Evaluation of Centrally Sponsored Schemes

Best Practices Compendium:
Health Sector

March 2021
Acknowledgment

We would first of all like to express our deepest gratitude to the Ministry of Finance for recognizing the crucial need for evidence in the deliberations of the 15th Finance Commission, and entrusting the conduction of these historic evaluations to NITI Aayog. Further, Dr. Rajiv Kumar, Vice-Chairman NITI Aayog, and Shri Amitabh Kant, Chief Executive Officer, have played a fundamental role, first in entrusting this weighty responsibility to the Development Monitoring and Evaluation Office (DMEO) and subsequently as mentors throughout the study, in providing all necessary support and guidance for the completion of the project.

Our invaluable partners in this exercise have been the Ministry of Health and Family Welfare, Department of Health and Family Welfare and Ministry of AYUSH and all its officials, without whose cooperation this evaluation would not have been possible. Ms. Vandna Gurani, Additional Secretary-cum-Mission Director (NHM), Sh. Vikas Sheel, Joint Secretary (Policy) and various Divisions of the Department also provided invaluable support. Sh Roshan Jaggi, Joint Secretary, Ministry of AYUSH and various division of the Ministry of AYUSH ensured timely comments. We are grateful to them for providing us access to available data, for patiently sharing their expertise through Key Informant Interviews (KIIs), and for providing their vital comments on the draft reports during various stages of the study. A detailed list of Key Informant Interviews can be found in the annexures to this report.

In the spirit of Centrally Sponsored Schemes in our federal structure, equally important partners in this endeavor have been the State Governments of Assam, Bihar, Delhi (UT), Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal, and their Chief Secretaries in providing both ground support and operational independence to our field partners for the primary study. State Principal Secretaries (Health), Mission Directors (National Health Mission) and Other Officials also provided invaluable support. Officials across the State governments have extended their gracious cooperation to the study, for which we are deeply thankful.

Next, we must thank our external expert, Dr. Rajesh Kumar, Ex-Dean (Admn.), Prof and Head, Department of Community Medicine and School Public Health, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh for helping refine and rationalize the report through their insightful comments, corrections and feedback at each stage. From the deep fundamentals of the sector to the latest developments, these experts helped ensure that the report was as comprehensive, cogent and technically robust as possible, within the short timeframes available.

Coming to the implementation teams, it goes without saying that the selected consultant firm, M/s Ernst and Young LLP. has done a remarkable job, particularly given the significant challenges of scale, time and resources presented by this project. Particular appreciation is due to Dr. Satyam Shivam Sundram, Partner and his full team. They conducted hundreds of interviews across 13 States and Union Territories of India, an extraordinary triumph of operational planning and logistics, through monsoons, festive seasons, a cyclone and a pandemic.

At NITI Aayog, this exercise would not have taken off without the consistent support of the Procurement Management Committee and Bid Evaluation Committee, particularly Mr. Sonjoy Saha, Adviser (PPP/PAMD), Dr. A.P Singh, Ex-Adviser (Agriculture) and Ms. Sanchita Shukla, the then Director, Internal Finance Division. Staff at the NITI Aayog Health vertical, particularly Mr. Alok Kumar, Ex-Adviser, Dr. Madan Gopal, Sr. Consultant and Dr. Nina Badgaiyan, Sr. Consultant,
have also been instrumental in seeing this project to fruition. The Internal Finance Division further merits special mention here for their extensive efforts.

DMEO team has been at the core of the evaluation studies - in this package specifically, Mr. Narinder Singh Rawat, Consultant and Mr. Deepak Kumar, Economic Investigator worked on every last detail of this herculean endeavor, under the guidance of Mr. Venugopal Mothkoor, Monitoring and Evaluation Specialist and Mr. S.P Srivastava, Director. Across packages, Deputy Director General Mr. Ashutosh Jain also oversaw coordination, standardization and monitoring of the study design, analysis and implementation processes across packages. They were supported by the Evaluations Core Team: Dr. Shweta Sharma, Mr. Ananad Trivedi, Ms. Sanjana Manaktala, Ms. Shruti Khanna, Ms. Vatsala Aggarwal, Mr. O.P. Thakur and Mr. Janyanta Patel. The Primary Data Quality Review team comprising Mr. Venugopal Mothkoor, Mr. Paresh Dhokad, Mr. Krishn Kant Sharma and Mr. Asad Fatmi contributed across packages in data quality and analysis. The DMEO administration and accounts officers, including Mr. D. Bandopadhyay, Mr. Munish Singhal, Mr. D.S. Sajwan, Mr. Manoj Kumar and others provided vital support on documentation, approvals, payments etc.

In accordance with the massive scope and scale of the exercise, this report owes its successful completion to the dedicated efforts of a wide variety of stakeholders. The country is deeply grateful.
Overview

In August 2019, NITI Aayog commissioned an evaluation of Umbrella Centrally Sponsored Schemes (UCSS) under the Health Sector. A part of this evaluation was focused on identifying global and home-grown best practices, case studies, interventions etc. to strengthen the implementation of various schemes under the Health Sector.

This document is a by-product of the evaluation and presents a compendium of best practices collected through primary and secondary sources and provides details on implementation mechanisms and the impact of such practices. The document is intended to facilitate knowledge sharing highlighting the high impact and innovative practices which have resulted in positive changes for all stakeholders in health and allied sector across the value chain, both in India and outside.

Thirty-two practices including seven global practices have been documented, covering areas like technology, innovation, gender mainstreaming, convergence etc. under different CSS. These practices have been included based on their key impact and contribution to the wider public policy context, by highlighting lessons learnt which may be useful for scale-up or cross- adoption.

It is highlighted that the practices included in this document are not exhaustive, and it is acknowledged that various high-impact interventions and activities are being undertaken across the country, based on global and local lessons, which may not have been included in this document.

This document is expected to be used by policymakers, scheme managers, and implementers for learning lessons from the proven successful implementation of interventions. The document aims to bring in one place the available resource of best practices and promulgate knowledge sharing.
# Table of Contents

Overview ..................................................................................................................................... 2

A. National Rural Health Mission ................................................................................................ 5
   1. Hridayam in Kerala ................................................................................................................ 5
   2. Digital ASHA Payments – Uttar Pradesh ............................................................................. 8
   3. Well London .......................................................................................................................... 10
   4. Kerala e-Health ................................................................................................................... 13
   5. Mission Flexipools by NHM .................................................................................................. 15
   6. NHM Conditionalities Framework ....................................................................................... 17
   7. Rs 1 Cess SIN TAX on Liquor for EMRT 108 Ambulance Services – Himachal Pradesh 20
   8. The Biowat – Meghalaya ..................................................................................................... 21
   9. Brazil Primary Health Care .................................................................................................. 23
  10. Labs for Life .......................................................................................................................... 26
  11. Role of Facility Based Newborn Care (FBNC) in reducing IMR - Jammu and Kashmir 30
  12. Kangaroo Mother Care Project – Uttar Pradesh ................................................................. 32
  13. Countrywide Integrated Noncommunicable Disease Intervention (CINDI) program in Bulgaria................................................................................................................................. 34
  14. Tamil Nadu Diabetic Retinopathy ....................................................................................... 36
  15. Mahila Master Health Check-up (MMHC) – Andhra Pradesh ............................................ 37
  16. Solar photovoltaic project at Yarrawonga Health ............................................................... 40

B. National Urban Health Mission ................................................................................................ 42
  17. Systems strengthening for better urban healthcare delivery through collaboration with Medical Colleges – Karnataka .................................................................................................................. 42

C. Tertiary Care Programs ........................................................................................................... 44
   18. Teleophthalmology in Tripura - Tripura Vision Centre .................................................... 44
   19. Tamil Nadu Accident and Emergency care Initiative (TAEI) ........................................... 46

D. Human Resources for Health and Medical Education .......................................................... 48
   20. Integrated Medical Information and Disease Surveillance System with biometric monitoring system at Primary Health Centers in Karnataka ......................................................... 48

E. National AYUSH Mission ........................................................................................................ 50
   21. Snehadhara in Kerala .......................................................................................................... 50
   22. Sadgamaya in Kerala ......................................................................................................... 51
   23. Chhattisgarh – AYUSH Gram in Tekari and Mana Villages .............................................. 52
   24. Innovative AYUSH practices in Kerala – JANANI ........................................................... 54

F. Other best practices ................................................................................................................. 55
   25. Universal Health Insurance – Turkey ................................................................................ 55
26. HR Strategies adopted in Bijapur, Chhattisgarh .......................................................... 58
27. Electronic Health Record Sharing System in Hong Kong ........................................... 60
28. Digital Healthcare solutions- South Korea ................................................................. 62
29. Public Health Cadre in Tamil Nadu ........................................................................... 66
30. Kerala Institute of Local Administration (KILA) .......................................................... 68
31. Integrated Hospital Sanitation Monitoring System Dashboard - Andhra Pradesh ...... 70
32. Patient Safety & Quality Improvement through Inter-Departmental Convergence under Swachh Bharat Abhiyan - Uttar Pradesh ................................................................. 73
A. National Rural Health Mission

1. Hridayam in Kerala

Introduction

Hridayam is a web-based solution for system management of care of children with Congenital Heart Disease (CHD). The website can be used as web-based registry for CHD cases across Kerala, monitoring the progress of program envisaged for management of children with CHD, identify the bottlenecks for implementing the protocols established at any point, understand the case status and response time for systems in place and ultimately the outcome of the program is one of the major reasons for the fall in Kerala’s IMR to 5.6.

To reduce the IMR level which has been stagnated at 12 for the past few years, Government of Kerala came with a state-of-the-art initiative to reduce the response time to treat children with CHD.

Key stakeholders

- Government of Kerala
- NHM
- Empanelled Private Hospitals
- Beneficiaries: All the children of Kerala with CHD

Implementation of the practice

- Hridayam website is a liaison to do case registration for public, Hospitals and (District Early Intervention Centre) DEIC. The case can be registered for babies after birth, during foetal development and any kid in Kerala under the age of 18.
- Foetal heart registration is also provided in case if CHD is detected before birth. This helps to plan the child delivery and pediatric heart surgery of the child.
- Once the case is registered by any target beneficiary. The case will be notified to concerned DEIC of the district where the child lives. During case registration immediately on filling in the basic information, the child will get an automatically generated unique registration number which will be used as Case Number for the case.
- On getting alert on case registration DEIC will check whether all forms are filled. On completion of registration (completing all five steps of registration and verification by DEIC) the case will be categorised primarily into categories 1, 2 or 3 and will be reflected on the table put in the dashboard.
- Five Paediatric Cardiologists are identified across Kerala who will give the opinion on cases online reviewing the case findings, investigation reports including ECHO findings as video and seeing the patients directly in case if the forwarded information is not enough.
- Pediatric Cardiologists will categorise cases based on the diagnosis, clinical condition and urgency to do the case as per the predefined categories. Category 1 (a-g), Category 2 A (1-3) primary and category 2B (1-3) staged procedures and category 3 Medical Follow up, so that surgery dates may be fixed by the institutions.
- Pediatric cardiologist will give opinion on individual cases and forward the same to SCTIMST or MCH Kottayam. These institutions will give surgery dates to individual cases as per the set protocol for each category.
- In case if the paediatric cardiologist is unable to reach a conclusion based on the available data, the child will be called for a review and the DEIC concerned will facilitate the same.
- Those cases clinically sick and severe will be put in the category 1a class automatically and this will be done by capturing six current clinical parameters. After categorising these cases, Pediatric cardiologist will forward all cases to SCTIMST or MCH Kottayam to get dates for surgery. They will review the cases, Diagnosis put by pediatric cardiologists, documents available, and will give dates which is the earliest for them. The system is set in such a way that these institutions can give dates that are within the timeline specified under the categorisation and the dates start from the date of birth.
- If the allotted dates are beyond the permitted dates, cases will be automatically referred to empanelled hospitals. All empanelled hospitals have individual login ids and they can see all the documents and reports so that they can allot the slots which are the earliest for them. All the empanelled hospitals will provide dates for any single case and the selection of facility will be based on the choice of the family.
- This process will be visible to DEICs and State level admin. DEICs will facilitate the process of referral to Empanelled hospitals by coordinating with the family that includes getting the choice of the family to go to which facility. Based on all these procedures state level admin will give a preauthorisation to the empanelled hospitals to take up the case with them.

- Resource utilization: This project requires a website and electronic health record management system have been developed. The rest of the project uses Information Communication Technology (ICT) to eliminate the bottleneck in the administration and to provide faster and timely treatment for the children with CHD. Empanelling Private Hospitals using PPP model enables increase in the capacity whenever required.

**Results of the practice**

- Kerala being one of the forerunners in public health care registered a new record of infant mortality rate to 5.6 (according to NFHS-4 report) from 12. This program is one of the major interventions for the reduction of Kerala’s IMR level approaching to a developed nation.
Lessons learnt

- Creating awareness of the program was difficult, so for creating public awareness both formal communication like hoardings at public hospitals, newspaper ads etc. and for easy informal communication like a Facebook page Hridyam, a separate WhatsApp number and a twitter account Hridyam are used.

Conclusion

- This program has an easy replicability with the current developments of Information and Communication Technology in India. This program majorly identifies the bottlenecks, eliminates it with the help of technology and makes use of the existing resources proficiently.

Further Readings

i. https://hridyam.in/hridyam.php

2. Digital ASHA Payments – Uttar Pradesh

Introduction

Under National Health Mission, the Government of India recruited ASHA workers to connect the marginalised communities to health care. ASHAs are well respected volunteers in the community who play a vital role in ensuring last mile service delivery. They receive performance linked incentives.

