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STRENGTHENING THE BACKBONE OF RURAL HEALTHCARE: A SCOPING REVIEW OF INDIA'S FIRST REFERRAL UNIT

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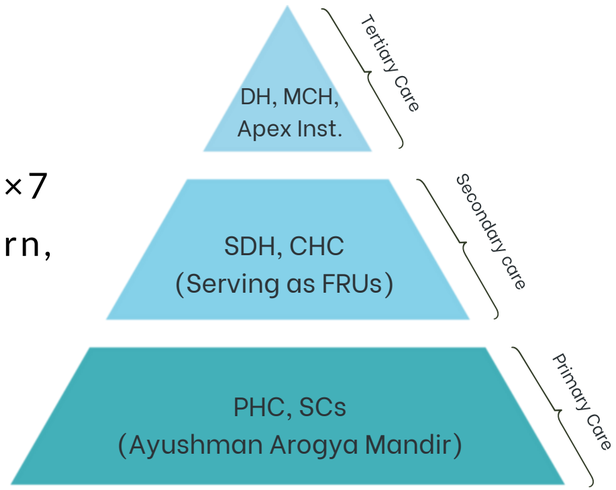
UNDER THE SUPREME GUIDANCE OF DR MANISH CHATURVEDI (NIHFW, DELHI)

Background of The Study!

First Referral Units (FRUs) are designated secondary-level health facilities, usually Community Health Centres (CHCs) or Sub-District Hospitals, tasked with providing 24×7 comprehensive emergency obstetric, newborn, and surgical care to a population of approximately 500,000, serving as a critical link between primary care and tertiary hospitals in India's public health system.



WHY FRUs?

- India's Maternal Mortality Ratio (MMR) has improved significantly, from 130 per 100,000 live births in 2014–16 to 80 (WHO estimates) in 2023. With institutional deliveries now at 89%, but institutional delivery alone is not enough, a shift from 'access to care' towards 'quality of care' is necessary.
- Health burden is expanding beyond maternity, so there is a need of multispecialty secondary hospital hub.
- NHM investments and IPHS guidelines provide a rare policy window for FRUs.
- Strengthening and expanding the scope of FRUs is key to achieving UHC.

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Sources: Estimates by WHO UUWBG and UNDP. Trends in maternal mortality estimates 2000 to 2023. 2024.
Chokshi M, Patil B, Khanna R, Neogi SB, Sharma J, Paul VK, et al. Health systems in India. Vol. 36, Journal of Perinatology. Nature Publishing Group; p. S9–12.

AIM & OBJECTIVE

TO EVALUATE THE INFRASTRUCTURAL AND FUNCTIONAL READINESS OF FIRST REFERRAL UNITS IN INDIA WITH REFERENCE TO STANDARDS AND TO ANALYSE REGIONAL EQUITY IN SERVICE DELIVERY. TO FORMULATE CONTEXT SPECIFIC POLICY FOR TRANSFORMING FRUS INTO COMPREHENSIVE SECONDARY CARE HUBS ADDRESSING BOTH MATERNAL-NEONATAL AND EMERGING RURAL HEALTH NEEDS.

01

TO EVALUATE THE ALIGNMENT OF EXISTING CHC-FRUS WITH IPHS STANDARDS (VOL 2- 2022).

02

TO ASSESS THE AVAILABILITY OF CORE SERVICES SUCH AS EMERGENCY OBSTETRIC CARE (EMOC), BLOOD STORAGE, NEWBORN CARE, AND SURGICAL INTERVENTIONS.

03

TO IDENTIFY GAPS IN HUMAN RESOURCES AND SUPPORT SERVICES CRITICAL TO FRU FUNCTIONALITY.

04

TO EVALUATE THE REFERRAL PATTERNS, DELAY FACTORS, AND CLIENT UTILIZATION OF FRUS.

