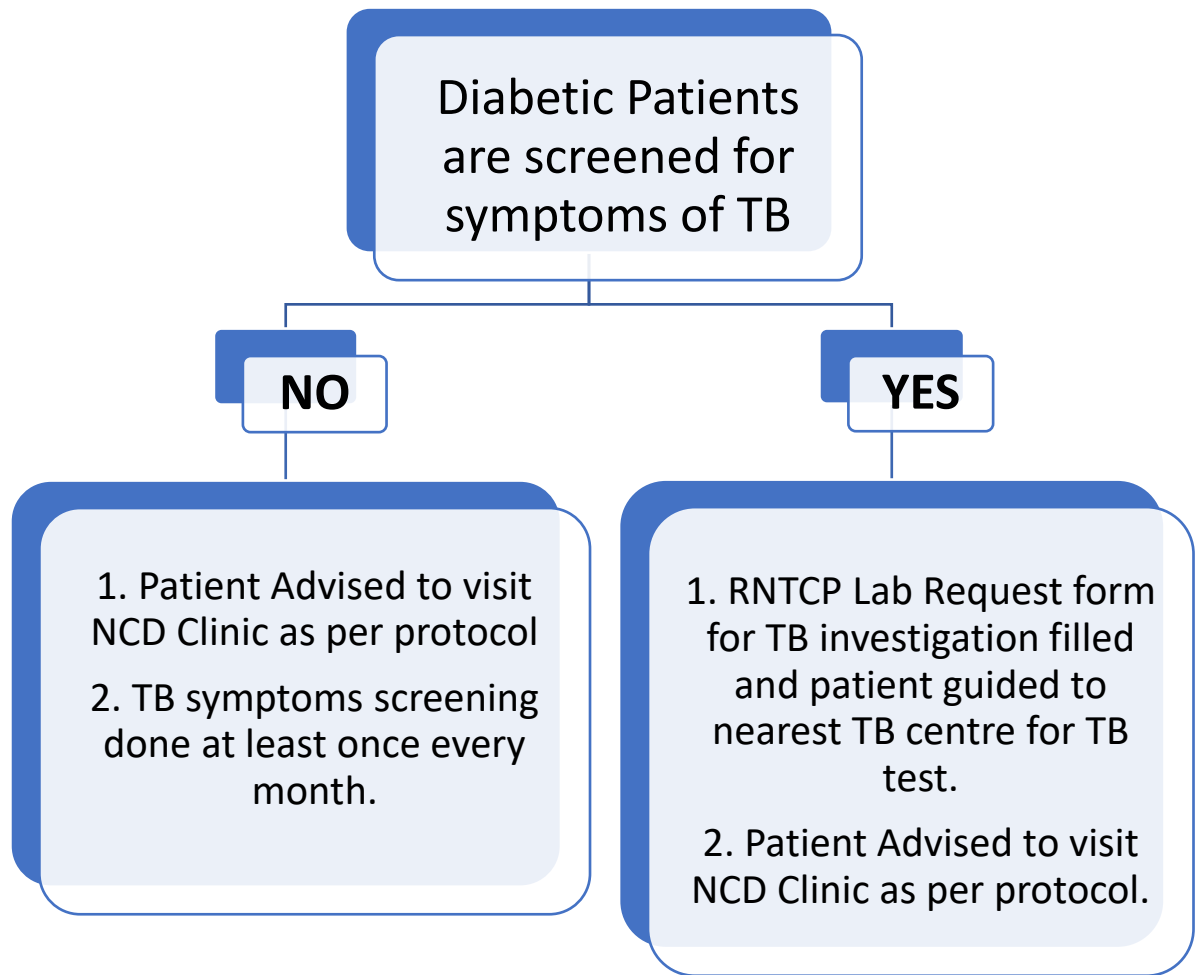
Role of counsellor:

- Conduct screening for TB symptom complex in persons attending the NCD clinic.
- Ensure proper display of IEC material of TB–diabetes collaborative activity at NCD clinic.
- Be involved in the training of TB–diabetes collaborative activity.
- Ensure screening of TB symptom complex during domiciliary visits
- Assist MO in preparing the action plan.

Role of staff nurse:

- Conduct screening for TB symptom complex in NCD clients attending the NCD clinic and at outreach camps.
- Ensure completeness of the referral card filled for the suspected TB patient under the guidance of MO and refer using RNTCP Laboratory Request Form
- Ensure that the patient referred from TB clinic is screened for diabetes and feedback is shared.
- Ensure that the suspected TB patient attends the TB clinic during his/her next NCD clinic visit.
- Maintain the NCD clinic register and assist data entry operator to complete the NCD formats.