Uttar Pradesh has over 1.5 lakh ASHAs and their incentive payment process majorly relied on paper-based system for reporting and incentive calculation. This paper-based system affects transparency and created considerable delays in ASHA payments. Therefore, Uttar Pradesh digitized the payment process which brought greater accountability thereby facilitating faster payments. The major challenges faced in ASHA payments were -

- Capturing the work done by ASHAs
- Recording it on a program without new investment
- Pay the incentives in a transparent and easy manner
- PFMS integration

Key Stakeholders & Process flow

![Diagram showing the process flow of ASHA payments in Uttar Pradesh]

Implementation of the practice

A mobile-based web application “Block Community Process Managers (BCPM) MIS” was created for mapping Health Workers Managers (BCPM) MIS. This MIS was created for standardised mapping of Geographies (District, Blocks and Villages), Health Facilities (DH, CHC, PHC, SC) and Health Workers. This application also consists of a module to digitize ASHA and Sangini incentive payment process to reduce delays and increase transparency in the process. The payment process comprises of the following steps:

- ANM approved paper-based, monthly vouchers submitted by ASHA by 20th of the month
- BCPMs enters and submit the vouchers digitally by 25th of the month
- MoIC approves the voucher on the portal by 28th of the month
- BAM makes payments by 5th of next month using pre-formatted PFMS
• ASHAs receive an SMS with a head wise breakup at all stages of payment
The training was provided to BCPMs on using MIS. This project was implemented in partnership with NHM, UP-TSU, Tattva Foundation.

Results of the practice

• Since the launch in Oct 2018, 90% of ASHAs incentives are paid by 5th of the following month
• Granular data access has helped to improve the functionality of ASHAs by 67%
• Overall average monthly incentive per ASHAs has increased by 35%
• Increased accountability and transparency in incentive payments
• Motivated and empowered ASHAs and SANGINIS
• ANALYTICA’ has enabled strategic use of data for physical and financial review and monitoring at state, division, district, and block level

Lessons learnt

The identified objectives have been fulfilled satisfactorily like timely and transparent online payment to ASHAs. There have been improvements in the system for effectively monitoring performance of ASHAs. The data captured is also being used to generate insights for monitoring and policy making.

Conclusion

The application is currently used in all 820 Blocks and is being planned for scale-up for payment of urban ASHAs. The BPCM MIS offers provision for detailed analysis and profound insights to ASHA incentive disbursement and utilisation.
3. Well London

Introduction

Well London provides a framework for communities and local organizations to work together to improve health and well-being, build resilience, and reduce inequalities.

Well London works at the very local, neighbourhood level. It engages and supports people to develop their individual and community knowledge, skills and capacity to act on the issues affecting their health and well-being. It was found to have had very positive impacts in improving diet and physical activities through the evaluation.

Lack of exercise and poor diet leading to obesity and its consequences. The prevalence of obesity in the UK population is one of the highest in Europe and it is higher in the poor communities that are targeted by the Well London project. Type 2 diabetes and cardiovascular diseases are more prevalent in these poor communities. Due to several barriers, the targeted groups often did not seek health care and preventive advice until they had advanced problems.

The program sought to build individual and community confidence, by improving individual and community support networks, as well as providing opportunities for individuals to participate in activities to boost levels of mental well-being, healthy eating and physical activity. Community engagement was used to identify each community’s assets and needs, and a co-development process was used, drawing on local knowledge, in order to identify and design solutions. This program aimed to:

- Increase levels of healthy eating, physical activity and mental health, especially among those who have experienced barriers to accessing services in the past.
- Increase levels of responsiveness of local service deliverers to community need.
- Build the knowledge and skills of residents and communities in order to improve their wellbeing and promote a sense of community.
- Leverage on existing services - making them more responsive to local needs.
- Help build ambition and aspiration in communities by empowering people to take up services and make small changes.
- Help make the community engage more meaningfully by mobilising participants who would not otherwise take part. Provide feedback to local providers of health and social care.

Key stakeholders

- Greater London Authority (GLA)
- The Institute for Health and Human Development at UEL leads on Research and Evaluation, Community Engagement and Development
- The Royal Society for Public Health (RSPH)
- South London And Maudsley NHS Foundation Trust (SLaM)
- London Sustainability Exchange (LSx)
- Central YMCA
- Youthforce

Implementation strategy:
The initiative began with a period of community engagement, to understand the needs, concerns and priorities of the target communities. The information gathered was used to shape a program of up to fourteen projects for each area, including core projects to build individual and community capacity, and themed projects to address mental well-being, physical activity and healthy eating, improve local environments and increase culture and arts activities.

The model starts by selecting a disadvantaged neighbourhood and recruiting a dedicated local coordinator who can ensure effective community building, participation, volunteers developing etc.

Initially, 15 volunteers with existing relationships within their communities were trained to reach out and empower local people. Volunteers went out twice per week for 4 hours per day on promoting activities and talking to and befriending residents. The recruitment of volunteers from the local community meant that those who were not usually reached by services of involved in projects were more likely to be reached and engaged.

The local community persisting problems are collected through door-to-door visits and community gatherings. Depending on the community demanding issues, the local community enhancement programs are designed with engaging the community and stakeholders. Through the local partners, these programs are carried out and volunteers are sourced through peer-to-peer approaches in the local community. To develop trainers for the community programs courses and training grants are provided.

Resource utilization: The first phase of development of the program was funded by the Big Lottery Well-being Fund, with £9.46 million used to develop, manage, deliver and evaluate interventions which took place over a three and a half-year period, between October 2007 and March 2011 in 20 of the most deprived areas in London. The program was delivered by the Well London Alliance, led by the London Health Commission. The London Health Commission was hosted by the Greater London Authority, which took the role of an accountable body for the Lottery funding.

The program sought to use the principles of asset-based community development and co-production to ensure that the Well London program of new activities built on existing assets, and that local communities were involved in decision making at each stage of development and delivery.

**Results**

Headcounts across projects estimated 46,918 attendances at projects and activities. An estimated 17,108 different individuals participated. Phase 1 participants reported that projects had helped
them improve their health and well-being:

- 80% reported that they received help to improve their understanding of mental wellbeing;
- 86% that they felt more positive;
- 83% helped to increased levels of physical activity;
- 63% helped to improve access to healthy food and
- 60% helped to make more healthy eating choices.

The evaluation was based on the Medical Research Council’s guidelines for evaluating complex interventions and aimed to capture evidence of impact on the participants’ health behaviours and wellbeing and on the local environment.

**Lessons learnt**

A major challenge was the time taken to develop and initiate several the new projects during the program implementation. There were delays, for example, in the establishment of the Well London Delivery Team project in some areas and delivery of some other key projects, such as Training Communities and DIY Happiness, which did not start until the end of the second year of the program, meaning some areas had less time to realise benefits than others.

**Conclusion**

Well London received political support from mayor of London and funded by national lottery community fund. A similar model can be used for any urban cites health and wellbeing intervention programs. Since the model is based on asset-based community development, this model enables the communities to use their public assets effectively and efficiently for their improved health and wellbeing. This program can be rolled out in the cities with support from local corporations.

**Further Reading**

http://www.welllondon.org.uk/files/1401
4. Kerala e-Health

Introduction

The eHealth Kerala project is being implemented by the Department of Health and Family Welfare, Government of Kerala, with the help of Ministry of Electronics and Information Technology, Government of India. The aim is to capture the demographic data, automate hospital processes and collate all information into a centralized state health information system through the network to ensure continuity in health care. This ambitious eHealth project of the State government envisages the development of Electronic Health Records (EHR) of the population. The project provides end-to-end automation on all government healthcare institutions, along with the integration of an electronic demographic database. It was launched on 26 January 2018.

Key Stakeholders

- Department of Health and Family Welfare, Government of Kerala
- Ministry of Electronics and Information Technology

Implementation of the practice

- The project is proposed to enable the surveillance of diseases of every person in Kerala. This project uses Aadhaar as the unique identification number.
- The project had a successful run since it was piloted in the Government Medical College Hospital (MCH), Thiruvananthapuram, and other 17 institutions, where all processes, right from outpatient registration, clinical examination and administrative processes, were being fully streamlined utilising the e-Health software.
- The eHealth project has been implemented in 86 government hospitals in the state, including the medical colleges of Thiruvananthapuram and Kollam.
- The program will further be operational in 80 more hospitals.

The demographic database of 1.41 crore population out of the total 3.5 crore population of the State is also being processed and steps to issue unique health identity cards to them are being initiated.

- The main components of the framework include
  - A Central Repository of Demographic, Public Health and healthcare data pertaining to the State which will get automatically updated.
  - Each citizen’s record in the demographic data repository will be uniquely identified which will be used by all the services provided by e-Health Kerala.
  - Centralized Healthcare Information System which has the functionalities of an Integrated Hospital Management System, Disease Surveillance, Management Information System and Healthcare Planning.
  - A high bandwidth reliable network connecting all hospitals (in the public sector) and linking them to Central Healthcare Data Repository and the Central Demographic Data Repository
Results of the practice

The Government expects to create a patient-friendly interface for public healthcare institutions all over the state. The systemic outcome is the availability of a universal database, dynamically updated, along with which government can plan for and monitor the provision of healthcare services. Availability of digital healthcare data in a centralised server will provide a huge impetus for the disease surveillance in the state. Real-time data from clinics will enable timely alerts on outbreaks and communicable diseases. Statistical reports from the Electronic Medical Records (EMR) will provide valuable data on Non-Communicable Diseases and enable State to proactively intervene to reduce the disease burden.

Lesson Learnt

- The scaling up has been a challenge. To get doctors and the staffs use the system even after capacity building has not been efficient
- The continued usage of system and creating a continuous record is difficult. For example-doctors can’t keep the patients waiting, if the system is down.
- Cost Effectiveness- there is a need to manage the costs in such a way that the overall cost of health care goes down.
- Information Exchange- the challenge is to motivate and encourage stakeholders to pull as well as push the right kind of information from the system.
- Adoption and Resistance- there is reluctance on the part of patients and doctors in fully adopting E-Health.
- Human Resource- bringing in ANM, Asha workers, Angawadi workers into the e-health

Conclusion

This project aims to create interoperable health care solutions across the state’s public health care system which in turn provides a) timely and accurate information for patient care, b) efficient and quality assuring clinical practice for the public healthcare providers. In addition to this, it also helps to gather comprehensive statistics for formulating public health policy.
5. Mission Flexipools by NHM

Introduction:
In order to improve the planning and implementation of public health programs as per regional requirements. So, NHM introduced “Mission Flexi Pool” which provides states to allocate the NHM funds to different health care programs as per the state’s health and welfare needs.

Implementation of the practice:
In order to empower States to carry out health reforms with additional resources and appropriate flexibility as per local needs. Planning and implementation are decentralized to the States (State Health Mission developing State Health Action Plan) to Districts (Districts Health Mission developing District Health Action Plan) to Block Health Action Plan which are a community-owned and as per local needs, keeping in view the implementation guidelines of various programs. Funds in NHM are pooled under “Mission Flexi Pool”. It is divided into five components under which funds are utilized for respective programs, as follows:

- Part A NRHM/ RMNCH+A (including Immunization) Flexipool
- Part B NUHM Flexipool
- Part C Flexible Pool for Communicable Diseases
- Part D Flexible Pool for Non-Communicable Diseases
- Part E Infrastructure Maintainence

There is a separate financial envelope tied to Part A to D with the flexibility provided to all States to allocate funds through various strategies as per the local needs and broad national priorities. The number of components under Flexi-pool varies from State to State. At least 70 % of funds of State under Part A- NRHM –RMNCH flexible pool is allocated to the districts, with high priority districts allocation are at least 30 % more per capita than non-priority districts.

The NHM funding between the Centre and States is in the ratio of 60:40 (for all states except NE and 3 Himalayan States), 60 from Central government and 40 from State.

States are required to work towards an increase of at least 10 % in expenditure every year. Maximum funds must be spent at lower levels i.e. at least 70% at Block and below, 20 % District level and 10 % at State Level. For implementation and supervision of the scheme, Decentralized planning and funds dispersion from Top to Bottom is done. There is periodic reporting at each level through their supervisory units to GOI. The fund flow mechanism is as follows:
Results
This mission gave flexibility to States in designing and executing Programme Implementation Plan and prioritising States’ local health needs. This also allowed states to implement different innovative programs that later rolled out across many other states of India.

Lessons Learnt
Re-appropriation of funds by different States for different programs leads to effective utilisation and healthcare planning. Tracking of the funds utilized by the states for different programs can be difficult due to unique fund distributions under any pool. Some programs are addressing this by reporting budget and utilisation at the end of the fiscal year.

Conclusion
Mission Flexipool provides de-centralization to district and block level which helps to improve public health care facilities across every corner of India as per their local needs. Other CSS and sectors may also look at adopting such practice promoting flexibility and efficiency in fund utilisation thereby prioritizing the local health needs.

Further reading
6. NHM Conditionalities Framework

Introduction:

Conditionalities Framework under National Health Mission is a result-based funding process in which the States performing well on the select indicators get more budgetary support based on selected outcomes, outputs and process indicators verified through various data sources and State reports. The framework gives the States a chance to earn incentives through performance-based funding which has been increased from 10% to 20% of the total allocation under flexi pools of NHM within the existing State pools.

The framework for 2018-19 was based on 7 key indicators while 75% full immunization coverage in case of EAG, North-Eastern (NE) and Hill states and 80% for rest of the States and UTs was used as a qualifying criterion for the States to claim the incentives.