05

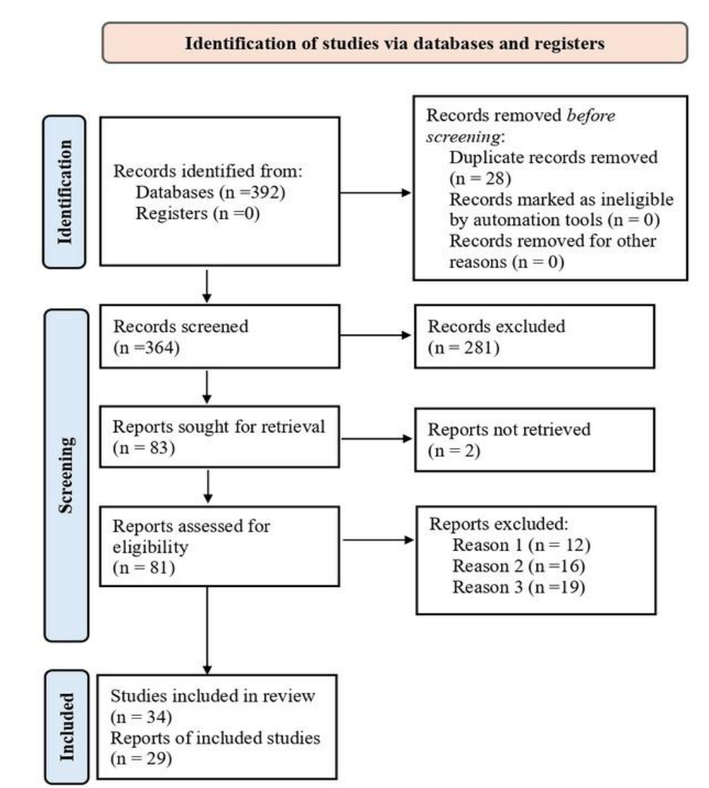
TO ASSESS THE CONTRIBUTION OF FRUS TOWARD ACHIEVING UNIVERSAL HEALTHCARE TARGET

06

TO FORMULATE CONTEXT-SPECIFIC POLICY AND IMPLEMENTATION RECOMMENDATIONS FOR NHSRC AND MOHFW.

METHODOLOGY

PRISMA SCR FLOWCHART



(Reason 1: Non-Public Sector Hospitals, Reason 2: Old Data: Pre 2012, Reason 3: Clinical studies (not administrative))

TYPE OF STUDY & TIME FRAME:

Scoping Review and studies from 2012 to 2024. (incl. 2004 guidelines)

DATA SOURCES:

Peer-Reviewed Literature (n = 34 studies):

- IJCM, WHO Bulletin, PubMed, AIIMS, TISS
- Search terms: "FRU", "IPHS compliance", "Emergency obstetric care", "CHC functionality"

Government & Policy Reports (n = 29 reports):

