



Benefit of Medical informatics in Clinical Decision Support

Clinical Decision Making using Data

What is a Decision Support System?

A decision support system (DSS) is a computer program application used to improve a company's decision-making capabilities. It analyzes large amounts of data and presents an organization with the best possible options available.

Decision support systems bring together data and knowledge from different areas and sources to provide users with information beyond the usual reports and summaries. This is intended to help people make informed decisions.

Decision Support Systems

- Clinical Decision Support Systems

- Facilitate clinical decisions
- E.g.: Medication orders, treatment options

- Administrative or Business Decision Support Systems

- Utilization Management
- Performance Management
- Quality Improvement
- Business Planning

CDS & CDSS

- Clinical decision support (CDS) can significantly impact improvements in quality, safety, efficiency and effectiveness of health care. Complete records allow CDS systems to help with diagnoses and track for negative drug interactions by having a better view of a patient's whole health.



- Clinical decision support systems (CDSS) are computer-based programs that analyze data within (EHRs) to provide prompts and reminders to assist health care providers in implementing evidence-based clinical guidelines at the point of care. CDSS help clinicians improve complex decision-making processes.

CDSS

- ❑ Provide the right information

1. To the right person
2. In the right format
3. Through the right channel
4. At the right time

Example:

The physician trying to order a drug gets an alert on her computer screen, indicating a potential interaction with a current drug at the time of ordering.

Where do Data for CDSS come from?

- Internal and External Sources
- External Sources
 - Knowledge synthesis & management systems
 - * Can give interaction alerts for drug-drug, drug-dosage, drug-disease
 - Evidence base for clinical guidelines
 - * E.g.: national guideline clearing house
 - * Can give alerts reminding physicians to order tests
- Research collections



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Lecture: (6)

- E.g.: PubMed, ScienceDirect



ScienceDirect

- EHRs

CDSS -Improve Safety and Quality

- Improve care by aiding decision making
- Draws from vast research, peer experience, external knowledge that is hard for any single person to store, synthesize and deliver
 - Can reduce provider bias
- Gives objective advice based on input patient characteristics and external knowledge
 - Can be used for direct communication with patients
- Can provide alerts to patients directly to improve patient provider interactions

Benefits of CDSS

The best CDSS provide measurable value, leverage multiple data types, produce actionable insights, deliver information to the user, demonstrate good usability principles, are testable in small settings and support participation in quality and value improvement.

All of this leads to increased quality of care and enhanced health outcomes, avoidance of errors and adverse events, and improved efficiency, cost-benefit and provider and patient satisfaction.



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The Future of CDSS

In order to implement and utilize a CDSS in a medical service, clinical information should be generated and managed in a standardized form. For this purpose, standardization of terminology, coding of prescriptions and unification, such as the preparation method and the weights and measures, should be integrated.

In the near future, more complex, useful systems will be developed, forging CDSS into an essential part of care. However, it will be necessary to better understand the algorithms embedded in CDSS and to assess them correctly to ensure their true potential for improving quality, safety, efficiency and effectiveness of health care.