Implementation of the practice

- The Framework is conveyed to the States at the beginning of financial year which gives them one year to improve their performance. In September-October, mid-term assessment is conveyed to the States to provide a status of their performance and scope for improvement.
- Five pools made in proportion to the NHM funds allocated are: 1) EAG 2) Non-EAG 3) North East 4) Hilly States 5) UTs.
- Based on the final assessment, States in each pool are incentivised or penalized and the funds left in the pool were distributed among /as NHM Budget among States in the pool to avoid more funding to better performing States and maintain equity in the distribution of funds.
- Methodology: The indicators and their formulas along with incentive/penalty score have been detailed below

<table>
<thead>
<tr>
<th>1. Improving Incremental performance based on NITI Aayog Report</th>
<th>Differential Score of state/ UT = (Composite Index Score in 2017-18) - (Composite index score in 2015-16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incentive/ Penalty Points = (Differential score/ Highest or Lowest Composite Index Score achieved) *40/- 40</td>
</tr>
<tr>
<td></td>
<td>*40 for states scoring more than 0 and -40 for states/ UTs scoring less than 0 as differential score</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Operationalizing Health and Wellness Centres (HWC)</th>
<th>Operational HWC as % of total SC = (No. of Operational HWC*/Total functional Sub Centres*) *100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*(as on 31st March 2019)</td>
</tr>
<tr>
<td></td>
<td>Incentive/ Penalty Points =</td>
</tr>
<tr>
<td></td>
<td>• 20 points if percent of operational HWC is &gt;=10%</td>
</tr>
<tr>
<td></td>
<td>• 0 points if percent of operational HWC is &lt;10% and &gt;=7.5%</td>
</tr>
<tr>
<td></td>
<td>• -20 points if percent of operational HWC is &lt;7.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Implementing Human Resource Information System (HRIS)</th>
<th>The assessment gave +10 to -10 points for HRIS operationalization and +5 to -5 points for synchronization with HMIS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incentive/ Penalty Points =</td>
</tr>
<tr>
<td></td>
<td>Availability of facility wise integrated line-listing of all HR (regular and contractual) Yes: +3 or No: -3</td>
</tr>
<tr>
<td></td>
<td>Salary invoice for both regular and contractual HR generated through HRIS: +4 to -4 • Yes: +4 or No: -4</td>
</tr>
</tbody>
</table>
|   | Transfer orders for both regular and contractual Human resource generated by HRIS: +3 to -3  
Yes: +3 or No: -3  
HRIS data to match with HMIS reporting: +5 to -5  
Yes: +5 or No: -5 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Grading of District Hospitals</td>
<td>Based on the findings of “The Health of our Hospitals” study conducted by NITI Aayog, States were to be given assessed based on the percentage of districts hospitals who have at least eight fully functional specialities as per IPHS. Since the report was not published, 10 points were given to each State.</td>
</tr>
</tbody>
</table>
| 5. Mental Health Services in Districts as per framework | Percent districts covered under Mental Health program = (No. of districts where Mental Health Program is functional/No. of districts approved under Mental Health Program) * 100  
Incentive/ Penalty Points =  
- 5 points if >=75% of the districts covered  
- 3 points if >=50% districts in Non-EAG and >=40% districts in EAG states covered  
- 3 points if <50% districts in Non-EAG and <40% districts in EAG states covered  
- -5 points if <40% districts in Non EAG and <30% districts in EAG states covered |
| 6. Screening of 30+ population for Non-Communicable Diseases | Percent of 30 plus population screened for NCDs = (No. of persons screened for NCDs/Total population to be screened) *100  
Incentive/ Penalty Points =  
- 5 points if >=15% of 30 plus population screened for NCDs  
- 3 points if >=7% and <15% of 30 plus population screened for NCDs  
- -3 points if <3% and >=2% of 30 plus population screened for NCDs  
- -5 points if <2% of 30 plus population screened for NCDs |
| 7. Rating of PHCs (both Urban and rural) on their functionality | Percent of PHCs rated 3 stars or more = (Number of PHCs rated 3 stars or more/Total PHCs) *100  
Incentive/ Penalty Points =  
- 5 points if >=75% of PHCs in Non-EAG and >=60% of PHCs in EAG states having 3 or more stars  
- 2 points if <75% and >=50% of PHCs in Non-EAG, <60% and >=40% of PHCs in EAG states having 3 or more stars  
- 0 points if <50% and >=40% of PHCs in Non-EAG, <40% and >=30% of PHCs in EAG states having 3 or more stars  
- -5 points if <40% of PHCs in Non-EAG, <30%of PHCs in EAG states having 3 or more stars |
Results of practice

- The performance-based funding has enhanced accountability and generated positive actions by the States. The States investing and demonstrating improved performance in the health sector are benefitted with increased incentives.
- It has also ensured that funds from high focus states and other weaker group of States, because of the penalty, do not go to better-performing states and disturb the equity in fund distribution.

Lessons Learnt

The conditionalities framework introduces a good amount of competition and aims to increase co-operation among the States by matching the good practices from other States for scaling up of a program.

Conclusions

A similar practice like the conditionalities framework can be adopted by other Sectors implementing CSS for encouraging competition and accountability in the States.

Further Reading

https://nhm.gov.in/WriteReadData/l892s/50923145171570520489.pdf
7. Rs 1 Cess SIN TAX on Liquor for EMRT 108 Ambulance Services – Himachal Pradesh

Introduction:
Due to the steep terrains in Himachal Pradesh, makes the state highly vulnerable to natural and man-made disasters. The state-run 108 ambulance services play a vital role in emergency medical response and transportation. Since alcohol consumption causes social and medical problems, SIN TAX was levied on alcohol to finance the 108-ambulance service.

Implementation of the practice
The state proposed a SIN TAX on every bottle of liquor sold in the state. As this is the first of its kind, a tax at the rate of Rs. 1/per bottle was levied in 2018-19 on every bottle of liquor sold in the state through Excise and Taxation department. The revenue generated through the SIN TAX is credited to EMRT society to support 108 ambulance services. This type of Pigouvian tax is also expected to reduce the consumption of alcohol in forthcoming years.

Results of the practice – output, and outcomes
Rs. 7.95 Cr of SIN TAX was collected in the year 2018-19, and the funds are being utilized for ambulance services.

<table>
<thead>
<tr>
<th>Liquor Bottles (Year)</th>
<th>Cess @ Rs 1/No of items</th>
<th>Total Collections</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018-19</td>
<td>7,95,35,099</td>
<td>Rs. 7,95,35,099</td>
</tr>
</tbody>
</table>

Conclusion
Since, alcohol does not come under the purview of GST but is covered under VAT, this type of SIN TAX can be levied and utilised for the benefit of health and health related promotional activities and become a supportive component of the state government for funding public health Programme. In the future, SIN TAX can also be levied on other items that contribute to the disease burden.
8. The Biowat – Meghalaya

Introduction:
The Biowat (Biomedical Waste Treatment) is a low-cost waste treating plant for biomedical liquid waste generated in a PHC at Nartiang, Meghalaya. Earlier, the biomedical liquid waste of the PHC was discharged unsafely in the nearby stream, against the Bio-Medical Waste Management Rules, 2016. The low-cost Biowat plant created at the PHC helped in preventing the local environment.

Implementation of the practice

Under this initiative biomedical liquid waste is first segregated from the other wastage and it is treated with the following four stages before disposal:

- **Stage 1: Intermittent/demand operated slow sand filtration**
  The first stage addresses the colour, turbidity issues. The liquid waste is backwashed into the sand filters.

- **Stage 2: Chlorine Disinfection**
  Chlorine demand of the biowaste batch is determined and biomedical waste is dosed with bleaching powder.

- **Stage 3: Carbon Adsorption**
  At this stage addresses colour, odour, chemical, detergents, and other pollutants issues backwashed into the sand filters.

- **Stage 4: De-chlorination with Vitamin-C (ascorbic acid)**
  In the last stage free chlorine residuals are neutralized by treating the waste with Vitamin-C before discharge is backwashed into the sand filters.
Results

- The BIOWAT has been constantly achieving discharge parameters of the effluent:
  
  - Free Chlorine: 0mg/L
  - pH: 7-7.5
  - Fish survival: >96 hours: 100%
  - Turbidity: <5 NTU

- Other benefits:
  - simple operation and maintenance
  - efficient chlorine removal
  - zero consumption of energy for daily operation
  - low start-up and running cost

Lessons Learnt

The low-cost plant with a set-up expense of INR 2.5 Lakh and annual maintenance cost INR 10,000 has been effective in managing hazardous biomedical wastage with simple operation.

Conclusion

The low-cost and easy maintenance plant makes this initiative highly scalable across other PHC’s and CHCs in the country.

Further Readings:

9. Brazil Primary Health Care

Introduction

The main objective of the project is to build comprehensive primary health care across the country in a cost-effective approach. The comprehensive primary health care provided through Brazil’s Family Health Strategy (FHS) was started in 1994 as a federal program to provide integrated primary care. Currently, it serves as basic health care for two-thirds of the population through Family Health Teams (FHT). The program also reduced avoidable hospitalizations to 45% in 15 years. The program aims to provide preventive and primary health services with increased accessibility to the wider population across the country.

Key Stakeholders

- Ministry of Health (Brazil)
- Family Health Teams (Doctors, Nurses and CHWs)
- Local Municipalities
- Citizens of Brazil

Implementation of the Practice

Family health teams (FHT) consisting of one general physician, one nurse, and about five to six Community Health Workers (CHW) are assigned a geographic area covering 3,000 to 4,000 people, with a maximum of 150 families per CHW.

Image: One Family Health Team

Features of FHT:

1. **Trained and equipped community workers:** CHWs are full-time workers trained with 55 days of didactic training and 28 days of supervised training. The training enables CHWs to expand their role beyond maternal and child health. CHWs are equipped with mobile phones or tablet computers used to make house calls in their assigned area. They register all family members in a family with their demographic and health details. The tablet computers help to collect data electronically, enable remote diagnoses, and real-time communication with the clinic. Regardless of the need, every family will receive a minimum of one visit every month from their dedicated CHW. During CHW’s investigation, if any illness symptoms are found, they are referred to doctors and nurses. CHW also help in clinic administering activities.
Image: CHW’s Roles and Responsibility

2. **Empowered nurses for care delivery**: Nurses are empowered through the Nursing Care Operationalization (NCO) program to prescribe diagnostic tests and some medicines. Nurses coordinate with the CHWs to provide primary care to the community.

3. **Physician-led community-based primary care teams and Family medicine focus for capacity building of doctors**: In 2013, to overcome the shortage of doctors, the Brazilian government launched “Mais Médicos” or “More Doctors” program. The short-term strategy for the program was to import Cuban doctors to work for Brazil’s FHT teams through a bilateral cooperation agreement with the long-term strategy of increasing the supply of doctors by expanding the medical training centres and residency base.

4. Also, **Family medicine (primary care) a specialty with a specially designed curriculum** followed by a National Communication Strategy was introduced to increase awareness on its importance.

5. **Comprehensive scope including NCD and cancer screening**: Comprehensive primary care at basic health unit (primary care center) including clinical triage, chronic disease management and screening uptake (cancer, NCDs) was instrumental. Auxiliary teams on hand were supporting the core FHT teams (e.g., psychologists, pharmacists, physiotherapists, dentists, social workers).

6. **Gatekeeping model & largest pay-for-performance primary care scheme**:
   - Under gatekeeping strategy, individuals mandated to register with FHTs
   - “Bolsa Família” program for direct conditional cash transfer to help people avail primary care for children
   - Primary Care Access and Quality (PMAQ) program, for improving the performance and quality of the FHTs:
     - Stringent quality audit to review facility conditions, performance on outcomes and consumer experience; quality score awarded basis:
       - Results from an indicator set derived from the external evaluation (70%)
       - Participation in the self-assessment activities (10%)
       - Performance on agreed-upon health indicators (10%)
       - Correct use of EHRs (10%)
     - Incentive payments basis three pay-for-performance tiers
     - Public reporting of FHT performance against the outcome indicators
• Robust primary care EHR to restructure and organize clinical information at the national level through computerization of all the primary care clinics

Results of the practice

The program reduced the avoidable hospitalisation by 45% in 15 years. Increased immunization uptake up to 100%, reduction in mortality across age groups, as well as reduced fertility and improved school enrolment are the positive impacts of this project.

Lessons learnt

• The project worked well with lower income population. Expanding the program to middle and upper classes gave diminishing results because they have majorly relied on private health sector.
• Lack of electronic health record integration across primary and secondary health services. The health data collected during primary health care services are not accessible to secondary care and vice versa. Thus, the collected data is not utilized to its extent.

Conclusion

The project has resulted in better outcomes in reducing mortality and fertility rates, increased immunization. The program has also demonstrated robust progress, scaling up across the country in a sustainable and steady fashion. The program also evolved through the years by adapting technology and increased accessibility of primary health care services in a cost-effective approach.

Further Reading


10. Labs for Life

Introduction

Labs for Life is a pilot partnership initiative of National AIDS Control Organization (NACO), Ministry of Health and Family Welfare (MoHFW) and U.S. Centers for Disease Control and Prevention (CDC) for improving the quality of laboratory services, building sustainable laboratory systems within the public health sector and strengthening country owned institutions. For phase 1, 20 laboratories have been selected across six states, and objectives were defined to improve the overall quality. After the implementation of this initiative, the overall quality score had increased significantly from baseline at the mid-term assessment of the laboratories.

Key Stakeholders

- Core Committee members, L4L team, NHM, NHSRC, CDC and other associate partners
- Principal Secretary, Director of Health Services, Director of Medical Education, Mission Director, State
- Chief Medical & Health Officer, District Quality Officer, District Program Manager etc...
- Head of the Institutions, Nodal Officers, HOD- Concerned

Implementation of the practice

The project was implemented in association with Christian Medical Association of India (CMAI). Initially, project governance committees were formed at National, State, District, and Institution level. At the National level, the core committee under the chairmanship of Additional Secretary, MoHFW, comprises of representatives from all the partners. The committee meets once in a quarter to monitor and develop strategies at the National level.

A baseline assessment was conducted at all selected facilities to identify the gaps, challenges, and document best practices. The findings were circulated to all the states.

A comprehensive capacity building plan with central, district and facility wise training program was developed to improve the vital systematic areas including Facility Management and Safety, Sample Collection, Documentation, Equipment Management, Calibration and Controls, Testing Methodologies, Inventory Control, Staff Training Practices, Setting and Monitoring Quality Indicators and Usage of Information Technology.

The several activities like Training of Trainers (ToT), district level onsite training, handholding by Regional Quality Consultants, Periodic mentoring visits by the L4L central team, and online webinars on technical topics have been conducted. E-learning videos on numerous lab tests and laboratory quality management systems are created and available in labforlife.in.
A district and state-level resource mapping were done to comprehend the currently available resources for diagnostics under various government institutions. This helps in tapping the available resources through referrals and improved linkage across various institution.

Apart from the interventions at systematic areas, facility-specific interventions were also undertaken in terms of technical advice for lab renovations in several institutions, Bio-Medical Waste Management issues, etc. Laboratories’ quality management service was also made in compliance with ISO standards.

The phase II of the project is being implemented to improve public health laboratories in institutions housing ART Centers. 22 ART center-Hospitals across six districts in Maharashtra and Andhra Pradesh are selected.

Further, during the evaluation, it was identified that unlike the secondary healthcare system, tertiary healthcare lacks well defined standards for service provisioning in Medical Colleges. MCI defines the academic requirements only, and the standards like IPHS and NQUAS deals with tertiary care only. Thus, the responsibility of setting a benchmark of service provisioning lies with the institution only. Therefore, under this program, recommendations have been placed for empowering the Medical Colleges for service provisioning standards for their various laboratories.