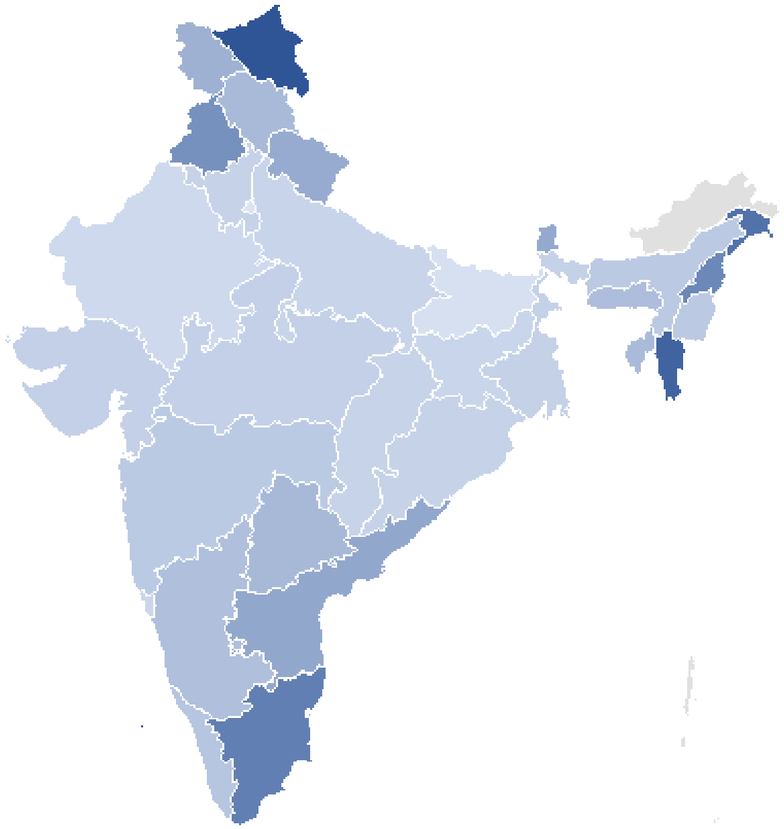
- NHM-MIS 2024, NFHS-5, NHSRC Guidelines, CAG Reports
- SRS, RCH II evaluations, NITI Aayog Health Index, MoHFW dashboards

ANALYSIS:

Quantitative data will be analysed to measure the percentage of FRUs operating 24×7, availability of blood storage units, presence of core specialists (OB-GYN, anaesthetists, paediatricians), institutional delivery rates and cesarean section frequency and regional disparities in FRU-to-population ratios.

A qualitative stakeholder analysis was conducted, involving health administrators, clinicians (doctors and nurses), and community members.

NATIONAL OVERVIEW



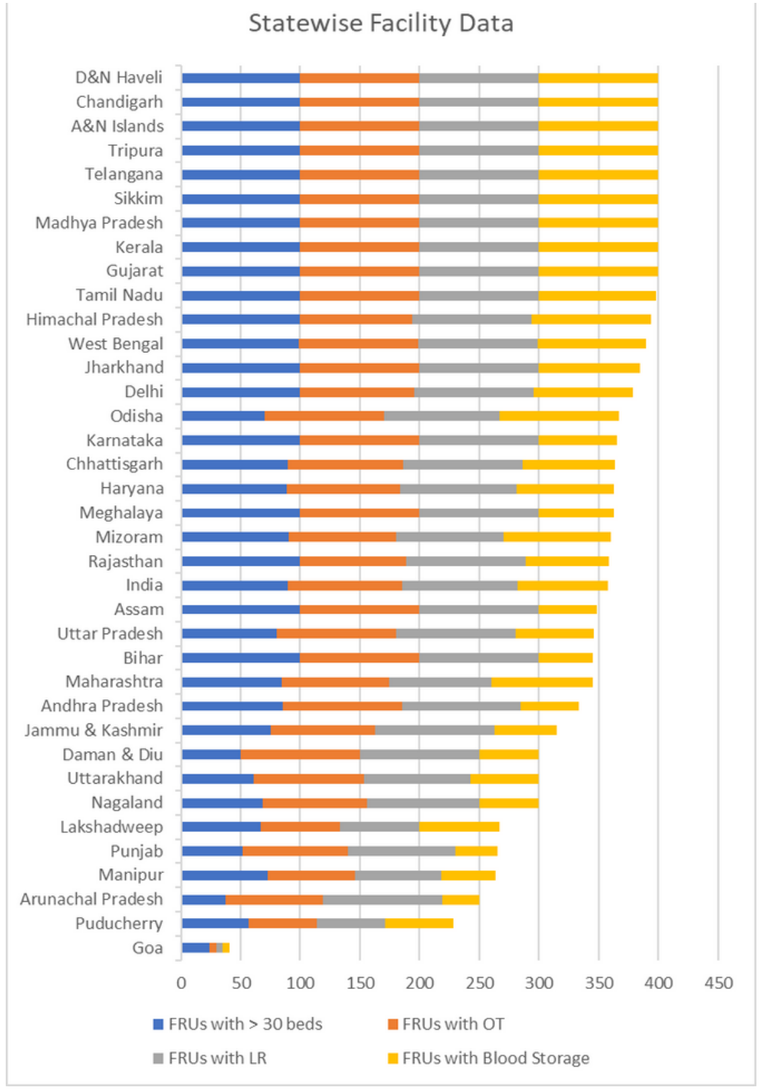
Statewise FRUs density,
The darker the higher!

