



GOVERNMENT OF KARNATAKA

**EVALUATION STUDY ON USAGE OF THE E-HOSPITAL
SOFTWARE DEVELOPED BY NIC, KARNATAKA**



ಕರ್ನಾಟಕ ಮೌಲ್ಯಮಾಪನ ಪ್ರಾಧಿಕಾರ
Karnataka Evaluation Authority

KARNATAKA EVALUATION AUTHORITY

DEPARTMENT OF PLANNING, PROGRAMME MONITORING AND STATISTICS

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Executive Summary

An evaluation study on the Usage of the e-hospital software developed by NIC, Karnataka was undertaken in three hospitals of Bangalore. The study employed multiple questionnaires, interviews and focus group discussions information to pertaining to hardware, software, willingness to use, perceived ease of use, actual use, implementation challenges, and beneficiary experience was captured and analyzed.

The major findings of this study are as follows:

Provider (Doctors') Responses

- Majority of the doctors perceive e-hospital system causes disruption in the patient care since the volume overload does not permit them to enter the required clinical care details in the OPD
- Non availability of computers at the point of care is another impediment for the successful utilization of the system
- Doctors are of the opinion that if there are simpler ways of capturing the clinical components like tablet based written OCR or transcription of the data by data entry operators then the system can be helpful.

Data Entry Outsourced Vendor:

- Third party vendor is responsible for allotting resources across the technology and data operators end.
- Minimal prior training is provided to the resources deployed for the tasks and they are seldom monitored/documentated for transition.
- Delayed salary payments are responsible for high attrition of staff especially data operators.
- Data operators require detailed training and capacity building to optimize the usage of the systems.

Other Hardware and software issues

- Improved or upgraded desktops are required to overcome redundancy. Restricted access and permissions to oversee the smooth flow of the system.
- Minimal opportunity at the local level to modify the critical workflow.
- Program manager to monitor usage of the e-Hospital module to its full extent and guide doctors/data entry operators etc. in case of any need.
- The lab reports and their dispatch in a more systematic and user friendly interface. Presently, the data entry operators are manually entering the records once they are validated.
- The upgrading of all the lab and other related systems to keep up with the patient input.

Training and capacity of key personnel

- Inadequacy of training and supportive IT systems are also adding to the implementation challenges for the clinical modules and other systems
- Data entry operators require hand holding and periodic training
- Call centre support for minor issues required
- Create short video training modules for use in training of new staff as well as reinforcement to existing staff.

Patients / Attendants

- Awareness is low across the spectrum and hence obtaining valid responses to perceived benefits was difficult.
- Patients are coming in direct contact with the e-hospital solutions during the registration and discharge. (Partially lab report collection)
- Waiting time at the registration is considerably long due to high loads.
- Discharge summary needs to be validated by competent authorities and the delay is being reported in all the hospitals due to inadequate manpower for the same (which the patients are perceiving as inefficiency of the system).

Recommendations:

1. Short Term Recommendations

- Software needs to be optimized for the local needs
- Coordination and presence of local help centre would smoothen the problem resolution and ease of use of software
- Training and capacity building of all major users required
- Appropriate Hardware enhancements and introduction of Tablets and Smart digital PEN inputs would enhance uptake of usage by doctors
- Mobile ORS is operational and may be publicized to book advance appointments. .

2. Long term Recommendations

a. To reduce waiting time at the registration counters

Provision of token machines where the patients or caretakers can generate time-stamped tokens for appointments.

Decentralize registration and distribute it to major areas of the hospital. For example, all maternal and child cases can be registered at a different location, and general outpatient cases can be registered at a different location. Differential registration would also help to segregate the infectious and non-infectious patients, during registration and avoid cross-contamination.

b. To reduce the total consultation time with senior consultants

Owing to large caseloads, senior consultants often find very little time to spend with the patients. Most doctors complain that they are understaffed to serve patient needs. Junior residents and/or qualified nurses can Pre-screen the patients by recording anthropometry, vital parameters, personal history, drug history, blood pressure, etc. Pre-screening would help the senior consultants to focus on clinical diagnosis and treatment.

c. Use of Mobile applications for specific components

Recent advances in mobile computing and improvement in both hardware and software have enabled complex activities to be accomplished using mobile phones. The development of mobile applications for user-specific functions will help doctors to quickly access the critical information and avoid re-typing of patient data. Capturing of crucial information for patient care such as provisional diagnosis, lab tests, and pharmacological treatment would help in minimizing the amount of data entry.

The use of mobile applications would reduce the need for costly hardware and the supportive data entry workforce required for patient data capture.

The capture of handwritten notes using an electronic pen (stylus) in pre-structured mobile forms can be explored to avoid data entry of critical information.

d. To improve in-patient record maintenance and discharge summary

A daily capture of critical progress and treatment notes for each patient in the structured format helps in building the in-patient record. The integration of the lab reports and consumables would help in adding the care components to the patient records. Upon discharge, the concerned doctor needs to add the discharge advice and generate the summary rather than create the entire in-patient the course of the patient.

Customization of the software to meet the local needs and local process

Each hospital has a unique system and method of functioning. In this context, having a generic solution often poses challenges for the efficient and effective operation of the hospitals. Hence before installation, it is essential to understand the workflow and requirements of the individual hospitals and customize the software with minimal changes to suit the needs.

Changes in human resources also necessitate the modification of the reporting templates and details. Having local software administrators capable of making these minor changes would help in maintaining the smooth operations of the software.

e. Ensure inter-operability among the different solutions provided so that the e-health systems from different programs are integrated on a common platform.