**Results of the practice**

Mid-term assessment conducted at all facilities found noteworthy development in diagnostic capacities, improved quality of services, strengthened specimen referral mechanisms, and
linkages between different levels. The overall Quality score increased expressively from 27.2% at baseline to 59.7%.

In District hospitals, a cross-sectoral improvement was observed. Improvement was maximum for Outcomes, Quality management, Inputs, Support services, Infection control, Clinical services, Patient rights and Service provision.

All medical colleges recorded an improvement compared to baseline scores. Improvement was more for certain elements viz. Specimen collection and handling, Biosafety, Staff management and availability, training and supervision, use of IT, and Communication. It was marginal to moderate for others i.e. Premises quality, Public health functions, Equipment availability and management, Budget and finances, Diagnostic capacities etc.

In view of promising outcomes from the early project activities, the objectives were changed from achieving improvement in lab services – in terms of capacity, quality and sustainability; to achieving accreditation for conformance to the ISO15189 standard for selected laboratories from among the L4L project participants. Nine labs have been selected for starting the accreditation process. Continuous Training and close mentoring support are being provided to these labs. This includes Internal Auditor training for identified laboratory Quality Managers, additional support through handholding to complete the QMS Quality Managers, additional support through handholding to complete the QMS documentation, arranging mock internal audits through L4L. NQAS certification is also being encouraged for those facilities that are partially ready.

Lessons Learnt
According to the midterm review report, though there is a significant improvement in many technical areas as compared to baseline information, it is apparent that many areas require more developmental actions such as:

- Responsiveness of institutions to training
- Lack of importance to leadership and staff motivation
- Requirements for guidelines and standards for tertiary care hospitals regarding the tests
- Resource needs and dedicated lab funds

The project has created a quality-assured diagnostics model at the district level, by integrating all levels of public health via a sample referral system that helps to utilize the available resources efficiently. The project also identifies the gaps from state level to facility level and bridges them with robust logistic and IT systems for training and laboratory management – Laboratory Information Management System.

Conclusion
Taking forward the learning from Labs for Life, NHM has launched the LIFE initiative on 6th July 2017 for the holistic transformation of Laboratory services in public hospitals through a systematic approach of continual quality improvement. This would entail closing of structural gaps, capacity building for staff, optimizing the laboratory process and implementing a credible Quality Management System to meet prevalent National and International standards. As the tangible outcome of the efforts, targeted laboratories would achieve quality certification/accreditation against NQAS/NABL standards. The States should advocate the importance of establishing, implementing and maintaining QMS in public health laboratories and disseminating the knowledge and facilitating the process of generating awareness.

Further reading


ii. [http://naco.gov.in/labs-life-l4l-project](http://naco.gov.in/labs-life-l4l-project)

11. Role of Facility Based Newborn Care (FBNC) in reducing IMR - Jammu and Kashmir

Introduction
Due to the lack of infrastructure for FBNC’s at secondary and primary health institutions, infant mortality was very high in Jammu and Kashmir. In addition to this, the steep terrain at J&K also makes the situation worse while transporting sick infants to tertiary care institutions located in cities. This initiative created high-quality Special New-born Care Units (SNCU) at the district level and reduced the J&K’s IMR from 51 in 2007 to just 26 in 2015.

Key Stakeholders
- Ministry of Health and Family Welfare
- Government of J&K
- State Health Societies
- Government Medical Colleges
- Kalawati Saran Children Hospital, New Delhi
- National Collaborative Centre for FBNC, New Delhi

Implementation of the practice
- A gap assessment was conducted by the State Health Society and Government Medical Colleges to identify the gaps in the functioning of SNCUs, labour rooms & OTs in District Hospitals, and CHCs.
- 160 Medical Officers & Staff Nurses working in SNCUs at District Hospitals & NICUs in Govt. Medical Colleges were trained in Facility-Based New-born Care program for capacity building in managing sick neonates.
- 4 days training had been conducted by faculty from NCC for FBNC, New Delhi in different Government Medical Colleges of State followed by 14 days observship at Kalawati Saran Children Hospital, New Delhi.
- Labour rooms were also strengthened by providing infrastructure as per the MNH tool kit and special 21-day training for the staff deployed in the labour rooms.
- The National Collaborative Centre for FBNC, New Delhi, made regular visits for onsite mentoring and supportive supervision to improve new-born care in J&K.
- As per FBNC guidelines, protocol posters were prepared by State Health Society J&K and provided to all the Special New-born Care Units of the State.
- The state also used SNCU online portal of MoHFW to monitor the functionality of SNCUs & NICUs daily for improving accountability. Funds were also utilized on strengthening the tertiary care institution.
Results of the practice

- By adopting the practice, the functioning of SNCUs and labour rooms at the district level had improved significantly, leading to a drastic decrease in the IMR, NMR, and ENMR with a record 8-point decrease of IMR in one year from 34 to 26 (SRS 2015).
- The referral of sick infants from peripheral health institutions to district hospitals had increased, and referral to tertiary care institutions had significantly decreased.

Lessons Learnt

Along with the infrastructural and skill enhancement, this initiative had frequent monitoring and accountability checks. Firm administrative actions were also required to get good results.

Conclusion

The initiative proved that with proper guidelines and administration, it is possible to provide quality health care services at all geographical areas, including difficult terrain. With continued efforts, mentoring and supportive supervision of FBNC Units, this initiative aims to achieve SDGs as well.

Further reading

i. https://cdn.s3waas.gov.in/s384f7e69969dea92a925508f7c1f9579a/uploads/2020/06/20 20062434.pdf

12. Kangaroo Mother Care Project – Uttar Pradesh

Introduction

Kangaroo Mother Care (KMC) is a method of holding a baby with the skin to skin contact. It is a WHO recognized concept originated from Columbia. KMC care lessens the risk of premature babies. This method of care has prevented ~4,50,000 new-borns deaths and 60,000 new-born deaths in UP alone.

Implementation of the practice

- The UP-Kangaroo Mother Care Project was implemented by UP Health department in 2016 in collaboration with Community Empowerment Lab. By 2018, it was rolled out to 13 CHCs of four districts and 42 District Women Hospitals.

- KMC is an innovative method that increases survival chances for underdeveloped, underweight and pre-mature new-borns. It is a simple technique, where the mother holds her new-born to her chest (>20 hours a day) and breastfeeds it. This skin on skin contact and the nutritive qualities of mother’s milk, together, have proven to relax hyperventilation, bring down hypothermia (increase body temperature) and keep the child away from infections.

- In this initiative, Kangaroo Care lounges have been created under Special Neonatal Care Units. The Kangaroo Care Lounges is a comfortable arrangement with large rooms where caregivers (usually mothers) can recline themselves by placing the baby over their chest and cover their body with linen to facilitate heat transfer.

- Key strategies attributing to the success of project:
  - Awareness of KMC has been created through an innovative hug program
  - Beautifully designed KMC lounges to maximize the comfort of the mother during a prolonged stay
  - CSR partnership has been made for essential supplies for KMC which includes cap, mittens, blankets, diapers, etc.

- Trained health workers provided IEC (information, education and communication) on KMC during the antenatal period along with essential new-born care messages. These messages were reinforced during the postnatal period.
Results of the practice

- According to WHO, kangaroo mother care is a safe and effective alternative to conventional neonatal care, especially in under-resourced settings, and may reduce morbidity and mortality in Low Birth Weight (LBW) infants as well as increase breastfeeding.
- This project avoided 60,000 newborn deaths in UP alone.

Lessons Learnt

This project shows that simple skin to skin contact care can improve the medical conditions of the babies and reduces the risks without any medications or machines. This method cuts the cost of incubators and reduces the need for repeated hospitalisation.

Conclusion

The simplicity of the project is the biggest strength for scaling the project. Awareness creation and acceptability is the biggest challenge in this initiative. Different approaches to increase awareness must be designed by analysing the cultural and social background of the community for the success of the project.

Further reading

iii. https://my.clevelandclinic.org/health/treatments/12578-kangaroo-care
13. Countrywide Integrated Noncommunicable Disease Intervention (CINDI) program in Bulgaria

Introduction

Countrywide Integrated Noncommunicable Disease Intervention (CINDI) Bulgaria is a WHO coordinated initiative that aims at preventing major non-communicable diseases. The program combines activities for disease prevention and health promotion, in line with the new public health achievements of medicine. The program targets population of working age (25-64), including groups at high risk for certain diseases. In 2004 the child component of the program was introduced – “Healthy Children in Healthy Families”.

Implementation of the Practice

- The objective of the program is to improve health by reducing mortality and morbidity from the major non-communicable diseases (cardiovascular, cancer, chronic respiratory diseases and others) through integrated collaborative interventions that prevent disease and promote health.
- CINDI also aims to reduce the risk of non-communicable diseases by reducing common risk factors, such as smoking, alcohol abuse, physical inactivity and unhealthy nutrition.
- Health education of the population to control the main risk factors for NCDs and health
- Capacity-building among medical specialists and program partners
- Participation of communities and institutions in program activities
- Development of guiding principles and guidelines of good practice for the professionals and partners
- Extensive IEC- campaigns, television and radio shows, publications in newspapers; conferences, lectures, seminars, consultations; health education materials, etc.
- Health education activities in CINDI zones were also directed to specific groups - ethnic minorities and disabled people. For example, for blind and people with residual vision. clubs with an exercise bike, treadmill. and steppe were provided, whereas for people with chronic non-communicable conditions support groups were developed. Free medical examinations, consultations and training on healthy nutrition, physical activity, hygiene, etc. are also provided.
- The management of the program is carried out at the central and local level. There are Programme councils, working groups on issues, public health coalitions. The program is implemented at the local level and relies on local funding from the Ministry of Health. Also, the municipal council provides funds annually and further sources of funding are also used (communities, NGOs).
- On the national level the program was funded by the Ministry of Health and on the local level - by different communities and NGOs.
- The key stakeholders are:
  - Ministry of Health
  - Working-age population and children
  - Other partners involved are:
    - Municipality and the Municipal Council; Regional Health Inspections, Regional Health Insurance Fund, hospitals, medical and diagnostic consultative centres, dispensaries,
media, NGOs, schools and kindergartens, companies, unions, clubs, youth homes, pharmaceutical companies, police, traders, manufacturers etc.

**Result:**

The conducted monitoring demonstrated positive change in the population’s behaviour on health for the 10-year program period established by the reduced levels of hypertension and cholesterol, the increased number of people with normal weight and the observed positive changes in nutrition. Overall, the mortality rates from major NCDs have decreased.

Main positive changes at a population level were:

- Decreased number of individuals who are carriers of two, three and four health risks (smoking, high cholesterol, hypertension, obesity, etc.)
- Decreased proportion of men with hypertension (by 6.2) as well as women (by 10)
- Reduced by 0.2 mmol/l the average levels of cholesterol, population levels of triglycerides - below 1.7 mmol/l
- Increased proportion of people with normal weight, slightly increased share of these with obesity, lower number of overweight individuals
- Positive changes in nutrition: almost every second individual consumes fish and chicken twice a week; reduced consumption of salt; increased consumption of fresh fruits and vegetables
- Smoking among men has decreased
- Alcohol abuse levels have reduced for men
- Overall, mortality rates from major diseases have reduced

**Lessons Learnt**

CINDI has proven an effective international model program for the prevention of chronic non-communicable diseases. The program combines activities for disease prevention and health promotion in line with the public health achievements of medicine. CINDI-Bulgaria managed to achieve positive results in the zones, with positive changes in the risk factors of health, with changes in the indicators of the health status of the population, which appear to be significantly higher results than the funds invested in the program.

**Conclusion**

The program was funded by the municipalities and the activities are carried out by teams of CINDI, with the support of many partner institutions and organizations, both at the central and local levels. The population actively participated in the activities and results demonstrated a positive change in population’s health behaviour.

**Further Readings:**

14. Tamil Nadu Diabetic Retinopathy

Introduction

The intervention aims to reduce the blindness caused due to diabetic retinopathy (DR). District level capacity at the government health system for effective screening, diagnosis and management (primary to tertiary) of diabetic retinopathy using technology were built. Arvind Eye Hospital (AEH) was partnered for the training of NCD nurses and doctors on treating diabetic retinopathy. The pilot project shows a widespread presence of DR.

Key Stakeholders

- Government of Tamil Nadu
- Arvind Eye Care System
- Public Health Foundation of India (for trainings and capacity building)

Implementation

- The pilot model was implemented in Tirunelveli district at 5 CHC’s and 13 PHC’s
- Training and Capacity: Training of NCD staff, Government ophthalmologist and paramedical ophthalmic assistants, on relevant topics for DR screening and ophthalmic instrument handling was provided by Arvind Eye Hospital.
- Patient’s treatment flow: Any patient with diabetes using that government health facility was screened for DR. NCD staff or nurses at that facility is in charge for the screening process, referral, and follow-ups.

Results of the practice

The project reveals the prevalence of DR among the registered population in 18 CHC/PHCs from five blocks in the Tirunelveli district where the project was implemented.

Lessons Learnt

- Patients follow-up were very low. Only 7% of them came for follow up check-up in one month
- NCD nurses were frequently transferred, so the training and capacity building had to be redone for the new staff

Conclusion

This project harnesses the growth of technology and existing government health facilities to identify and treat the patient for diabetic retinopathy at district level. This scheme is easily scalable by training the existing workforce and establishing reading & grading centers at district level. Government of Tamil Nadu has planned to roll out the second phase in three other districts of Tamil Nadu with funding from Queen Elizabeth Diamond Jubilee Trust. AEH has been selected as training partner for the second phase as well.

Further Readings

ii.  http://www.ijo.in/article.asp?issn=03014738;year=2020;volume=68;issue=13;spage=78;e page=82;aulast=Ramakrishnan#ref7
15. Mahila Master Health Check-up (MMHC) – Andhra Pradesh

Introduction

Andhra Pradesh is one among the top states with a high prevalence of Non-Communicable diseases. Early-stage detection and treatment became necessary to minimize the mortality and morbidity caused by NCDs. Further, in order to reduce the inequality in healthcare services for women in rural and urban areas, the state government decided to make use of technologies such as cloud and data analytics solutions for screening women above the age of 30 for non-communicable diseases. Mahila Master Health Check-up (MMHC), a health care program for women of Andhra Pradesh was launched to improve the basic healthcare services for women. Under this program, over 6 million rural women between the age of 30 to 60 years were screened and referred for continuity of care.