Program Design and Service Delivery



The Who Question ?

1. All patients registered at the NCD clinic are to be screened for the four-symptoms complex and be referred to nearest DMC/PHI with referral slip if found positive for any one or more of the symptoms.
2. MO-in charge of the NCD clinic has been tasked with the supervisory responsibility for 4 Symptom complex screening.
3. Staff Nurse and Counselor are given the primary responsibility to screen the patient for TB Symptoms
4. The staff nurse and counselor would be trained by the MO-Incharge to screen the TB symptom complex.

Capstone work area with objectives of the Capstone Project

Ample amount of available evidence says that people with diabetes have a significantly increased risk of active TB, which is two to three times higher than people without diabetes(2). Modelling studies have indicated that cause of 15–20% of all TB cases in India is attributable to diabetes. In addition, preliminary evidence also shows that diabetes worsens TB treatment outcomes in terms of increased deaths, failure, and relapse rates(2). The number of people with diabetes is expected to increase in the coming years. This can seriously threaten TB control in the country. Identification of potential TB cases through 4Symptom (4S) complex screening, referral and subsequent linkage to care for positive cases is the need of the hour. The Capstone is aimed at identifying the gaps and ensuring the fidelity to the program guidelines.

Objectives

The objective of capstone project are: -

- To understand the on-ground implementation strategies of the program
- To identify the gaps in implementation of the program and the potential reasons.
- To ideate potential solutions for successful implementation of the program

Field Visit Documentation (Activity Description)

Activity Description:

The purpose of the field visit was to observe and document the operations and services provided at the NCD Clinic, Community Health Center (CHC), Chomu. The visits were aimed to gather information about the healthcare infrastructure, work-force, service delivery, and challenges in the context of the activities to be implemented as a part of Joint TB-Diabetes collaborative activities under NPCDCS Program

Places Visited : Community Health Centre (CHC), Chomu & Health & Wellness Centre

People Interacted with: MO (I/C), CHC Chomu, MO(I/C), NCD Clinic, MO(I/C), DMC/TB Centre, Counsellors, Lab Technician, ANM, Community Health officer, ASHA's, Patient & Patient Attendee's.

Tasks Performed: Interaction & Data Collection



Figure 1 & Figure 2 : Interaction with MO (I/C) and observation of service delivery at CHC , Chomu



Figure 3: Interaction with CHO, ANM & ASHA's .

Challenges
• B1a: Poor knowledge levels among the staff regarding specific roles and responsibilities, 4 Symptom(4S) Screening, related documentation in Registers and reporting of the same as per the prescribed format.
• B1b: Poor follow-up and tracking of suspected TB cases due to lack of documentation and Non-Availability of the “Triplicate Referral Slips” at the NCD Clinic.
• B1c: Non-Relevant IEC Material / Job-Aids (Posters) being displayed at the NCD Clinic
• B1d: Poor -Visibility of IEC Material (Posters) due to site of display and content overload / cluttering
• B1e: Non-Replacement of torn-out IEC (Posters) material with new material, as evidenced from 2 observations in a span of month.
• B2a: Non-Availability of sanctioned staff (Staff Nurse) due to internal re-allocation to emergency services.
• B2b: irregular availability of sanctioned Data-Entry operator and dependence on other on-roll data entry operators for electronic documentation and reporting of data.
• B3a: Absence of an indicator to track the testing status and outcome of potential cases who were screened, advised, and referred by NCD clinic for Testing at DMC.
• B3b: Non-existence of personalized tools (physical) to document and track patient history either with NCD clinic or with the Patient apart from the OP Slip and common patient register
Enablers
• B1a: Presence of Designated Microscopy Centre (DMC) in proximity (30 meters) to NCD Clinic
• B2a: Keen-ness among the staff at TB Centre to work in coordination with NCD Clinic.
• B2b: Availability of senior physician as the MO-In charge for the NCD Clinic.
• B4a: Predictable and increasing financial commitment towards TB elimination by the Government and support from the multilateral and global funding agencies.
• B5a: Political commitment towards TB elimination, championed by the Prime Minister of India.