- NITI Aayog review found states like Uttarakhand, Assam, and Rajasthan had ≤50% of required functional FRUs meeting targets.
- CAG 2023 Bihar audit: 40% FRUs non-functional due to lack of anaesthesia personnel despite JSY-linked demand.
- Less than 8% of CHCs meet full IPHS 2022 compliance.
- 39% FRUs are functional 24/7 despite policy mandates.
- 68% of surveyed FRUs lacked in-house blood storage availability in high-focus states.

Equity in Coverage (Ideal ratio: 1 FRU per 500,000)

- Chhattisgarh: 1:670,000
- Tamil Nadu: 1:138,000
- Assam: 1:470,000
- Gujarat, Haryana, Madhya pradesh, Orissa: 1:600,000
- Rajasthan: 1:900,000

INFRASTRUCTURE & COMPLAINCE



Infrastructure Norms for FRUs:

- 30–50 beds, OT, labour room, blood storage, neonatal area, diagnostics & referral transport
- Human Resource: 1 OB-GYN, 1 Anaesthetist, 1 Paediatrician, 1 Physician, nurses and technicians

National Infrastructure Status:

- OTs functional in 89.7% FRUs (but often under-equipped)
- Blood storage available in 75% of them. State disparity: UP with 30%, Gujarat with 100% functionality (NHM MIS)
- Neonatal equipment (warmers, CPAP, SNCUs): 58% average (Kerala / TN: >90% , Meghalaya: <50%)
- Only 16–22% of designated FRUs can perform C-sections (NFHS 5).
- Inter-facility ambulance referrals needs attention (e.g. Chhattisgarh: 21.7%) delay care by 2–3 hours
- LSAS/CEmOC task-shifting helps, but many trained doctors are not retained
- 60% of normal deliveries handled by nurses.

Sources:

Ekka et al. Assessment of infrastructure of first referral unit. Int J Community Med Public Health. 2019 Nov 27;6(12):5168. , NHM MIS 2024, Keshri et al., CAG Reports

STAKEHOLDERS PERSPECTIVES

Community-based feedback (Rajasthan's Jan Sunwai) revealed "non-availability of female doctors deterred institutional deliveries."

- Referral fatigue: 4–6 hour journeys to reach functional FRUs, especially in hilly/tribal areas
- Mistrust of care quality: "Even if they have an OT, they'll say the surgeon isn't available." – Woman, Gaya (Bihar)
- Cultural mismatch: Dais (traditional birth attendants) still preferred in Bastar/Meghalaya due to fear of cesareans and perceived disrespect at FRUs

Clinicians:

- Bonded doctors face unsafe postings and poor accommodations
- "Delivering babies by torchlight while rats run under the stretcher." – Junior doctor, Maharashtra
- High vacancy rates: Anaesthetists and paediatricians missing in >50% of FRUs
- Midwives & staff nurses handle 60%+ of deliveries but lack decision-making power and recognition

Provider perspectives (NHSRC consultation): Poor staff quarters and lack of night shifts are leading deterrents for retention.

