International Institute of Health Management Research (IIHMR)
NEW DELHI
HIT 707 Healthcare Information System Design
Batch- 2018- 2020
Term Exam

TOTAL TIME: 3.0 HOURS **MAXIMUM MARKS: 70**

Read the following case and answer the questions provided.

Background

Clinical pathways – also known as integrated care pathways, coordinated care pathways, care maps or anticipated recovery pathways – are task-orientated care plans that detail essential steps in the care of patients with a specific clinical problem and describe a patient's expected clinical course. Clinical pathways are a result of adapting documents used in industrial quality management known as Standard Operating Procedures that aims to improve efficiency in the use of resources and task completion within a set time. Clinical pathways offer a structured approach in developing and implementing local protocols of care, based on evidence-based clinical guidelines. Clinical pathways differ from clinical guidelines and protocols, as they are a set of practical treatment processes detailing how to implement clinical guidelines, including both clinical guidelines and non-clinical activities. They are used by a multidisciplinary team and for coordination of care. Physicians use clinical pathways to give appropriate instructions on a daily basis. The nurses review the orders and confirm their accomplishment. Other care team members such as the therapist, nutritionist, interns and clerks carry out all the orders in the pathway pertaining to them. Patients' progress in the pathway will be reviewed and nurses and physicians will record the variances. The variance will be monitored and analyzed by the pathway team (e.g., pathway committee) to discover the areas for improvement. This will help in increasing outcome consistencies. Pathways thus promote continuous improvement and reliable care. In addition, clinical pathways help in pursuing the goals of improving patient care quality, maximizing the efficient use of resources and supporting clinical effectiveness of health-care staff.

The Hospital of General Staff Department (HGSD) of the People's Liberation Army is one of the largest hospitals in China, with 30 departments for different specialties and having more than 1700 beds. Currently, there are more than 50 subsystems in HGSD that can be classified into nine categories. These categories are physician workstation, nurse workstation, clinical information, anesthesia management, pharmacy management, office automation, decision support, audio-visual Centre and electronic medical record.

Physician and nurse workstations, in particular, are two main systems used in the treatment process. All of these systems support different aspects of daily activities in the hospital but most of them are separated.

In recent years, in order to improve medical service quality with effective resource usage at lower risk and cost, HGSD implements clinical pathways in the treatment of six diseases: Non-ST-segment elevation acute coronary syndrome (NSTACS), acute coronary syndrome (ACS), breast cancer, fracture of femoral shaft, ST-segment elevation acute myocardial infarction and uterine leiomyoma. Initially, the clinical pathway knowledge is paper–based, serving a reference purpose without integration with the current information systems. As a result, the management of clinical pathway has become complex and difficult to fully integrate into the treatment process. Medical error, adverse events, unnecessary examinations and tests occur that could be preventable through the support of clinical pathway during the treatment process. Furthermore, because of the isolation of clinical pathway knowledge from existing information systems, it is hard to improve medical quality through the statistical analysis of pathway deviation.

Therefore, it is important that the clinical pathway knowledge is fully integrated into current information systems and is fully transparent to the health-care staff to support the treatment process in improving medical quality. Currently, there are two main problems in clinical pathway management in HGSD. The problems are (1) lack of shared pathway knowledge support causes difficulties in reducing medical errors; (2) lack of integration of IT systems with the formal clinical pathway knowledge causes low efficiency and is error prone. In order to resolve these problems, the integrated clinical pathway management system is to be implemented in May 2020.

1. Design a simple clinical pathway (steps) to be taken for any disease after admission of a patient until discharge. Show this through a flow chart. (10 marks)

2. Design an EHR architecture based on open EHR or any other architecture you know to address the problems or gaps mentioned in the case. (30 marks)

3. Design Master Patient Index based on meta data for any one of the module (15 marks)

4. Draw data flow diagram level 0, 1, 2 for flow of information for CPOE that can be integrated into the system. (15 marks)