Most Important Challenges & Corresponding Suggestive Actions

1	Poor knowledge levels among the staff regarding specific roles and responsibilities, 4 Symptom(4S) Screening, related documentation in Registers and reporting of the same as per the prescribed format.
2	Poor follow-up and tracking of suspected TB cases due to lack of proper physical documentation and Non-Availability of the “Triplicate Referral Slips” at the NCD Clinic.
3	IEC Material (Posters) overloaded with content and placed right beside doctors table in conjunction with 4 other IEC materials leading to cluttering and poor visibility.
4	Absence of an indicator to track the potential cases who do not seek testing for TB despite being screened, advised, and referred by NCD clinic for Testing at DMC
5	Non-existence of personalized tools (physical) to document and track patient history either with NCD clinic or with the Patient apart from the OP Slip and common patient register

Problems	Suggestive Actions	Feasibility	Priority
1. Poor knowledge levels among the staff regarding specific roles and responsibilities, 4 Symptom(4S)	• Re-fresher training for the staff on identified knowledge-Gaps	Swift	
	• Provision of relevant IEC Material and Ready-Reckoners	Challenging	

Screening, related documentation in Registers and reporting of the same as per the prescribed format.	• Institute an Annual re-fresher training mechanism at the CHC in collaboration with NTEP	Swift	
2. Poor follow-up and tracking of suspected TB cases due to lack of proper physical documentation and Non-Availability of the “Triplicate Referral Slips” at the NCD Clinic.	• Re-fresher training for the staff on identified Practice-Gaps	Swift	
	• Procurement of referral slips from NTEP staff	Swift	
	• Regular coordination meetings between NCD & NTEP Staff	Challenging	
3. Cluttering and Poor visibility of the IEC material (Posters) due to overloading with content and placing right beside doctors table in conjunction with other IEC material.	• Re-designing of IEC material specific for the purpose	Challenging	
	• Identification of proper placement area	Swift	
	• Spacing between IEC materials	Challenging	
4. Absence of an indicator to track the testing status and outcome of potential cases who were screened, advised, and referred by NCD clinic for Testing at DMC.	• Institute an indicator to track the testing status and outcome for all cases referred for screening	Swift	
	• Ensure that the indicator status is reviewed monthly on priority basis at District level and at coordination meetings	Challenging	
	• Ensure that the indicator is added to the MIS portal of NP-NCD	Difficult	
5. Non-existence of personalized tools (physical) to	• Design tools such as patient card & 4S Screening Stamp(for NCD clinic) and	Swift	

document and track/review patient history either with NCD clinic or with the Patient apart from the OP Slip and common patient register	patient book (for patient) to make patient history more accessible.		
	• Incorporate the tools as a part of daily practice at the NCD Clinic	challenging	
	• Develop a mechanism and incorporate into NCD Portal / ABDM	Difficult	

Most important Enablers

1	Presence of Designated Microscopy Centre (DMC) in proximity (30 meters) to NCD Clinic
2	Keen-ness among the staff at TB Centre to work in coordination with NCD Clinic.
3	Availability of senior physician as the MO-Incharge for the NCD Clinic.
4	Predictable and increasing financial commitment towards TB elimination by the Government and support from the multilateral and global funding agencies.
5.	Political commitment towards TB elimination, championed by the Prime Minister of India.

Best Practices	Supporting actions required to sustain the best practices
1. Presence/Situation of Designated Microscopy Centre (DMC) in proximity (30 meters) to NCD Clinic.	1. Letter of Appreciation to the MO I/C of the CHC for allocating closely located rooms for both
	2. Advocating for replication of the same incase of renovation or internal relocation.
2. Display of TB specific IEC material (Posters) at the NCD clinic.	1. Letter of Appreciation to MO I/C & Staff of NCD Clinic from NTEP for ensuring display of TB specific IEC.
	2. Ensure regular supply of TB specific and updated IEC material (posters) to replace worn-out and old IEC material.

Final Recommendations

1. **Indicator:** The Program currently does not have indicators to track the testing status and outcomes of testing for the cases referred to the DMC. An addition of the following indicator in Form 3A, Form 4 & Form 5A would automatically lead to regular line-listing and thereby follow-up with NTEP & Patients to ensure that suspected cases are tested, linked to care and managed properly

Indicator D : No. of referred cases Tested at the DMC / PHI

Indicator E : No. of Tested cases identified to be positive
2. **Refresher Training:** The Staff were initially trained 5 years ago and no subsequent refresher trainings were organized. Re-fresher trainings are to be conducted periodically with the support of NTEP Staff to ensure adequate knowledge levels and fidelity to the program.
3. **IEC Material:** Provision of relevant IEC materials, Job-Aids and ready reckoners help staff to refresh their knowledge levels and help educate patients to seek care if they identify such symptoms.
4. **Tools:** Tools such as individualized Patient Cards, Patient Books and stamp for 4S symptoms helps document history and can be quickly retrieved as well. These should be employed to improve fidelity.