Administrators :

- Overburdened by dual roles: Many MOICs function as both administrators and surgeons. In their words: "I'm supposed to run an OT and file five reports a day." – MOIC, Chhattisgarh
- Delayed fund flow: NHM funds delayed up to 6 months; 24% unutilized in states like UP & Odisha (CAG, 2020)
- Low operational autonomy: Facility-level innovations are stifled by rigid program structures

NEED FOR SERVICE EXPANSION

🧪 Toxicological & Zoonotic Crises	🌞 Climate-Linked Emergencies
• 58,000 snakebite deaths annually (WHO)	• Heatwaves: Delhi/Rajasthan >49°C in 2024
• 30,000 pesticide suicides (Lancet)	• Floods → leptospirosis, diarrheal outbreaks
• Rabies deaths ~20,000/year (WHO)	• Hypothermia & high-altitude illness ignored in CHC norms

💔 NCD Events & Trauma Care	🧠 Mental Health & Behavioural Emergencies
• 1.5M+ heart attacks/year; delayed rural care	• Rural India: 1 in 4 global pesticide suicides
• Stroke, DKA, hypertensive crisis often unmanaged	• No crisis rooms, psychiatric protocols in FRUs
• Trauma from road accidents, burns, falls unaddressed	• CHCs sedate suicide patients, no follow-up

POLICY RECOMMENDATIONS

I. Legislative:

- Update 2004 FRU Guidelines. : Expand the definition of FRUs as Health Emergency Hubs in NHM frameworks to include trauma care, toxicological emergencies, mental health, and non-communicable disease (NCD) management—not just maternal and neonatal services.
- Include updated service packages based on emerging rural health needs
- Recognize FRUs as first-line disaster responders in future health security strategy (climate disaster, epidemic surge, mass trauma)

II Infrastructure & Service Expansion

- Modular Infrastructure Upgrades: Promote prefabricated modular units for OT, blood storage, mini-ICUs, and isolation wards—especially in hilly, tribal, and disaster-prone districts—to save time and cost (20–40% reduction).
- Standardize Equipment Packages: Issue FRU-level kits by category: Essential obstetric, Toxicology (snakebite, pesticide), Trauma & burns, Point-of-care diagnostics (glucose, dengue, ECG, ketones), Mini-ICU (ventilator, monitor, syringe pump)
- Adopt Portable Digital Tools: Handheld ultrasound, glucometers, ECG, Mobile X-ray, oxygen concentrators, AI-enabled triage apps for ANMs and nurses
- Embed Mental Health Crisis Rooms, Mandate 1 safe consultation room per FRU supported by a psychologist (onsite/remote) for: Suicide prevention, Domestic violence intervention, Postpartum depression

POLICY RECOMMENDATIONS

III. Human Resource Strengthening

- Rural HR Incentive Reforms:
- Provide bonded doctors with: Safe accommodation, Fast-tracked PG admission preferences, Competitive rural hardship allowances
- Task-Sharing & Advanced Training:
- Scale-up CEmOC/LSAS + introduce new task-sharing modules (e.g. toxicology, trauma first responder) for MBBS doctors and nurses.
- Foreign exchange medical care services.

IV. Community Systems, Accountability & Outreach

- Institutionalize Community Scorecards & Public Dashboards
- Monitor patient satisfaction, staff absenteeism, drug availability
- Integrate Jan Sunwai (public grievance redress) into health planning

V. Financing, Monitoring & Scale-Up

- Introduce FRU Flexi-Funds
- District-level “FRU Enhancement Pool”
- Revise NHM PIP Guidelines
- Allow states to propose non-maternal service enhancements in FRUs (e.g. toxicology, trauma, ICUs
- Public-Private Partnerships for Diagnostics & Transport
- Outsource imaging, pathology, or ambulance tracking to reliable partners (under strict quality norms)

UPGRADATION AND INTEGRATION

- Drone delivery of blood units, essential drugs, vaccines, and biologistics
- Heatwave detection dashboards, vector-borne disease surveillance alerts, and integration of blockchain mechanism for medical reports and specific drugs.
- Dedicated solar power units and battery backups to sustain operating theaters, diagnostics, and critical care during power outages.
- Rain water harvesting system infused.
- Private booths with tele-psychiatry access, digital screening tools
- Compact ICUs with ventilators, infusion/syringe pumps, cardiac monitors, and automated defibrillators.
- Scorpion and snake venom toxin kits: includes prazosin, polyvalent antivenin, atropine protocols.
- Disaster-ready MCI kits: triage tags, portable stretchers, mobile oxygen, and mass-care dashboards.