Key Stakeholders

**Health, Medical & Family Welfare Department**
- Implementing Agency
- NCD Screening & Treatment covering 11,850 ANMs, 450+ doctors, 100+ Health Officials

**Dell-EMC**
- Technology Partner
- Develop software solution for MMHC consisting of a tablet app for the health workers, web apps for the secondary level and tertiary level doctors and dashboards for the health officials

**TATA Trusts**
- Deployment Partner
- Training & Capacity building

Implementation of the practice

Mahila Master Health check-up (MMHC), a health care program for the women of Andhra Pradesh, was inaugurated by the Health Department of Andhra Pradesh in collaboration with Dell-EMC as a technology partner and Tata Trusts as Deployment Partner.

This intervention has been implemented in more than 7000 health sub-centers across the state in the year 2016-17. Women between the age of 30 to 60 were screened for 7 health conditions, namely oral, breast and cervical cancers, hypertension, diabetes, hormonal disorders, and vision disorders.

**MMHC Program Flow**

- Initial screening by ANM & MOs for 7 health conditions (NCD) are recorded in Dell EMC developed Andhrar based EHR
- Women go to nearby sub centers
- 1075 PHCs, 277 MMUs, 7917 Subcenters
- Screened & Treated
- 57 Secondary Hospitals
- 11 Tertiary Hospitals
- Follow up

Program Highlights:
- Improved Access
- Improved Efficiency
- Real-time tracking
- Reduced paperwork
- Continuity of care
- Local Language
MMHC uses an integrated cloud-based software solution to improve efficiency and monitoring. 11850 Health workers, 350+ Doctors, were trained on the effective use of the application. The software technology is accessible through tablet applications for health workers, web apps for secondary and tertiary level doctors, and dashboards for health officials. Patient health records are created during screening are shared and tracked using the patients Aadhar card at primary, secondary, and tertiary levels. This ease of data sharing improves the quality of continuity care of the patient by increased the efficiency of health workers and doctors. Real-time tracking dashboards of the program enables the Health Department for improved administration and monitoring.

Image: Screenshot of Application used at PHCs

Results

Dashboard and Real-time data provided provides excellent value in the quality of services and tracking issues. User-friendly UI made in the local language made the application acceptable among the primary health care workers. Efficient screening and continuity are the major good outcome of this initiative. The initiative has led to increased value for all stakeholders:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen – Improved Access</td>
<td>• Health records with Unique-ID</td>
</tr>
<tr>
<td>Health worker – Improved Efficiency</td>
<td>• NCD screening, enrolment, patient history.</td>
</tr>
<tr>
<td></td>
<td>• Pictorial UI, Telugu, simple dashboard, help audio/video</td>
</tr>
<tr>
<td></td>
<td>• Reduced paperwork, Intelligent Sync</td>
</tr>
<tr>
<td>Doctor – Improved Efficiency</td>
<td>• Comprehensive patient history</td>
</tr>
<tr>
<td></td>
<td>• Easy management of patient info. Examination, lab tests, diagnosis,</td>
</tr>
<tr>
<td></td>
<td>treatment and referral</td>
</tr>
<tr>
<td>Health Department – Improved</td>
<td>• Real-time tracking of program progress with drill-down</td>
</tr>
<tr>
<td>Administration</td>
<td>• Administrative monitoring of personnel performance</td>
</tr>
<tr>
<td>Policy Makers – Improved Coverage,</td>
<td>• Monitoring health indicators, performance</td>
</tr>
<tr>
<td>Indicators</td>
<td>• improved planning, resource allocation</td>
</tr>
</tbody>
</table>

Lessons Learnt

Technology adaption by all health care workers is very critical. Tablets provided to ANMs had hardware, software, and connectivity related issues. Many ANMs didn’t upgrade or sync the application regularly. This problem could have been rectified with additional training to ANMs.
Conclusion
Integrated data systems at all levels of healthcare services played a crucial role in improving the efficiency of health care workers, monitoring, and administration activities. Further, the data can also be used for policy creation, planning, resource allocation.

Further reading
http://www.nhmmp.gov.in/WebContent/IndoreSummit/Day%202/NCDs/MMHC%20for%20Indore.pptx
16. Solar photovoltaic project at Yarrawonga Health

Introduction

Yarrawonga Health (Victoria, Australia) is Moira Shire’s largest health service providing acute inpatient services, residential aged care and primary and community health services. The health centre reduced its carbon emission by installing 96 kilowatt photovoltaic solar array and demonstrated as a leader in environmental management within the local community.

Implementation of the practice

In 2013, Yarrawonga Health electricity cost had risen by approximately 60 percent than the previous year. Electricity is predominantly used for air conditioning, ventilation and lighting. In order to alleviate increasing energy costs, Yarrawonga Health with financial support from the Department of Health installed a 96 kilowatt photovoltaic solar array. In addition, the department supported Yarrawonga Health with an LED lighting replacement project that is currently being implemented.

Besides energy cost savings the system was chosen to reduce the organization’s carbon emissions. The anticipated benefits from the solar array were annual savings of $25,000 to $30,000 and an annual reduction of ~200 tonnes in carbon emissions. The system consists of:

- 2 x 48 kW inverters
- 384 x 250 Watt solar panels
- cabling and racking, isolators and circuit breakers
- data logging and remote access, and
- safety access walkways and anchor lines.

The project was planned and facilitated by Yarrawonga Health with assistance from a structural and electrical engineer.

Results

Over the period 11 August 2013 to 31 January 2014 the project achieved the following outcomes, which suggest that the project will achieve the anticipated benefits:

- A reduction of 87,543 kWh of purchased electricity from the grid as compared to the same period in the year before
- Generated solar electricity of 83,311 kWh, averaging 13,885 kWh per month
- Cost savings of $14,163, averaging $2,360 per month, or about 15 percent reduction in electricity expenditure, and
• Carbon emission savings of 99.5 tonnes.

Additional electricity and carbon, and associated financial, savings are expected at Yarrawonga Health from the LED lighting project currently being implemented.

A related benefit from the project has been an ongoing organisational cultural change at Yarrawonga Health in relation to energy use. Staff have embraced the project and have a better understanding of energy efficiency and what they can do to reduce energy use.

Image: Generated solar electricity and financial savings per month

Conclusion

In addition to the electricity, the solar panels on the roof serve as heat insulation to the building. The medical center also upgraded to energy-efficient LED lights which reduces energy consumption and carbon emissions into the atmosphere.
B. National Urban Health Mission

17. Systems strengthening for better urban healthcare delivery through collaboration with Medical Colleges – Karnataka

Introduction
The Karnataka health department collaborated with Bangalore Medical College & Research Institute [BMCRI] to provide technical support like training, research and field activities medical academicians provide useful insights to improve public health system in urban areas.

Key Stakeholders

- **Department of Community Medicine**
  - Implementation partner for National Health Mission and Bruhat Bengaluru Mahanagara Palike programmes
  - Plans and carryout field activities like vaccination campaign, other intervention programmes etc.

- **Bangalore Medical & Research Institute**
  - Knowledge Partner
  - Provides technical support, training field workers, research activities etc.

Implementation of the practice
The Department of Community Medicine collaborated with Bangalore Medical & Research Institute to work on National Health Mission and Bruhat Bengaluru Mahanagara Palike initiatives. They offer technical support in to improve health care services as follows:

- Trained manpower for planning and field level activities like subject experts in respective fields, postgraduate and undergraduate medical students, students pursuing Diploma in Health Inspector (DHI), student nurses


- Research activities like time motion study to decrease wait time at UHC, Awareness & Client satisfaction of NUHM at UPHC, intermediate term evaluation of NUHM in BBMP, Focused Group Discussion on Drug Abuse & Illicit Trafficking

- Convergence through Urban Health Training Centres: Health care services are being provided to the patients visiting the Outpatient Department of the UPHC, assist in immunization sessions, ANC clinics, high risk pregnancy detection & in providing services at specialty OPDs like Medicine, Paediatrics, evening clinics of Surgery Orthopaedics, Psychiatry

- Space and resource persons for regular training activities
Results of the practice
The collaboration becomes a win-win situation for NHM and medical colleges. Participation of academicians in NHM programs brings in additional perspectives and innovative ideas to improve the standard of the programs. The inclusivity with medical college also provides the students and research participants a chance to solve real-life challenges.

Lessons Learnt
In long run, the sustainability of the project will be a major challenge. The continual availability of the college guidance will be difficult in long run NHM programs due to the churn rate of researchers and human resources. An efficient knowledge management system is required to improve the knowledge transfer and continuity of the project. Scaling this collaborative initiative to other districts is also hard since infrastructure and robust networks of people are challenging in other parts of the state.

Conclusion
Apart from the scalability and sustainability challenges this collaboration provides availability of additional resources to the NHM, helps in upgrading and remains relevant to the changing needs of the community and growing requirements of the healthcare delivery system. Adapting to robust collaborative methods will deliver extended benefits to both the Karnataka health department and BMCRI.
C. Tertiary Care Programs

18. Teleophthalmology in Tripura - Tripura Vision Centre

Introduction

Tripura Vision Centre was initiated in 2007 to deliver eye care services to all the people in the state using ICT. The main objective of the project was to improve the access of primary and preventive eye care services to rural areas of Tripura by adopting emerging developments in both ICT and medical technologies.

Implementation of the Practice:

- The project was initiated on a PPP model, with Department of Health and Family Welfare, Tripura as the apex agency.

- The teleophthalmology project required setting up of Vision Centres (VCs) in all the blocks of the state to meet the requirements of the rural population of Tripura. The project was implemented in phases to cover all blocks of rural Tripura.

- The VC have been established adjacent to Information Centres in order to leverage the existing Tripura State-wide Area Network (TSWAN) infrastructure. ICT has been utilized to transfer the images of the diseased eye to the referral centre where the pictures are diagnosed and prescribed the modality of treatment.

- The project was implemented in a phased manner:

<table>
<thead>
<tr>
<th>PHASES</th>
<th>PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHASE 1</td>
<td>The first pilot Vision Centre was set up in Melaghar block in April 2007 and is operational to date.</td>
</tr>
</tbody>
</table>
| PHASE 2 | • The second phase scaled the vision center network to 10 blocks in West Tripura district covering a population of approximately 15,32,982.  
  • This phase is also comprised of the enablement of digital patient medical records in the Vision Centres using a database management solution, the “Vision Centre Management System (VCMS)”. It also included setting up of private wireless network with a bandwidth of 384 Kbps expandable up to 2Mbps. |
| PHASE 3 | • 29 Blocks of the State were covered to bring a state-wide network of Teleophthalmology services.  
  • Apart from setting up Vision Centre infrastructure at 40 + 2 locations, IL&FS also set up a core mini data centre for maintaining electronic medical records and connectivity network operations centre (NOC) at IGM |
| PHASE 4 | The Fourth Phase or the present phase was commissioned in the year 2014 with the introduction of four new Vision centres. |

- Patient Examination Procedures:
  - The ophthalmic assistant, an in-charge of Vision Centre- registers the patient, does the primary examination, notes down all relevant details, captures the image of the eye (external, anterior chamber &/or fundus) and uploads this with the history and examination details into the software application for specialist sitting in the IGM hospital, Agartala to review, confirm the diagnosis and decide on treatment modalities.
• One senior Ophthalmic Assistant at the IGM hospital first reviews all patient details and based on the seriousness of the condition refer the case to the specialist for further examination and treatment.

• If the doctor requires further information from the patient, Tele-consultation is established between doctor at IGM hospital and patient at the respective Vision centre. After the complete examination doctor issues a prescription to the patient. If there are more examinations required patient is requested to visit IGM hospital. Diagnosis is made based on the history, current symptoms and image of the eye. At the end of the consultation, specialist prescription is printed by Ophthalmic Assistants (OA) and is given to the patient. OA also explains medicine and instructions to the patient and counsels him in the case of referral for further treatment at IGM Hospital Agartala.

• It takes around 15-20 minutes to examine a patient, however for the Teleconsultation and treatment patient is to wait for 30-45 minutes. Each Vision Centre is daily visited by 15-20 patients on average. At IGM Agartala each doctor review at least 15-20 patient records on software per day apart from routine OPD at the IGM.

• Key stakeholders include NHRM, Department of Health and Family Welfare, Government of Tripura, IL&FS, Arvind Eye eCare System

Results of the practice

Till March 2016, the project had screened 4.72 lakh patients across 44 VCs. The number of women screened n these VCs are more than 40%. The trend indicated that a higher number of women are accessing the services of the VCs as compared to earlier trends, as they have access to the services closer to their homes.

Lessons Learnt

The VCs have helped in screening a significant proportion of eye conditions such as refractive error, cataract, glaucoma, keratitis, diabetic retinopathy, infections, fundus examination and some low vision carefree of cost.

Conclusion

This project has been cost-efficient with the sharing of specialized health care services and can be scaled with more health care services through telemedicine.

Further Readings


ii. https://health.tripura.gov.in/?q=3006201701
19. Tamil Nadu Accident and Emergency care Initiative (TAEI)

Introduction

Tamil Nadu alone accounts 10.7% of road traffic accident deaths in India. During 2016, Tamil Nadu accounted for 17,311 which is 12% higher as compared to 2015. So, to reduce the response time after the accident and to use the golden hour efficiently, Government of Tamil Nadu launched an innovative program “Tamil Nadu Accident and Emergency care Initiative (TAEI)” in January 2018.

Implementation of the Practice

- The objective of the initiative was to reduce deaths caused by stroke, myocardial infarction, trauma (includes road traffic accidents), burns, poison, pediatric emergencies and, other life-threatening conditions, the first hour after the accident is the golden hour.
- TAEI used the following model to respond to the emergency cases

<table>
<thead>
<tr>
<th>Pre-hospital care</th>
<th>Reduction in response time through technology</th>
<th>Concept of emergency room</th>
<th>Emergency care centres on high RTA prone stretches</th>
</tr>
</thead>
</table>

*Pre-hospital care:

“108” Ambulance Service is being operated 24x7 in Tamil Nadu free of charge as a Public Private Partnership with GVK EMRI through a single Toll-Free number. Each ambulance has one fully trained Emergency Medical Technician (EMT) who provides pre-hospital care to the victim and a pilot (driver).