References :

1. Perappadan BS. Government programme for non-communicable diseases renamed - The Hindu. T1. World Health Organization. Tuberculosis [Internet]. 2023 . Available from: <https://www.who.int/news-room/fact-sheets/detail/tuberculosis>
2. Global Tuberculosis Report 2022 [Internet]. Geneva: World Health Organization; 2022. Available from: <https://www.who.int/publications/i/item/9789240061729>
3. Vos T, Lim SS, Abbafati C, Abbas KM, Abbasi M, Abbasifard M, et al. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet [Internet]. 2020 Oct 17;396(10258):1204–22. Available from: [https://doi.org/10.1016/S0140-6736\(20\)30925-9](https://doi.org/10.1016/S0140-6736(20)30925-9)
4. Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, Duncan BB, et al. IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. Diabetes Res Clin Pract [Internet]. 2022;183:109119. Available from: <https://www.sciencedirect.com/science/article/pii/S0168822721004782>
5. Hayashi S, Chandramohan D. Risk of active tuberculosis among people with diabetes mellitus: systematic review and meta-analysis. Trop Med Int Health [Internet]. 2018 Oct 1 [cited 2023 Sep 4];23(10):1058–70. Available from: <https://pubmed.ncbi.nlm.nih.gov/30062731/>
6. McMurry HS, Mendenhall E, Rajendrakumar A, Nambiar L, Satyanarayana S, Shivashankar R. Coprevalence of type 2 diabetes mellitus and tuberculosis in low-income and middle-income countries: A systematic review. Diabetes Metab Res Rev [Internet]. 2019 Jan 1 [cited 2023 Sep 4];35(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/30144270/>
7. Awad SF, Huangfu P, Ayoub HH, Pearson F, Dargham SR, Critchley JA, et al. Forecasting the impact of diabetes mellitus on tuberculosis disease incidence and mortality in India. J Glob Health. 2019 Dec;9(2):20415.

8. World Health Organization. Collaborative Framework for Care and Control of Tuberculosis and Diabetes. Geneva; 2011.
9. Ministry of Health and Family welfare Government of India. National framework for joint TB-Diabetes collaborative activities. Revised National Tuberculosis Control Programme (RNTCP) National Programme for Prevention and Control of Cancer Diabetes Cardiovascular Diseases and Stroke (NPCDCS). 2017;62.
10. Meena S, Rathore M, Gupta A, Kumawat P, Singh A. Assessment of National Program for Prevention and Control of Cancer, Diabetes, CVD and Stroke (NPCDCS): An observational study in rural Jaipur, Rajasthan. J Fam Med Prim care. 2022 Jul;11(7):3667–72.
11. Modi B, Jadav P, Vasoya N. Evaluation of National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular disease and Stroke (NPCDCS) in Gandhinagar district, Gujarat 1 2 3. 2019;10.
12. Phutane MS, Sawant PA, Randive AP, Hulsurkar YP, Mahajan US, Kudale AM. Sociocultural aspects of delays in diagnosis among tuberculosis-diabetes comorbid patients in Satara, India: Its implications for the implementation of the national framework for joint tuberculosis-diabetes collaborative activities. Indian J Tuberc [Internet]. 2023; Available from: <https://www.sciencedirect.com/science/article/pii/S0019570723000872>
13. Master of Public Health (Implementation Science) [Internet]. [cited 2023 Sep 6]. Available from: <https://iihmr.edu.in/program/Master-of-Public-Health-Implementation-Science>
14. Postgraduate training scheme [Internet]. [cited 2023 Sep 6]. Available from: <https://tdr.who.int/home/our-work/strengthening-research-capacity/postgraduate-training-scheme>
15. National TB Elimination Program (India) - Wikipedia [Internet]. [cited 2023 Sep 6]. Available from: [https://en.wikipedia.org/wiki/National_TB_Elimination_Program_\(India\)](https://en.wikipedia.org/wiki/National_TB_Elimination_Program_(India))