COST ESTIMATES

Current Funding Focus (Status Quo):

- Majority of NHM/RCH funding allocated to:
  - CEmOC & BEmOC trainings
  - Dakshata program (quality maternal care)

- Minimal (NULL in most states) investment in:
  - Toxicology kits, ICU beds, trauma infrastructure, or diagnostics
  - Mental health, zoonotic preparedness, or modular infrastructure

Estimated Comprehensive FRU Upgrade Cost:
₹1-1.5 crore
(Compared to current ₹50–75 lakh limit for traditional maternal-care FRUs)

Component est cost per FRU	**Rupees in Lakh (₹)**
Modular infrastructure expansion	15-35
Trauma & toxicology kits	2
Basic ICU setup (ventilator, monitors)	30
Mental health & tele-psych room	5
Point of care diagnostics / AI triage tools	8
Renewable power & rainwater systems	7
Telemedicine & referral dashboards	3

TIMELINE OF EVENTS

2025-26

- Policy amendment. (HR reforms, Infrastructure & Technology, Governance & Community)

2027-28

- Pilot based projections of comprehensive FRUs- 5 states (focusing 2 EAG states+ 1 NE + 2 states who is doing exceptionally good in strengthening health system as per the government norms.)

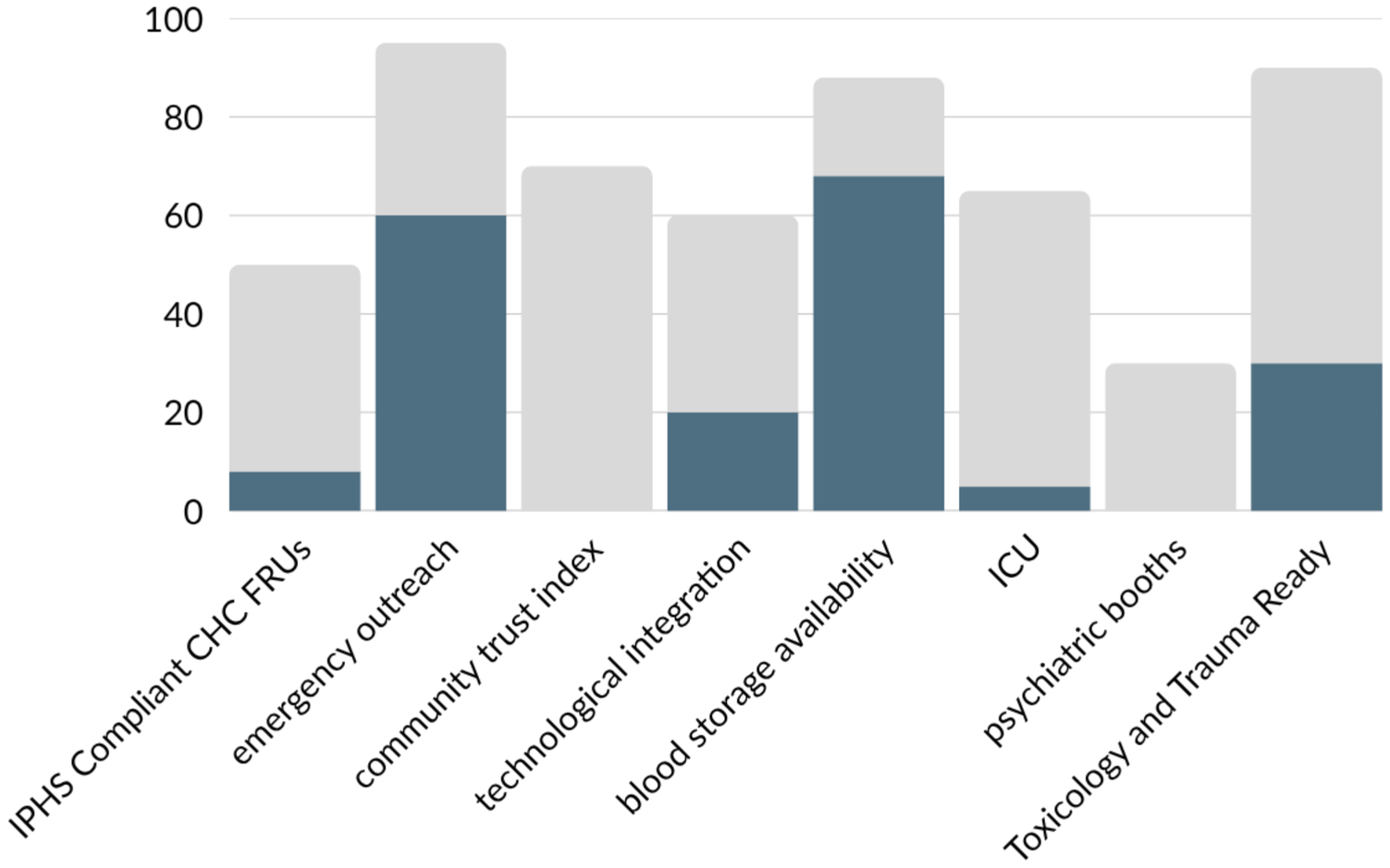
2029-30

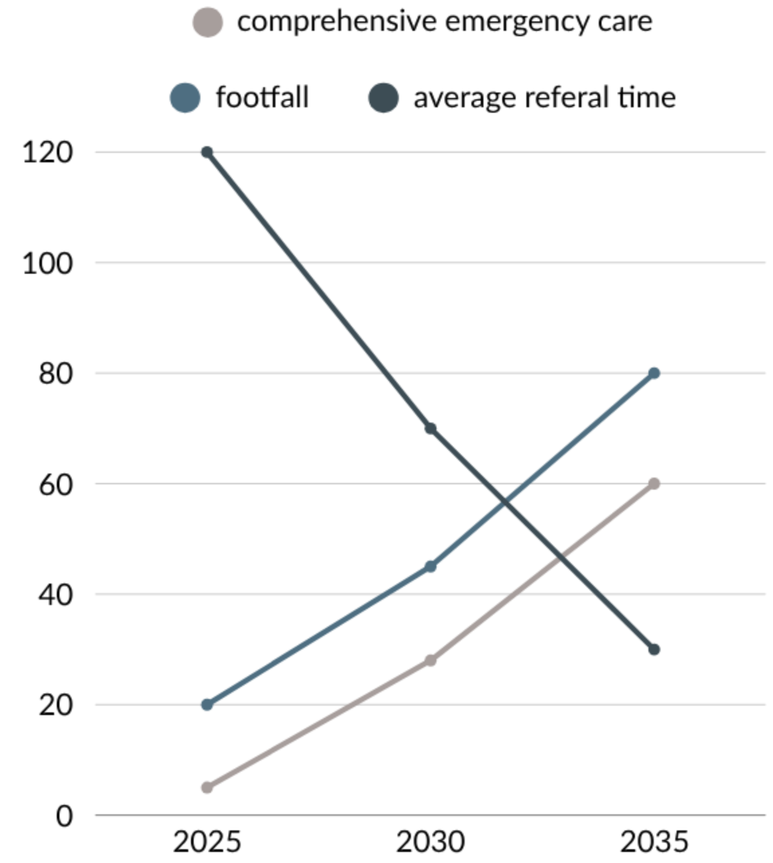
- Making final changes as per the stakeholder's need and advertising the scheme nationwide.

2030-35

- 100% rollout

IMPACT PROJECTONS





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THANK YOU

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