*Reduction in response time through technology:

All the ambulances have a GPS device that is integrated with the 108 Emergency Response Centre. Currently, the calls to 108 Emergency Response Centre records details about the caller’s district, taluk, and village and nearby landmark given verbally by the caller. In a state of panic, giving exact location details becomes difficult. Under these circumstances, the new mobile application for android mobile enables the 108 Emergency Response Centre Officer to view the caller’s geographic location precisely and locate the ambulance through GPS.

A new mobile application has been designed to work even without an internet connection (data / GPRS). This application uses DTMF technology to determine the callers’ location without an internet connection. This special feature is an initiative by the Government of Tamil Nadu to enable even the rural and tribal population with feeble mobile network coverage to have access to its 108 Emergency Response Service. To begin with, five Emergency Response Officers would have DTMF enabled the system to receive calls from this mobile app without an internet connection. This application has been developed in collaboration with IIT Madras.

All the 108 ambulance pilots have been provided with android phone and a special android mobile application has been designed to reach the caller location and to take the patients to the nearest hospitals through the shortest route and avoiding the traffic.

*Concept of the emergency room:

The concept of an emergency room is devised to provide immediate emergency care to an RTA victim, within the golden hour without waiting for an Accident Register entry. 72 hospitals
have been identified for standardization of the Emergency Room. A system of Triage is done based on the criticality of the victim and colour is assigned, (RED/YELLOW/GREEN). Red denotes highly critical which is located near the triage room.

*Emergency care centres on high RTA prone stretches:*

Emergency care centres are established on high accident-prone zone to stabilize the patients with in 20 to 45 minutes and to move them to higher institution. Functions of ECC are as follows:

- Triaging and Reassuring patients
- RSI (Rapid Sequence Intubation)
- Cardiac Resuscitation
- Fluid Resuscitation
- Pain Management
- Bleeding Control, wound care

- TAEI developed a hub and spoke model with the existing 72 hospitals in the state and brought trauma care under one umbrella in addition to ST Elevated Myocardial Infarction (STEMI) and Stroke Care and Rapid Intervention with Plasminogen Activator and Thrombectomy (SCRIPT).

- Key stakeholders involved are- Government of Tamil Nadu, NHM and IIT Madras (for App development)

- Technology used includes ambulance locater app, caller geographic location capture app using GPS, caller geographic location capture app using DTMF, 108 Pilot navigation app, spatial mapping of medical facilities algorithm.

- Infrastructure:
  - In STEMI, there are 18 hubs that have facilities like CCU and Cath Labs, with treatment available for thrombolysis, angiogram and angioplasty. STEMI has 154 spokes with CCU facility with treatment available for thrombolysis.
  - In SCRIPT, there are 23 hubs which have facilities like CT scan, Cath Labs, and Neurosurgery with treatment available for thrombolysis, thrombectomy, conservative management/surgical management for hemorrhagic stroke patients. STEMI has 55 spokes with CT scan with treatment available for thrombolysis and, conservative management for hemorrhagic stroke patients.
  - Level 1, 2, 3 trauma centres are to be established in various medical college hospitals, District headquatered medical hospitals and other government hospitals
  - The State Planning Commission has recommended for Point of Care Testing (POCT) in 25 centers at a cost of Rs. 277.50 Lakh for funding of innovative schemes under Tamil Nadu Innovations Initiative (TANII)

**Results of the practice**

This program reduced the monthly trauma mortality rate of Rajiv Gandhi Government General Hospital, Chennai from 8.27% to 2.71% and non-trauma mortality has been reduced by 2%. More than 70,000 lives have been saved annually.

**Conclusion**

This program can be implemented with some technology investment and administrational change in the hospital. This model shows a very promising impact and increases the efficiency of government hospitals towards emergency cases.

**Further Readings**

2. [https://www.taeionline.com/](https://www.taeionline.com/)
D. Human Resources for Health and Medical Education

20. Integrated Medical Information and Disease Surveillance System with biometric monitoring system at Primary Health Centers in Karnataka

Introduction

In 2010, the Government of Karnataka developed the Integrated Medical Information and Disease Surveillance System (“IMIDSS”) to address absenteeism in PHCs and patient tracking. A biometric monitoring system that objectively records attendance and reports its to supervisors in real-time was installed, combined with a robust system of incentives and penalties for unauthorized absences, led to an improvement in staff attendance and patient health.

Implementation of the practice

From a sample of 322 PHCs across five socio-economically diverse districts, 140 were randomly selected to receive IMIDSS while the remaining 182 continued with the status quo paper system. PHCs in the treatment group were equipped with an IMIDSS device, consisting of a fingerprint reader and a multi-purpose mobile phone (J-PAL, 2020). The device was used to record staff attendance via thumb impression at the beginning and end of each day. It was also capable of recording details about cash benefits paid to patients along with photographs and signatures and thumb impressions of beneficiaries taken at the clinic, and statistics regarding the number of patients seen and the diseases treated. In practice, it was primarily used for attendance monitoring (J-PAL, 2020).

Results of practice – outputs and outcomes

- The monitoring system increased attendance among nurses, lab technicians, and pharmacists
- Even though the official leave policy was not strictly enforced, the monitoring system increased medical staff attendance by 5.5 percentage points (15 percent) from a base of 37 percent among medical staff. It had the greatest impact on nurses, lab technicians, and pharmacists (a 7%-point increase from a base of 40 percent), but virtually no effect on doctors (J-PAL, 2020).
- The new monitoring system led to improved antenatal care and infant health. Pregnant women in treatment PHCs were 11 percentage points (27 percent) more likely to receive recommended Iron Folic Acid tablets, compared to 39 percent of the comparison group (J-PAL, 2020).
- Mothers in treatment at PHCs were 8 percentage points (16 percent) more likely to have their baby delivered by a doctor, compared to 50 percent of the comparison group. Their newborn children were 4.6 percentage points (26 percent) less likely to be born underweight, compared to 18 percent of the comparison group, and weighs 67 grams more on average.

Lessons Learnt

- The monitoring system increased the attendance among nurses, lab technicians, and pharmacists
- The system did not have much effect on doctors
Conclusion

The initiative can be replicated in other states for monitoring staff attendance by regularly recording the attendance and leaves at all levels.

Further Readings

i. https://openknowledge.worldbank.org/bitstream/handle/10986/18408/882680PUB0978100Box385205B00PUBLIC0.pdf#page=215

E. National AYUSH Mission

21. Snehadhara in Kerala

Introduction

Snehadhara is an initiative by the Government of Kerala. The initiative employs ayurvedic practices and techniques for palliative care to patients suffering from long-term illnesses who require home visits.

Implementation

Snehadhara started as a project of a block panchayat in Idukki in 2016. It was further decided to allocate funds for this initiative in three districts. Snehadhara was initiated in three districts of the state, namely Thrissur, Thiruvananthapuram and Kasargod. The palliative policy of Kerala recognizes and encourages the role of other systems of medicine such as AYUSH in palliative care.

A trained nurse and a multipurpose staff were appointed, and a rented taxi vehicle was provided. The activities are carried out with association and support from LSGIs. With the help of ASHA workers, Local Self Government Institutions (LSGIs), and social workers the beneficiaries of each Panchayat were identified. The medical team visits bedridden patients at their doorstep.

Results of the practice

As reported by National AYUSH Mission, Kerala the total number of people benefitted from this initiative as on February 2020 is 9,803.

Conclusion

Ayurvedic practices and techniques may be beneficial for palliative care to patients suffering from long term illnesses and those who require home visits.

Palliative care aims to improve the quality of life of the patient and reduce the suffering of the family and friends of the patient. It aids in alleviating the suffering incurred due to underlying disease conditions or the side effects of ongoing treatments etc.
22. Sadgamaya in Kerala

Introduction:

The focus of this initiative is on adolescent health care. It started in the year 2014 with a thrust on adolescent problems especially behavioural and learning problems. It focuses on behaviour management and screening of learning disabilities in the various NCD clinics in the 14 districts.

Implementation:

One medical officer with a Bachelor of Homeopathic Medicine and Surgery or BHMS degree is appointed in each district for SADGAMAYA. The project is implemented in 14 districts across Kerala. Human resource support is provided by the National AYUSH Mission.

As a part of Sadgamaya, series of awareness classes are carried out in Schools, Grama Sabhas, and Resident Association Meetings and among teachers. ASHAs are also now educated of the problems dealt in Sadgamaya. The potential target children are identified by them and parents of these children are persuaded to attend clinic with children. These children are screened at centre for specific problems and corrective measures initiated.

Results of the practice

As reported by National AYUSH Mission, Kerala a total of 27,783 patients were assisted by the projects for various problems like ADHD, learning disorders etc.

Conclusion:

The initiative has played a positive role in understanding, identifying and assisting adolescents with behavioural and learning problem.

Further Readings

23. Chhattisgarh – AYUSH Gram in Tekari and Mana Villages

Introduction

AYUSH Gram component of the scheme includes selecting one village per block for the adoption of AYUSH as a way of life. It started to gain some momentum towards the end of 2016-17 FY. While some initiatives have been taken in Kerala, Mizoram and Telangana, there have not been any other initiatives undertaken. Normative guidelines had been provided under NAM. Maximum flexibility is provided to the States/UTs under this component for implementing activities. The population norms and different strategies for implementation of the program have already been spelled out in the guidelines.

Implementation of the Practice

- Herbs are grown within the Dispensary. Herbal drinks are distributed to villagers and school kids
- Women in SHG are involved in gathering and coordinating with the villagers and organising various street plays, dances and other awareness campaigns
- Yoga teacher is present in the school and takes classes on a weekly basis
- Every 15-18 days either health check-up camps/yoga camps/ street plays/dances/awareness campaigns are conducted (termed as Kala Jatta)
- Health check-up camps are regularly organised with grant support of INR 4,000 (for 3 months interval)
- AYUSH training to ASHAs, Anganwadi workers and school teachers is given every quarter

Initiatives in Tekari Village
Initiatives in Mana Village

Lessons Learnt and Conclusion

- Ayurveda Gram Centre is the first approach point for any type of illness or preliminary treatment. They are not dependent on Sub-centres or PHCs.
- Villagers indicated an increase in reliability on Ayurveda. Food habits have changed for better and awareness towards Medicinal herbs has increased.
- Farmers are still not motivated to cultivate herbs as selling of these herbs remains to be a challenge. It is difficult to recover the invested money.
24. Innovative AYUSH practices in Kerala – JANANI

Introduction

JANANI is an initiative of the Department of Homeopathy, Government of Kerala that was launched in Kannur in 2012. The initiative employs homeopathy treatments for infertility in public health facilities. Cases like repeated abortions, polycystic ovary disease, endometriosis, fibroids and related problems which are known to be some of the reasons for female infertility are tackled under JANANI.

Implementation of the practice

The government implemented this project as a pilot study in the homeopathy department using plan funds. An infertility centre was set up in Kannur District Hospital wherein the treatment was free of cost including the medicines under the district panchayat fund. After the pilot in 2012 by 2013, the department introduced infertility treatment centres at Thiruvananthapuram and Kozhikode as well.

Results of practice

Over time there has been an exponential growth in the number of infertility cases being registered and treated at Kannur District Homeopathy Hospital. As per the Economic Survey 2018-19, the cases have increased to approximately 1500 in 2017 (Economic Survey 2018-19).

JANANI has been extremely beneficial for those who were unable to conceive even after undergoing 10-15 years of treatment like IVF (In Vitro Fertilization), ICSI (Intra-Cytoplasmic Sperm Injection) (EY Primary Analysis: KII, 2019).

The JANANI scheme of Government of Kerala has spread awareness about the availability of Homeopathy treatment for infertility in public health facilities. The total number of conceptions after homeopathic intervention through JANANI project till March 2019 is 1,655 of which 966 were reported as successful deliveries (EY Primary Analysis: KII, 2019).

Lessons Learnt

- With the success of the pilot project, expansion strategies for scaling up and increasing the reach with the creation of a greater number of centres were effective.
- The involvement of district panchayat through the funding of medicines and community outreach was successful.
- IEC activities like medical camps, awareness classes and district-specific initiatives were also useful. For example, a family meet of beneficiaries is conducted in Kozhikode.
F. Other best practices

25. Universal Health Insurance – Turkey

Introduction

Health Transformation Program (HTP) launched in 2003 aimed to increase access to health services. This included eliminating fragmentation in financing by merging the then five health insurance schemes (including the Green Card Program) into Universal Health Insurance (UHI) scheme. The new scheme was managed by a newly created institution SSI – Social Security Institution (Tirgil, Ipek, & Atun, 2018).

Multiple health insurance schemes were integrated into a single purchaser SSI. The coverage included in-patient treatment costs, outpatient services, and outpatient prescription drugs. Health expenditure ranging from 4.5% to 5.8% of GDP since 2000 contributing significantly to the UHI (Sparkes & Reich, 2015).

Key Stakeholders

- Ministry of Health, Turkey
- Social Security Institution
- Employed citizens
- Registered hospitals and pharmacies

Implementation of the practice

- The coverage included in-patient treatment costs, outpatient services, outpatient prescription drugs
- The public sector doctors were given responsibilities to provide healthcare for a population in a defined area and incentivised accordingly based on beneficiaries’ feedback
- For the provision of primary and preventive care on a priority basis, the remuneration of the doctors is based on the population covered
- The government of Turkey strongly discouraged public sector doctors to go for private practice
- Multiple health insurance schemes were integrated into a single purchaser SSI
- The adoption of the Social Security and Universal Health Insurance Law in 2008 created the legal and institutional basis for a fully harmonized health insurance system (UHI)
- Execution of a single Health Implementation Guide, published annually
- Key developments in the HTP

2002-2006

- Focus on improving access to health services
- Health Transformation Program (HTP) is designed, building on work done in the previous decade, including elements of the Basic Health Law
- Introduction of higher salaries and performance incentives for hospital clinicians to encourage a voluntary transition from dual practice to full-time working
- Green Card benefits expanded to include outpatient benefits and pharmaceuticals. Conditional cash transfers were introduced, covering 6% of the population (for pregnant women and children from the
most disadvantaged households), to encourage the use of maternal, neonatal, and child health services

- Contract-based employment introduced for healthcare personnel in rural and less developed regions
- Major changes in pharmaceutical policy, including changes to pricing and value-added tax
- Hospitals belonging to the Social Insurance Organisation integrated with the Ministry of Health hospitals
- Universal health insurance is legally adopted as a part of broader social security reforms

### 2007-2010

- Contract-based family medicine scaled up in all provinces of Turkey
- Cost-sharing for primary health-care services was abolished. Primary health care available for all citizens free at the point of delivery.
- Social Security Institution established as a single organization for financial pooling and purchasing
- Free availability of emergency services and intensive care services (including neonatal intensive care) for the whole population
- Mobile pharmacy services introduced to improve access in rural areas
- Tracking system for drugs introduced

### 2011-2013

- The Green Card scheme joins the Social Security Institution and unified social health insurance is fully implemented
- The Ministry of Health strategic plan for 2013–17 is developed

### Results of practice

- Key improvements in health indicators in the decade since implementation:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Before Implement of program</th>
<th>Results after short span</th>
</tr>
</thead>
</table>

- Formal health coverage of Turkish population increased over 95% in the period 2000-2015.
- Significant improvement in health coverage for the poor in Turkey.
- Gradual steps taken in this regard, helped in improved targeting, expand benefits to the Green Card Program, including the improvement in the quality of service delivery within a comprehensive reform in the sector. Patient satisfaction improved from 39.5% in 2000 to 75.9% in 2011 (TurkStat - Life Satisfaction Survey, 2011).

