

Lecture Notes

Provider Analytics

Electronic Health Record (EHR)

In this module, first, you saw what an EHR is. **EHR**, short for electronic health record, is a **digital** form of a patient's **medical records**. EHRs are getting more and more comprehensive every day, and they contain data on the patient's **medication** history, **encounter** history, **immunization** history, etc.

• Help

• Logout

You can perform a lot of **analytics** using the information given above. For example, in this EHR, it is obvious that the patient was diagnosed for Cellulitis during 2005-06.

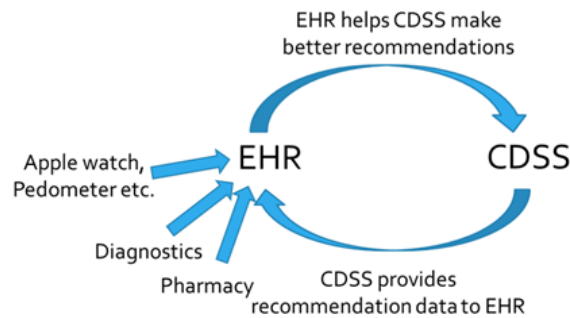
- Based on all the information available above, that addresses this encounter, you can check if the treatment protocol for Cellulitis diagnosis was followed or not.
- Do this for all the patients a doctor treated, and you'll be able to **assess the doctor's performance**. Do this for a few doctors, and you'll be able to **compare their performance levels**.
- You can even use predictive analytics here. See how the ER (emergency room) visit rate of a patient depends on this factor (the proportion of cases for which the treatment protocol was followed) and other factors like it (such as the immunization status), and use this to **predict the number of times the patient is likely to visit the ER next year**.

When you get the data for analysis though, you will get to see demographic information such as ages, genders, etc., but according to US law, **you cannot access identifiable information** about a patient, such as a phone number, an address, etc.

Clinical Decision Support System (CDSS)

So, one of the applications of an EHR is in a **CDSS** or a clinical decision support system. To summarise, the CDSS takes the patient's health record data and the symptoms that he/she is experiencing, and based on this, suggests the **ideal treatment, medication, tests, etc.**

Actually, EHRs and CDSSs form a mutually beneficial cycle:



The EHR also takes in data from **diagnostics** and **pharmacies**, and **claims** submitted to payers. A good EHR may even have data from modern-day equipment such as **Apple Watches, pedometers**, etc.

Analytics Opportunities Related to Providers

There are four major types of **analytics** problems that healthcare providers usually try to solve using analytics. They are —

1. Improving administrative efficiency
2. Improving clinical quality
3. Utilising resources judiciously
4. Controlling the cost of care

You looked at an example of how hospitals work on improving their performance. In the **hospital performance-improvement** example, different departments were assessed in terms of various aspects —

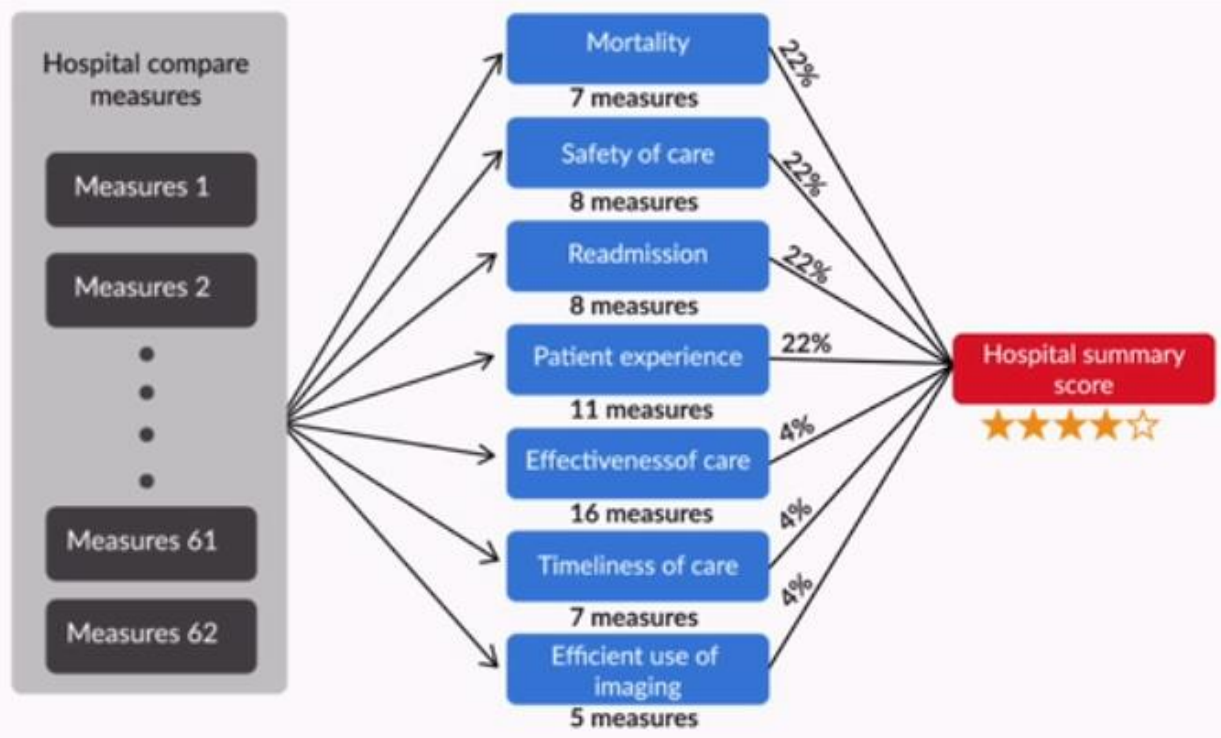
1. **Volume** – The number of patients handled per doctor
2. **Revenue leakage** – The revenue lost due to doctors cancelling their appointments
3. **Utilisation** – The number of appointments completed per doctor
4. **Quality** – The average patient satisfaction score and average outpatient wait time
5. **Finance** – The revenue generated per dollar spent on the department

There are several ways of assessing clinical quality. Some assessments of clinical quality, i.e. checking the compliance with treatment protocols, checking the complication rate, keeping track of ER visits, etc., are done by payers.

However, in addition to private payers, the US government also takes various steps to ensure that clinical quality standards are met. Let's see what these standards are.

Hospital Compare

One of the best initiatives under Obamacare is **Hospital Compare**. Hospital Compare summarises **62 measures** into **seven groups** which are then summarised to form the hospital summary score.



Under Obamacare, **star ratings** are provided for various other components too:

- Health plans
- Drug plans
- Combinations of both health plans and drug plans
- Hospitals
- Home health services

Over the last decade, efforts have been made to **rate American hospitals** based on several factors that indicate the quality of treatment and patient care. The ratings are calculated based on each **hospital's data**. The aim is to help patients choose a hospital based on its ratings. Thus, hospitals in the US have realised the importance of keeping track of their **predicted ratings** for the next year, so that they can improve their services accordingly. This has paved the way for new opportunities in healthcare analytics, with healthcare consultancies building models to **predict hospital ratings**.