



RESEARCH ARTICLE

NO COST ELECTRONIC HEALTH RECORD (EHR); MINIMAL HEALTH RECORDS (MHR) UNDER CMCHISTN IN TAMIL NADU

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ABSTRACT

Background: The Electronic Health Record known as EHR is the essential document to ensure quality treatment in time to the beneficiary. Normally implementation of EHR involves huge expenditure though it is need of the hour. Our model of EHR known as Minimal Health Record (MHR) under the Chief Minister's Comprehensive Health Insurance Scheme (CMCHISTN) is being implemented without any additional financial support is being deliberated here.

Objectives: Creation and sustaining the EHR model with minimal effort and expenditure using the available information and resources.

Methods: The information available in the discharge summary given by the hospitals as a part of claim documents is being used to develop our no-cost EHR i.e. Minimal Health Record (MHR).

Results and Conclusion: Our EHR that is called Minimal Health Record (MHR) under CMCHISTN is possible without any additional effort and expenditure, where the individual service provider is generating it as a part of service provision, regulated by standards of the Government and the data is made available to the beneficiary.

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INTRODUCTION

Electronic health record (EHR) is the starting point for the ambitious digital health environment in any States or Countries. At the global level, health care is driven by the strong information technology including clinical decision support system and data analytics. The availability of timely health report helps in delivering comprehensive health care. The EHR with standardized, structured and integrated details of the beneficiary is the need of hour. The EHR model in Tamil Nadu under Chief Minister's Comprehensive Health Insurance Scheme (CMCHISTN) known as Minimal Health Record (MHR), wherein EHR is created with no cost is being discussed here.

MATERIALS AND METHODS

EHR is a digital version of the patient records available instantly for the authorized users at the same time maintaining the confidentiality. Electronic version of medical records ensures that it is portable and shared across health care organizations including diagnostic and supportive services. The timely availability of details improves the quality of treatment and minimizes the medical errors.

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It also empowers the patient in decision-making process and facilitates the public health administrators in disease control and prevention. Further EHR ensures coordination between various levels of care like doctors, nurses, and technicians etc. including administrative units and increases the efficiency of the health system. The last two decades have witnessed a series of various e-health initiatives launched by developed countries. Canada launched an initiative in 2001 to modernize its ICT infrastructure in healthcare in the name of Canada Health infoway and has EHR of 94.6% of Canadians as per its annual report 2016-17 (<https://www.infoway-inforoute.ca/en/component/edocman/3350-annual-report-2016-2017/view-document?Itemid=101>). Last, in UK electronic health record in the name of summary Care Record (SCR) under NHS is available for 96% of UK population (<https://digital.nhs.uk/summary-care-records>). Similar way e health card is available in Germany and South Korea. Further some countries are adopting the open HER also. As per as India is concerned, it is predominantly paper based with minimal digital information that too not standardized and exist in silos. Further states are at different levels of progress in eHealth sector. In Tamil Nadu already implemented Health Management Information System through Tamil Nadu Health System Project supported by World Bank (<http://projects.worldbank.org/P075058/tamil-nadu-health-systems-project?lang=en>). The National Health Policy 2017 of Government of India, among the other things proposed for National Digital Health Authority (NDHA),

Table 1. Essential Requirements and availability under Cmchistn for sustainability of EHR /MHR

S.No	Required facilities	Availability under CMCHISTN
1	Unique identifier	URN number in the family insurance smart card with link to individual Aadhar number
2	Policy & regulations	As per point 7 in section 23 of tender and MOU it is enforceable (www.cmchistn.com) which says, "As far as possible a minimal essential health record to be created and maintained for every beneficiary, with a provision to see their own medical records without the option for editing. There should be mechanism for periodical update of this Health Information Record".
3	Standards & interoperability	The minimum standards are prescribed and accepted by providers and it is interoperable between the providers. Need to ensure standard coding in future
4	Privacy and confidentiality	Access only with URN and OTP, which is under the beneficiary control.
5	ICT infrastructure	Existing CMCHISTN claims management portal, is able to process and store the EHR with minimal revisions in the IT structure which is build on the open source format
6	Sustainable	It is part of claim processing with limited additional work and financial expenditure. Since EHR is linked to claims payments sustainability is assured

NAME OF THE HOSPITAL, PLACE					
DISCHARGE SUMMARY					
NAME:	AGE:	SEX:	HOSPITAL NO:	IP NO:	DOA:
ADDRESS:	AADHAAR NO:	URN NO:			DOS:
CONSULTANT:	DEPARTMENT:	UNIT:			DOD:
FINAL DIAGNOSIS:					ICD 10:
PROCEDURE DONE:					
HISTORY OF PRESENT ILLNESS:					
PAST HISTORY:					
GENERAL EXAMINATION:			LOCAL EXAMINATION:		
INVESTIGATIONS:					
TREATMENT GIVEN:					
DISCHARGE ADVICE:			DIETARY ADVICE:		
NEXT REVIEW DATE:			IN CASE OF EMERGENCY: PLEASE CONTACT		
DATE:			REPORT PREPARED BY:		
TIME:			COUNTER SIGNED BY:		

Picture 1. Model template for Electronic Health Record under CMCHISTN- Minimal Health Record (MHR)

National Health Information Network (NHIN) along with disease registries and surveillance systems. Further Government of India already notified EHR standards⁴. In this scenario the implementation of EHR is critical.