### Lessons learnt

The success story of Turkey can be attributed to the following factors:

- Legislation like Social Security and Universal Health Insurance Law in 2008 that ensured UHC
- Proactive role of the Government
- Importance had been given to primary health care

### Conclusion

- Health expenditure as a % of GDP plays a critical role in achieving the goal of UHC. Health expenditure in Turkey ranges from 4.5% to 5.8% of GDP since 2000 contributing
significantly to the UHI (Sparkes & Reich, 2015)

- UHI implementation has led to the elimination of major sources of fragmentation of public health delivery system and has reduced the inequality in access to and utilisation of services across the nation.

Further reading

i. *Successful Health System Reforms: The case of Turkey*

26. HR Strategies adopted in Bijapur, Chhattisgarh

Introduction

The district of Bijapur in Chhattisgarh has more than 70% tribal population with deprived basic healthcare facilities due to a shortage of doctors and paramedical staff and healthcare infrastructure. Most of the deliveries till July 2016 were non-institutional due to sudden bandhs, blocked roads etc. With a revamp of the health system in the district, conditions have drastically improved and the percentage vacancy of health workforce has changed from almost 100% to less than 40-50% within 2-3 years. Many tribal women have also been opting for institutional deliveries with well-equipped district hospitals, round-the-clock availability of gynaecologists, pediatricians, and nurses.

Implementation of the practice

- The vision to provide comprehensive health improvement of tribal population in the district was started with the available local funds.
- The project was a joint effort by the Directorate of Health Services (DHS), Govt of Chhattisgarh (GoCG) in collaboration with UNICEF and Public Health Foundation of India (PHFI), and the main agenda was to attract and retain specialised Human Resources (HR) for health in districts of Chhattisgarh.
- Filling of vacant posts of the health workforce to meet the shortage was targeted and hiring fresh medical graduates on contract and paying them a high salary to serve in remote areas was promoted.
- Lucrative salaries and packages were offered to fill the shortage of specialist doctors and medical officers.
- The district utilises the corpus of INR 40 Crores per annum to cater to the health needs.
- The administration trained the tribal women to become ASHA workers to participate in health system strengthening.
- Provisions of incentives like jobs for spouse, education for children were the key initiatives taken to support the health workforce.

Results of practice – outputs and outcomes

- Vacancy of health workforce has reduced drastically.

<table>
<thead>
<tr>
<th></th>
<th>2016-17</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sanctioned</td>
<td>Posted</td>
</tr>
<tr>
<td><strong>Doctors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBBS Doctors</td>
<td>44</td>
<td>15</td>
</tr>
<tr>
<td>Specialist</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td><strong>Allied Healthcare Staff</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Nurse</td>
<td>114</td>
<td>16</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Lab Technician</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>ANM</td>
<td>176</td>
<td>111</td>
</tr>
<tr>
<td>MPW</td>
<td>92</td>
<td>21</td>
</tr>
</tbody>
</table>

- Institutional deliveries increased to an average of more than 100 institutional deliveries per month at public health facilities.
- Involvement of tribal communities in healthcare delivery has increased.
- Health indicators have improved in the district.
Lessons learnt

- With the right strategies and actions, improving health services is possible even in remote and difficult areas.
- Provisions like jobs for spouse, education for children etc., can help in attracting a health workforce even in difficult areas.

Conclusion

Retaining doctors and paramedics in the Naxal affected belt and other difficult to reach areas, addressing the shortage of human resource in healthcare with minimum cost has been a public health contribution.

Further Readings

*Outsourcing of Recruitment and Management of Human Resources for Remote and Conflict areas in Chhattisgarh: A Case Study*
27. Electronic Health Record Sharing System in Hong Kong

Introduction

The Electronic Health Record Sharing System (eHRSS) is a Hong-Kong government-led, non-compulsory program launched in March 2016 for the sharing of health records of citizens in both public and private healthcare sectors in Hong Kong. The centralized repository contains details of the patient’s drug reactions, diagnosis, procedures, medications, immunisation etc. and is stored and shared across the health care providers with the patient’s consent.

Key Stakeholders

- GovHK
- Food and Health Bureau
- Department of Health
- Hospital Authority
- Office of the Government Chief Information Officer
- Office of the Privacy Commissioner for Personal Data

Beneficiaries

- Citizens of Hong-Kong
- Healthcare Providers

Implementation of the Practice

- The first stage of the eHR program was implemented from 2009 to 2015 as a sharing pilot called "Electronic Patient Record". In March 2016 eHRSS was launched.
- The data privacy and security of the eHRSS was given legal protection.
- An information infrastructure is provided for the healthcare providers via the eHRSS. With the consent of patients, the records can be retrieved by healthcare professionals.
- In stage one of eHRSS, they developed eHR sharing platform core infrastructure, the CMS Adaptation modules (CMS Adaptation modules are modules developed to facilitate private hospitals to connect to and interface with the eHRSS) and CMS On-ramp application (CMS On-ramp is a clinical management software with sharing capability developed under the eHR Programme. It is a turn-key system readily usable by private clinics.), as well as the standardisation and interfacing component

Results of the practice

eHRSS has helped promote public-private collaboration, facilitate the continuity of care and improve the quality and cost-effectiveness of healthcare services. According to the Hospital Authority (2018), more than 485,000 patients and 3,500 private healthcare professionals were enrolled in the PPI-ePR pilot up to January 2016.

Lessons learnt

The predominant challenges faced on the development of eHR are concerns over data privacy and cybersecurity of the database. As health-related data is highly personal and sensitive, patients generally wish to keep such data sharing on a need-to-know basis. To address this issue, following measures were introduced under PPI-ePR:

- Electronic Health Record Sharing System Ordinance became effective from 2 December 2015 for the establishment of the eHRSS. It provides a legal base to protect the system, data as well
as information (Privacy Commissioner for Personal Data, 2018).
- There are two options for voluntary registration: indefinite sharing consent and one-year sharing consent for patients. Consent is valid until revocation by the patient’s registration is being withdrawn or cancelled.
- Only patients’ data which are within the scope of sharable eHRs will be uploaded to the system and accessed by clinicians on a need-to-know basis.
- Some members have proposed the inclusion of a “safe deposit box” containing sensitive data in the system, in which patients can have control over access to data put in the box. While claiming that such functions might undermine the comprehensiveness of eHRSS, the Government is now exploring the feasibility of the proposal in the enhancement of eHRSS.

Conclusion

With the increasing ageing population and rising NCD burden in India, information systems like eHRSS will help in devising future health policies for the nation. Implementing electronic health records will further help in streamlining the referral and follow up processes in the country with strong gatekeeping.

Further reading


28. Digital Healthcare solutions- South Korea

Introduction

The Korean healthcare system is run by the Ministry of Health and Welfare (MoHW) and is funded by a compulsory National Health Insurance Scheme (NHIS) that covers 97% of the population. Government of Korea has implemented various measures aimed at expanding its digital health industry, i.e., Digital healthcare for Korea. Since 2017 digital healthcare has become a top priority in the country with increased investment and deregulation where appropriate to spur innovation. Digital health is one of the four pillars of the current administration’s plan for the fourth industrial revolution, with emphasis placed on areas such as healthcare related Big Data, Health IT (HIT) and artificial intelligence (AI). The Korean healthcare market majorly focuses on IT related solutions to be provided to the patients and as a result, they have recently started heavily investing in AI and Block-chain implementable solutions to create a total digital healthcare system that will enable sharing of accountable patient data via secure means in real-time. Korea envisions creating more IT enables solutions and customer centric products designed and customisable for different patients according to their need basis their medical records. In South Korea, 5G coverage is already relatively widespread which severs as a backbone for the digital health infrastructures, with approximately 80% population coverage, and demand for 5G services from consumers is higher than in most other countries.

Key Stakeholders

- **Government Institutions**
  - Provides regulations and developmental plan for other players

- **Medical Centers**
  - Korea’s Big 5 hospitals
  - Asan Medical Center, Severance Hospital, Samsung Medical Centre, eoul National University Hospital, Seoul St. Mary’s Hospital

- **Large Corporations**
  - Major Conglomerates in Digital Health
  - Samsung Electronics, LG Electronics, KT Corp, SK Telecom etc,

- **Start-ups**
  - Notable Digital Healthcare Start-ups/Scale-up
  - Insung Information, H3 Systems, Biospace, Vuno etc.

Implementation of the practice

Most of the digital health care projects in South Korea are based on the following digital areas:

<table>
<thead>
<tr>
<th>Digital areas</th>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health IT</td>
<td>Wide-spread prevalence of clinical IT systems, growing investment in patient monitoring accessories, EMR/EHR, etc; Growing trend of fully digitizing the hospital operations</td>
</tr>
<tr>
<td>Big Data</td>
<td>Strong government support for precision medicine &amp; genomics, AI-based health products and services, etc</td>
</tr>
<tr>
<td>Blockchain</td>
<td>Growing investment in Blockchain-based medical record database, disease prediction services, etc</td>
</tr>
<tr>
<td>Telemedicine</td>
<td>Currently blocked by regulation, but active pilot programs in patient monitoring systems, chronic disease management systems, etc;</td>
</tr>
</tbody>
</table>
The Key Feature and services in South Korean include:

1. Korean Health Insurance Review and Assessment Service (HIRA) is a value-based purchasing system that guarantees medical service quality improvement and cost appropriateness through efficient resource distribution. HIRA system creates synergistic effects by combining various healthcare purchasing activities and roles. It is based on 3 components:
   - Rule Making - Benefit standard (Treatment, Drug, Medical material) management,
   - Monitoring & Feedback – Medical claims & review, quality assessment, drug utilisation review, on-site investigation, medical fee verification,

2. Excellence of Korean Healthcare relies on its Advanced Health Technology (HT). Health Technology (HT) translates into healthy living for all people around the world with prevention, treatment and diagnosis of diseases, promotion of health, improvement in rehabilitation, and long-term care. HT comprises of 5 components – Biotech, Material Tech, Mechatronics, Nanotech and Information & Electronics.

3. EMR systems in Korea have sophisticated functionalities such as clinical decision support and warnings for drug-drug contradictions and age restrictions. Focus is given on Health Information exchange (HIE) rates between external organisations. Korea utilise Digital healthcare using IT to help distribute medical resources efficiently.

4. As part of the government policy to encourage hospitals to share information across healthcare providers, the Korean government announced a three-year project in 2018 called FEEDER-NET. The projects ultimatum is to create a sustainable bio-health big data ecosystem for research, industry and policy making.
5. South Korea uses Big data for medicine - The Korean Bio-Information Center (KOBIC) operates the National DNA Management System which can provide customized diagnosis and medical treatment for patients by integrating big data on various types of medical patient information. Desktop virtualisation, mobile EMR, dashboard, animation based patient education, mobile e-consent, smart patient guide, smart bedside station and some of wireless device & systems are used.

6. Paradigm shift in healthcare: Information & Communication Technology has been a game-changer in healthcare, shifting the focus from treatment to prevention and management.

7. Korea government’s direction for healthcare is supporting innovative growth in healthcare through DNA-P: Data – Network – Artificial Intelligence + Platform. Key Features:

- OUR (On-Time Universal Reference) hospital that stays with patients every step of the care pathway.
- AI-powered smart emergency medical system – securing golden hour during an emergency and seamless integration of the emergency system. AI-based precision medicine services “Dr. Answer” where AI doctor answers all questions and offers medical diagnosis and treatments using medical big data. Targeting 8 major diseases relating to cardio, cancer and brain, it provides solution like prevention, diagnosis, treatment and prognosis.
- Post, precision, personalised hospital information system (P-HIS) – balance between large and small hospitals with cloud service efficiency. P-HIS – Develop a cloud HIS for Precision medicine to apply/ deploy to primary/ secondary and tertiary hospitals across the country. Cloud HIS is integrated with extensive additional features and analytics services for P-HIS expandability.
- Intelligent SW Technology Development for medical data analysis – personalised treatment based on integrated data and activation of ICT industry (AI, Big Data).
- AI-based smart emergency medical system – develop a seamless integrated emergency medical system to secure patients’ golden hours and to reduce medical expenses.
Results of the practice

South Korea is a forerunner in all the health care performance metrics and the country try to improve those metrics with technology and innovation. Most of the performance metrics are better than US and many European countries. Few metrics as follows in 2017:

- Life expectancy at birth was 82.7 years
- Colorectal cancer survival rate at 72.8% - (OECD highest)
- Cervical cancer survival rate at 76.8% - (OECD 2nd highest)
- Overall cancer survival rate at 66.9%

Lesson Learnt

Data security and privacy become major concerns for Digital Health initiatives. Several laws and acts in Korea regulate the personal and medical information required to provide medical and healthcare services. Experts describe the regulations surrounding the sharing of patient data, which is important for the development of health IT and big data (AI, deep learning)-based technologies as well as precision medicine platforms, as being both complicated and vague. The guidelines surrounding deidentified data, as well, is unclear, and therefore leaves healthcare providers and companies at risk if they were to interpret the guidelines incorrectly. The current administration has committed to removing excessive regulations on the data industry to boost the growth of the sector, especially relating to the healthcare. The major data privacy regulations act in South Korea are

- Personal Information Protection Act (PIPA): Enacted on September 30, 2011, Korea’s Personal Information Protection Act (PIPA) is considered as one of the strictest data protection regimes in the world. According to the Act, any information that, if revealed, may considerably infringe on the data subject’s privacy, such as information related to an individual’s health or medical treatment, genetic profile, sexual orientation, criminal records, ideology and faith is considered sensitive data.
- Medical Services Act: The Medical Services Act regulates matters related to quality of medical services, requirements for hospitals and medical records as well as prohibition against disclosure of confidential patient information such as treatment options and drugs prescribed.