16. Perappadan BS. Government programme for non-communicable diseases renamed - The Hindu. The Hindu [Internet]. 2023 May 5 [cited 2023 Jun 19]; Available from: <https://www.thehindu.com/sci-tech/health/new-diseases-and-initiatives-prompt-health-ministry-to-widen-and-rename-ncd-programme/article66816673.ece>
17. Arini M, Sugiyo D, Permana I. Challenges, opportunities, and potential roles of the private primary care providers in tuberculosis and diabetes mellitus collaborative care and control: a qualitative study. BMC Health Serv Res. 2022 Feb;22(1):215.
18. Lin Y, Li L, Mi F, Du J, Dong Y, Li Z, et al. Screening patients with diabetes mellitus for tuberculosis in China. Trop Med Int Health. 2012 Oct;17(10):1302–8.
19. Prakoso DA, Istiono W, Mahendradhata Y, Arini M. Acceptability and feasibility of tuberculosis-diabetes mellitus screening implementation in private primary care clinics in Yogyakarta, Indonesia: a qualitative study. BMC Public Health. 2023 ;23(1):1908.

Provisions & Organization of Services (Observation and Assessment Checklist)

A	Laboratory	Options			3 persons LA
	No. of Lab Technicians	1 (NCD) (2 LT) 1 (ALT) 1 (TSL) 4 (contract LA)			
✓ 1	Lab Technician Availability	24x7 ☒	Partial ☐	Not Available ☐	7 days 9-3 available
✓ 2	Blood Sugar ✓	Being Done ☒	Not Being Done ☐	Approximate Number of Tests per day 80-100 person	If Not Done Specify Reason Big NCD
✓ 3	Lipid Profile ✓	Being Done ☒	Not Being Done ☐	Approximate Number of Tests per day 10-15	If Not Done Specify Reason not NCD, but main lab
✓ 4	Blood Urea ✓	Being Done ☒	Not Being Done ☐	Approximate Number of Tests per day 40-45	If Not Done Specify Reason same
X 5	Chest X Ray	Being Done ☒	Not Being Done ☐	Approximate Number of Tests per day 50-100	If Not Done Specify Reason CHC Lab
X 6	ECG (performed in NCD clinic 1 male 1 female)	Being Done ☒	Not Being Done ☐	Approximate Number of ECG per day 20-25	If Not Done Specify Reason (done in NCD clinic)
X 7	USG X	Being Done ☒	Not Being Done ☐	Approximate Number of USG per day 65	If Not Done Specify Reason USG Lab
8	a) Blood Samples: Usual Time to report (Ask the technician)	2:30-2:45 Hrs			Not done in NCD clinic but in Lab of CHC
	i) OPD Samples				
	ii) Field Samples (no only samples from field)	Hrs			
	b) Documentation (Check the register)				
	i) OPD Samples	Yes (off-line / on-line lab)			

A	Laboratory	Options		Remarks
	ii) Field Samples			
9	Training of LTs in past five years	Yes ☐	No ☒	No any (N/A) ideas For other LT base is frequent training
10	Resource Availability			
	a) Functional Glucometer	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	b) Glucometer Strips	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	Advance Requisition
	c) Lancets	Yes ☒ No ☐	No issue	
9	d) ECG paper Rolls	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
9	e) X Ray Films	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☒ No ☐	
11	There is arrangement for segregation of BMW at the site.	Yes ☐ No ☐ 9		

B	OPD and Service Provision Area			
1	IEC Related to NCDs displayed in Facility	Yes ☒ No ☐		
2	Functional BP Apparatus	Yes ☒ No ☐		
3	Separate NCD Clinic functional	Yes ☒ No ☐		
4	Counsellor Posted	Yes ☒ No ☐		
5	Designated Nurse for NCD services at Clinic	Yes ☐ No ☒	Have trained but they used to send in emergency	
C	Drug Dispensing			
1	Drug Availability			
	a) Tab Aspirin	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	b) Tab Atenolol	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	c) Tab Metoprolol	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	d) Tab Amlodipine	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	e) Tab Enalapril	Yes ☐ No ☒	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	f) Tab Hydrochlorthiazide	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	g) Inj Streptokinase 7.5 Lac / 15 Lac U	Yes ☐ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	h) Inj Heparin Sodium 1000 IU (emergency)	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	i) Inj Insulin Regular / Intermediate	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	j) Tab Metformin	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	k) Tab Isosorbide Dinitrate	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	l) Tab Digoxin	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	m) Inj Digoxin	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	n) Inj Mannitol 20% 300 ml	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	o) Inj Adrenaline	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	
	p) Inj Atropine	Yes ☒ No ☐	Supply Issues / Stockouts in Past (Ask) Yes ☐ No ☒	

from
store
last

store?
store
store

Emergency
available

Emergency
available