RESULTS AND DISCUSSION

In this background we proposed to introduce EHR under CMCHISTN incorporating the requirements discussed above and at the same time without any additional substantial financial expenditure to the state. The Cmchistn is the health insurance scheme of Government of Tamil Nadu for the

residents of the state where in around 15 million families are enrolled and eligible for 1027 medical interventions mainly covering tertiary health care. Further details of the scheme is available in the website⁵. The Government pays the entire premium and every eligible family is provided with annual sum insurance up to Rs 2 lakh. Each family is provided with a smart card with Unique Reference Number (URN) and we are in the process of linking this with national unique identification number i.e. Aadhar.

Our EHR model was proposed and centered on

- Continuity of care is important in rendering best treatment to the beneficiary.

Chief minister's comprehensive health insurance scheme Beneficiary - Electronic Health Record /
பயனாளியின் குறைந்தபட்ச மின்னணு மருத்துவ பதிவேடுகள்

Enter your Smart Card URN Number /
தயவு செய்து உங்கள் தனிப்பட்ட அடையாள எண்ணை பதிவு செய்யுங்கள்

Enter your Mobile Number/
தயவு செய்து உங்கள் கைப்பேசி எண்ணை பதிவு செய்யுங்கள்

Enter Captcha Image

Enter your OTP Number

View / பார்க்க Reset / அழிக்க

REFNO	Patient Name	Admission Date	Discharge Date	Hospital Name	Package Name	Document
6H_1902910942484	Devasingh	13/04/2017	14/04/2017	Bensam Hospital, Kanyakumari TN.	TN0702 : Maintenance Haemodialysis For CRF	Download
6H_1902911232108	Devasingh	11/05/2017	12/05/2017	Bensam Hospital, Kanyakumari TN.	CM0513 : MAINTANENCE HEMODIALYSIS FOR CRF (8 DIALYSIS) INCLUDING SEROPOSITIVE	Download
6H_1902911497448	Devasingh	05/06/2017	06/06/2017	Bensam Hospital, Kanyakumari TN.	CM0513 : MAINTANENCE HEMODIALYSIS FOR CRF (8 DIALYSIS) INCLUDING SEROPOSITIVE	Download
6H_1902911740078	DEYA SINGH	27/06/2017	28/06/2017	Bensam Hospital, Kanyakumari TN.	CM0513 : MAINTANENCE HEMODIALYSIS FOR CRF (8 DIALYSIS) INCLUDING SEROPOSITIVE	Download

Picture 2. Process of MHR/EHR generation under Cmchistn

- This is possible only if there is seamless information sharing among the health care providers particularly between Government and private hospitals.
- There is absolute need for regulatory mechanism to ensure meaningful, transparent, validated health data capture and portable across the health care providers, without any holding back by the provider or vendor.
- The need for data security, patient confidentiality and consent must be ensured.
- There is limited interest from the hospitals to invest in health informatics technology particularly when it is going to be used by everyone.
- Suitable manpower constraints especially smaller hospitals.
- Minimum essential data set of information is ideal to start with which can be expanded on later date according the requirements.
- The data sharing should be ensured through financial control mechanism available under claims payment and by enforcing through Clinical Establishments (Registration and Regulation) Act 2010.
- The surveillance/ notifications of diseases under public health act should be used as an additional tool to enforce EHR.
- It should be implemented without any additional data entry work to the health worker or doctor and use the available data to the extent possible.

In the Cmchistn, claim documents are submitted in the online portal by the hospitals for the payment in the structured format. The discharge summary given by the hospitals is part of the claim documents and using the information available in the discharge summary we decided to develop our no cost EHR i.e. Minimal Health Record (MHR). Accordingly the hospitals are instructed as per the existing agreement to upload discharge summary in the prescribed format (Picture 1). The Minimal Health Record (MHR) which is the EHR under

Cmchistn, has demographic identifiers and minimum information required like clinical symptoms and provisional diagnosis, diagnostic tests done, treatment given, follow up advise etc. with sign and seal of the treating doctor. The process of creating EHR is deliberately kept simple to ensure maximum usage where patient can able to view/ download his/her Medical Records as EHR/MHR anytime by using smart card number (URN). The patient can generate their EHRs through our Website (<http://www.cmchistn.com/>) by entering Smart Card Number (URN) and one time password generated send to the given number. The number of EHRs generated/created in the last 6 months from May 2017 is 2,59,298 and out of this 281 beneficiaries have accessed their records and around 2500 records are getting added per day. The sustainability of this EHR / MHR model is critical and it is ensured through existing facilities available under CMCHISTN which are listed in Table 1. To conclude the EHRs created empowers the beneficiary and will improve service effectiveness in future. This to confirm again is that, the objective of this article is mainly ensure availability of the one electronic health record with limited additional resources and not measuring the effectiveness of the EHRs which is already known. So far nearly 2.5 lakh records created and around 300 beneficiaries actually it.

Conclusion

Based on the above discussions it is clear that creating an EHR that is called Minimal Health Record (MHR) under CMCHISTN is possible without any additional effort and expenditure. Where the individual service provider is generating it as a part of service provision, regulated by standards of the Government and the data is made available to the beneficiary at the any time, which can be shared with his or her approval with provision to add all other health related details on later date on need basis. It is obvious that IT infrastructure for EHR is a huge investment and no single participant will be interested in financing this system, which is

beneficial to all. Hence it is it is advisable to have open platform preferably developed and maintained by private organizations with expertise funded by Government where every service provider may be authorized to access suitably.

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