Conclusion

South Korea uses the vast amounts of health data to which it has access to assess the consumption of health services and improve efficiency and cost-effectiveness. When it comes to public health policy, notably a collaborative governing approach and rich data infrastructure, the country stays ways ahead than the rest of the world.

Further reading

29. Public Health Cadre in Tamil Nadu

Introduction

Public health interventions are delivered by different bottom - top level stakeholders lacking regulatory authority and powers to systematically enforce public health in the state (Parthasarathi & Sinha, 2016). In Tamil Nadu, there is a dedicated Public Health Cadre that works in administrative and management positions and manages the primary health services. A separate, systematically trained Cadre has helped handle stressful situations like a tsunami, etc.

Implementation of the practice

- A fresh medical graduate can join as Municipal Medical Officer (MMO) in the Cadre. Within 4 years of joining, the MMOs can also complete a diploma in public health (from Madras Medical College). MMOs with completion of diploma get regularized and depending on the vacancy can also be promoted to the Deputy Director level.

- Three categories of such posts are –
  a) district level officer to head primary health services
  b) principal of training institutes
  c) faculty in the community medicine department in medical colleges

Further, with an MD degree, career progression may include working in medical colleges or field services. The promotions can reach further up to the director through joint director and additional director posts (Parthasarathi & Sinha, 2016).

- There are also incentives for working in rural areas, such as:
  - Allowance for working in rural areas is INR 1000 per month.
  - Before the introduction of the NEET exam in the State, 50% preference was given to the candidate for working in rural areas for two years and they were also provided further preference for each additional year of work experience in rural areas (EY Primary Analysis: KIIIs, 2019).
  - Residential accommodation is provided to the medical officers in the majority of cases.

Results of practice

- **Better health outcomes without high expenditure on health** - Tamil Nadu without spending more than the national average on health has been the state with one of the best health indicators. Kerala also with better health outcomes, in contrast, has public health expenditure more than the national average and private expenditure more than twice of the national average (Kumar, Bothra, & Malrembam, 2016)

- **Disaster Management** - Cadre adopts annual pre-emptive planning for responding to potential natural disasters such as floods and cyclones. This ensures that when catastrophic disasters like the tsunami of 2004 strike, the state has the internal preparedness to deal with them (EY Primary Analysis: KIIIs, 2019).

Lessons learnt

- Separate components in the public health workforce can be helpful:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Health workforce categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Public health administrative and leadership posts (to be headed by doctors with public health training)</td>
</tr>
<tr>
<td></td>
<td>Technical staff (epidemiologists, entomologists, health informatics/surveillance officers)</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Trained public health management staff</td>
</tr>
<tr>
<td>4</td>
<td>Grassroot front-line public health workers (female and male multi-purpose workers)</td>
</tr>
</tbody>
</table>

- Doctors joining public service can be given a choice to either enter the clinical cadre (providing clinical care) or the public health cadre (with a predominant public health role).

- Doctors with pre-existing public health qualifications and/or providing in-service public health training to existing doctors should be included.

**Conclusion**

A public health management cadre/public health cadre maybe considered by the States for efficient management of public health system. This practice is replicable across States due to similar administrative structure and minimal restructuring at block/district/state level required.

**Further Readings**

1. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5112973/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5112973/)
2. [https://apps.who.int/iris/bitstream/handle/10665/329567/seajph2018v7n1p29.pdf](https://apps.who.int/iris/bitstream/handle/10665/329567/seajph2018v7n1p29.pdf)
30. Kerala Institute of Local Administration (KILA)

Introduction

Kerala Institute of Local Administration (KILA) was established in 1990 as an autonomous institution at Thrissur with several campuses in Kerala. KILA is registered under the Travancore-Cochin Literary, scientific and charitable society Act 1995 and supported by the Government of Kerala. The main objective of the institute includes strengthening decentralization and local governance, establishment of training and research centres, conducting training programs for the local government officials. KILA provides support in training, research and consultancy for local self-governing institutions (LSGIs). The institute accelerates the socio-economic development of the State through the strengthening of LSGIs.

Key Stakeholders

- Government of Kerala
- Organizational Structure of KILA- The institute has been headed by the Director and supported by staff who together form part of different organizational committees.

Implementation of the practice

- KILA functions for promoting decentralized governance in both rural and urban areas.
- Organizational Structure of KILA- The institute has been headed by the Director and supported by staff who together form part of different organizational committees.
- The organizational committees are
  - Training Planning & Monitoring Committee
  - Journal Committee
  - Research and Internship Committee
  - Grievance Redressal Committee
  - Help Desk Advisory Committee
- KILA focuses on the following core areas to strengthen the LSGIs:

<table>
<thead>
<tr>
<th>Participatory planning</th>
<th>Local &amp; Urban Governance and Development</th>
<th>Gender Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Economic Development and Livelihood Promotion</td>
<td>Poverty Management</td>
<td>Child Rights Governance</td>
</tr>
<tr>
<td>Natural Resource Management and Watershed Development</td>
<td>Financial Management</td>
<td>Food Security and Sustainable Agricultural Development</td>
</tr>
<tr>
<td>Good Governance and Social Accountability</td>
<td>Human Development</td>
<td>Training Skills Development</td>
</tr>
</tbody>
</table>

- KILA has been actively engaged in capacity building programs on local governance and decentralization. Training programs offered by KILA are:
  - Trainers Training Program
  - Panchayat to Panchayat Program
  - Certificate Course for Elected Representatives
  - National Level Course on Decentralized Governance
  - International Course on Decentralization
  - Decentralized Training for Local Government Functionaries
• Off-Campus Training Program-The institute also conducts research studies and publishes reports and working papers on decentralization and local governance. The institute disseminates information to the public mainly through its publications.

• KILA also promotes training of interns on video documentation using smart phones. The training aims to train interns who can further train panchayats using these video documentations.

Results of the practice

• Involving all stakeholders in the discussion including the elected heads, district-level officials, representatives of major educational/research institutions, NGOs etc.
• Training support provided in development sectors like health, education, agriculture etc.
• 1,041 trainings conducted in 2019-20 with ~40,300 participants.

Lessons Learnt

• Robust training and dissemination of information for decentralised local planning contributes towards smooth and efficient functioning.
• Similar curriculum maybe developed for PRI members and other LSGIs by centre to be taken up by States.
• Handholding support should be provided wherever required.

Conclusion

Kerala has succeeded to a great extent in achieving local development through decentralized planning with the trainings and support provided through KILA, the implementation of health programs has been found to be better in the State which is reflected in the overall health outcomes. The LSGIs using these trainings are further developing innovative models to address problems like waste disposal, solid waste management, employment generation etc.

Further Readings


iii. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5294441/
31. Integrated Hospital Sanitation Monitoring System Dashboard – Andhra Pradesh

Introduction

In this project Government of AP has developed a web-based Hospital Sanitation Monitoring System Dashboard (http://aphospitalsanitation.com). This application tracks sanitation, security and pest & rodent control services outsourced to different vendors on daily basis with scientific check points. As a result of this tracking system, patient satisfaction at public health facilities has increased.

Key Stakeholders

- Ministry of Health and Family Welfare (AP)
- Vendors for Sanitation, Security, Pest control
- Andhra Pradesh Quality Assurance Division
- Hospital Administrators and Superintendents
- Patients

Implementation of the practice

Government of AP has formulated and approved the New Scientific Sanitation Policy-2015 largely based on ‘Swachhata guidelines for public health facilities’ for better implementation of sanitation in government hospitals wherein sanitation, security, pest & rodent control services would be implemented by different service providers for better implementation of the services to create a visible impact in maintaining health facilities up to the satisfaction of the patients. In order to manage, track and monitor three different service providers, a web-based application has been developed, reviving the monitoring process.

- HSMS Application developed by Andhra Pradesh Quality Assurance Division is meant for improving efficiency and efficacy by creating a real time monitoring tool. The monitoring items have been grouped within the ten parameters according to the weightage.
- Each monitoring items further has specific measurable elements. These measurable elements are checked in each department of a health facility through specific checkpoints.
- All Checkpoints for monitoring items are collated, and together they form an assessment tool called ‘Checklist’. Scored/ filled-in Checklists would generate scores reflecting the percentage of performance along with hospital average score (Sanitation, Security, P&R control)
- Each facility under Scientific Sanitation Policy-2015 should perform online assessment thrice a day in different shifts by
  - Medical Superintendent
  - RMO
  - Hospital Administrator /Nursing Superintendent /Head Nurse.
- Scores will be reflected only after a minimum of 2 Assessments of each service
- Scores entered by Facilities will be reflected on the CM COREDASH BOARD along with the facility photographs.
Measuring Metrics:

- Monitoring items identified for the three different services as follows:

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Monitoring Item</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cleanliness of Toilets / Urinals / Wash basins</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Cleanliness of Wards</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Cleanliness of Labour Room / OT / Emergency / OP / Lab</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Cleanliness of Other Areas</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Cleanliness of Drainage and Sewerage</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Garbage Disposal</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Cleanliness of open areas</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Attendance and Uniform</td>
<td>20</td>
</tr>
<tr>
<td>9</td>
<td>Consumables</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S.No</th>
<th>Monitoring Item</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attendance of the Staff</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>Uniform of the Staff</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Control of Stray Animals</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Crowd Control and Systematic Parking of Vehicles</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Complaints from Public</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Regular Trainings to Staff</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S.N.o</th>
<th>Monitoring Item</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attendance &amp; Uniform of the Staff</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Control of Pest &amp; Rodents</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Dis-infestation Treatment as per periodicity</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Recommended Preventive measure for re-infestation</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Usage of Reputed Chemical/ Pesticides Reports</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Evidence of any pest and knowledge of infestation associated with the neighboring premises which may affect the hospital (complaints from public)</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>Regular Trainings to Staff</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td>100</td>
</tr>
</tbody>
</table>

- Data is collected on a daily basis on the assessment scorecard for the above-mentioned monitoring items through the web-based application.

Results of the practice:

- Public Perception and Patient satisfaction towards Hospital sanitation, security services have increased. (as per Patient satisfaction Survey in Likert Scale).

<table>
<thead>
<tr>
<th>65 Hospitals</th>
<th>23400 Patients Feedback</th>
<th>2% Poor</th>
<th>4% Fair</th>
<th>18% Good</th>
<th>68% Very Good</th>
<th>8% Excellent</th>
</tr>
</thead>
</table>

- Reduced hospital acquired infection rate.
- Increased footfalls (Increased No. of public utilising Public Health Services).
- Hospital scores are kept in the public domain in order to maintain transparency accountability and to maintain the integrity of the program.

Lesson Learnt:

Healthcare workers adapting to this new monitoring application was the major hurdle in this
project. The resistance to adapt to technology was reduced through training programs for healthcare workers.

**Conclusion:**

HSMS is implemented in 33 District Medical Education (DME), 11 Teaching Hospitals, 11 Specialty Hospitals, 11 Medical Colleges & Hostels, 7 DH (District Hospital), 33 AH (Area Hospital), 3MCH (Mother & Child Hospital) and 2CHCs (Community Health Centres) to improve the hospital sanitation and reduce hospital acquired infection rate.

**Further reading**

http://www.nhmmp.gov.in/WebContent/IndoreSummit/Day%203/11%20Core%20dashBoard%20Integrated%20Hospital%20sanitation%20Monitoring%20System%20in%20Andhra%20Pradesh%20Final.pptx
32. Patient Safety & Quality Improvement through Inter-Departmental Convergence under Swachh Bharat Abhiyan – Uttar Pradesh

Introduction:

The safety and quality of services provided by the public health facilities are interconnected with many other departmental activities apart from the health department. It is crucial to identify the critical bottlenecks that hinder collaboration. It is essential to streamline those processes and make the interdepartmental process self-driven and sustainable.

Key Stakeholders

- Health and Family Welfare Department UP
- Police
- Department of Excise
- Ministry of Urban Department
- Municipal corporation
- Disaster management department
- Police and Fire services
- Department of Medical education
- Public Works department
- Horticulture department
- Panchayati Raj institutions

Implementation of the practice

The key strategies followed on the initiative are as follows:

Bottlenecks with concerned departments found are listed below:

- Police and Fire services – Infrequent on-site hands-on trainings provided in a hospital
- Disaster Management department – Trainings not provided in health facilities
- Municipal corporations - Infrequent audits and check-ups
- Panchayati Raj institutions – Poor engagements with health-related issues. Social audits not done
- Horticulture department – No plans for maintenance of planted trees and gardens and long processing time for the request
- Public Works departments – Delayed response to requests for budgetary estimates
- Police – Inadequate support from home guards in facilities and inadequate crowd management support during emergencies and disaster.
- Ministry of Urban Department – Lack of awareness for compost pit for biodegradable waste
- Department of Excise – Delay in issue of licence for storage of spirit
- Department of Medical education – Poor emphasis on preventive aspects of medicine

Meeting convened by PS Health with secretaries of all concerned departments and commitment to change is secured from senior officials. Directives to eliminate bottlenecks were issued to district officials. Process improvements were monitored continuously.
Results

This project is considered as a first step for improving the inter-departmental convergence. This convergence initiative enables the departments to share resources, such as finances, knowledge, and people. Also, collaborative effort creates mutual benefits for both departments like reduced cost, optimization processes, improved time efficiency, elimination of redundant activities etc.

Lessons Learnt

Involvement of many stakeholders makes the monitoring process and accountability of the initiative very complicated. Meetings have been held only at senior official level; all major stakeholders of the departments must be included to identify impediments in inter-departmental process. Conflicts between the departments might arise while defining the responsibility of the activities will fail to deliver to their full potential of the initiative.

Conclusion

The Standard Operating Procedures with the assurance of concerned departments will help in further improving the inter-departmental collaborative activities. Detailed sequence activities with clear roles and responsibilities, including time timeline for completion, will aid the process more self-driven and sustainable.