Reducing EMR implementation cost and improving adoption using eLearning for training and change management.

Dr Saurabh Bhatia, MBBS(AFMC), MS, FCR
Managing Director, TSML Solutions Pvt Ltd, Pune
S.Bhatia@TSMLS.org; +91-917-5522-499.
Life Member: IAMI, MCI, KWMPA
Executive Editor: MINI, IAMI Newsletter

Abstract

Introduction

Going live after a successful implementation of an HIS or EMR in a big hospital is the beginning of the problem for the clinical adoption, training and change management team.

Problem statement

We faced the issue of training a massive employee user base for a quaternary care hospital. The total number of users to be trained were 4000, while the adoption period was about 2 months; 1/5th the required time.

Cost of conventional training

The cost of conventional training worked out to be about 5.28 Million Indian Rupees (52.8 Lakhs).

Cost of eLearning based training

In the interest of time and money, we switched to eLearning training modules, allowing everyone a period of 45 days, and learning it simultaneously. The cost of training came down to 14.5 Lakh Rupees, and the training was covered in a period of 2 months.

Total saving in terms of implementation

With switching almost the entire training to automated online training modules, we saved not only over 38 Lakh rupees in the implementation effort, but also saved the hospital from what otherwise could have been a certain failure of adoption due to the 10 month long training and adoption cycle.

Introduction

Going live after a successful implementation of an HIS or EMR in a big hospital is a challenging task. While initial challenges appear in the form of accurate requirement gathering, correct product identification, gathering configuration data and its configuration, the day the configuration team declares the EMR fit to go live, is the beginning of the problem for the clinical adoption, training and change management team.

Assumptions for this paper

For this paper, we used our experience of implementing a solution for two quaternary care hospitals of Delhi. The bed strength was around 900 then. The number of personnel to be trained were about 2400 nurses, 300 in house doctors, 600 visiting doctors, and an additional staff of about 600 employees comprising of pharmacy, store keepers, front-office, quality department, secretaries and clerical staff. The total people to be trained were estimated to be about 4000.

Training logistics

After preparing the training material and running a short pilot on a mixed group, we came to the conclusion that about 8 hours of training was required by every individual. The traditional method to train is to make a set of about 20 people sit in a computer lab, with 2 instructors who will train them. Further, the training was to be done in 4 periods of 2 hours each, because it was expected that new learners cannot focus at a stretch for 8 hours to learn effectively.

Problem statement

This approach posed following problems, as communicated by hospitals:

1. Different set of employees needed different combination of module trainings. It was thus difficult to merely create a mathematical group of 20 trainees, but needed a group of 20 trainees with similar needs. This posed a major problem for HR to create such batches, especially in departments where strengths were so low that the department had only 8 people out of which, more than 2 could never be spared.
2. Batch making was further complicated by different shift of duties of various personnel falling in the same batch.
3. The 2400 nurses who needed training could not be spared during duty hours. So they would have to be allocated before or after duty hours. This meant abnormal timings for training.
4. All doctors will not be able to attend as scheduled because of emergency and OT schedules and batches of 20 were seen impossible most of the time.
5. Visiting doctors visit once or twice in a week and it was impossible to force them to attend pre-planned training sessions. They needed to be trained as and when they visited, even if this meant splitting their training over two months.
6. The hospital had only one computer lab with 6 computers but were willing to upgrade it to 10 computers. But another 10 computer lab had to be raised or outsourced, perhaps at a different location.
7. The total training was for 200 batches at a conservative estimate, and was expected to spill over 250 batches, utilizing 16-20 students, of 8 hours each, totaling 2000 hrs of class room training. This meant 250 working days of training which meant 10 months to train the entire workforce, if trainings were conducted for 8 hrs everyday, 25 days a month.
8. We proposed employing double the number of trainers and conduct trainings for 16 hrs per day, which would bring down training time to about 5 months. However even this was rejected as too long for adoption training and hospital anyway expressed inability to provide 40 personnel everyday for exclusive training time.
9. The nurses had an attrition rate of about 25% which meant that about 600 new nurses will have to be trained every year subsequently, practically meaning about 2-3 new nurse trainees will trickle in every day. For the remaining force, the attrition was estimated at 8% which meant about 125 new trainees every year. In total, it could be assumed that about 750 additional trainees will need to be trained over the year which meant additional 350 hrs of training, reaching a total of about 2350 hrs of training, roughly about 11 months.

Cost of training

To calculate the cost of training, we have projected the cost of only those factors here which changed when training methodology was altered. For the factors which remained consistent e.g. 1 computer per person to learn the EMR, we have ignored the costs in this estimate. All costs in indian rupees.

A. Cost of nurses' training time: Average salary was considered at about 18,000 p.m., as lesser experienced nurses predominated; which was about 600 per day. Training a total of 3000 nurses would cost INR **18,00,000**
B. Cost of doctors' training time: Average salary was taken around INR 2000 per day, for 900 doctors, was costing the hospital about INR **18,00,000**
C. Cost of training other personnel: it was difficult to find an average salary as this was a motley group but we settled at an average of about INR 650 per day totaling to INR **400,000** for 600 employees.
D. Cost of trainers: trainers costed about 200 per hour. Since we needed 2 trainers for each session, we needed to pay about 4000 training hours, totaling **800,000**
E. Cost of additional 14 computers, networking and space: **3,80,000 and 2,00,000 respectively.**

Cost of stationary and other training material, electricity, installation of training server etc have been ignored since they were small in comparison to other costs, and were not affected significantly by change of training method.
The total cost of training thus worked out to about Rs. 52.8 lakhs

Changes that happened with eLearning

With impossible logistics stacked against us, we changed our training approach in the following way:-

1. We implemented an open-source Learning Management System (LMS) on the hospital network itself, which behaved like a website within campus. The employees could also login using internet, (VPN) when permitted. It was thus possible to access this training material from any computer within hospital premises, and sometimes from home also.
   1.1. All the training material was uploaded there.
   1.2. Role based courses were created for each role e.g. Nurse, doctor, accounts etc.
   1.3. Each user was asked to self-register and self-enroll in courses.

1.4. Each course had training material, practice sessions, mock and final tests

1.5. Each candidate was awarded a certificate of passing the modules that their role demanded.

2. It was decided that classroom training would be given to each person for not more than 2 hours.

3. First 30 minutes to teach how to utilize eLearning for training. Next 90 minutes, split over 2 sessions for doubt clearing and advanced questions. The second session was a *free for all* doubt clearing session

4. Strategically identified key people, which were more or less one person per department were trained for a longer duration to become training champions

5. Nurses and doctors were each given a timeline of 45 days from enrollment to complete their training using bits and pieces of free time that they get in the day or night duty.

6. *Free for all* doubt clearing sessions were conducted where learners could walk in and ask queries instead of structured batches with mandatory attendance.

7. This was made a mandatory part of all new joinees' induction training.

8. The users were not allowed on the main EMR till they had not obtained the certificate from LMS.

Changes in the cost of training

As a result of this change, the total training was completed in two months. The need for formal classroom training was brought down to one fourth the number of hours with just 30% computers. The actual expenses that occurred due to this different strategy are as follows:

Cost of nurses training: 4.5 lakhs (¼ of traditional model)

Cost of doctors' training : 4.5 lakhs (¼ of traditional model)

Cost of training other personnel: 1.5 lakhs (2/5th of traditional model)

Cost of trainers: 2 lakhs ((¼ of traditional model)

Cost of additional computers: Nil

Additional cost of web-material building: Nothing extra was built. We used existing Powerpoint or Word files.

Additional expense for LMS configuration: 2 lakhs

Total training expense: about 14.5 lakhs

Conclusion

Implementation of eLearning portal in a hospital successfully brought about the same skill set and expertise in employees, within 25% time and at only 28% the projected cost; **a saving of over 38 Lakhs in this case.**