Slide 1

**Decision Support for Quality Improvement**

Unit 6.1: Clinical decision support system
(CDSS) basics.

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Slide 2

**Objective**

- Define decision support, its importance, and why it is difficult to implement

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Slide 3

**Clinical Decision Support Systems**

Definition: "…active knowledge systems which use two or more items of patient data to generate case-specific advice."

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Slide 4

## A Decision Tree



Play Golf 9
Don't Play 5

Weather?

Sunny     Overcast     Rain

Play Golf 2
Don't Play 3

Play Golf 4
Don't Play 0

Play Golf 3
Don't Play 2

Humidity?         Windy?

< = 70     > 70     Yes     No

Play Golf 2
Don't Play 0

Play Golf 0
Don't Play 3

Play Golf 0
Don't Play 2

Play Golf 3
Don't Play 0

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Slide 5

## Clinical Decision Support Systems

Will the decision-aid
be used in a clinical
setting?

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Slide 6

## MEANINGFUL USE

Clinical decision support is described as
"health information technology functionality
that builds upon the foundation of an EHR to
provide persons involved in care processes
with general and person-specific information,
intelligently filtered and organized, at
appropriate times, to enhance health and
health care."

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**Slide 7**

## Clinical Decision Support Systems
### Effects on Medication Safety

- CDSS combined with CPOE can improve medication safety and reduce medication-related expenditures
  - Introduces automation at the time of ordering
  - Increases legibility
  - Assures that the order is safe and compliant with guidelines

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**Slide 8**

## Clinical Decision Support Systems
### Are They Being Used?

- Despite potential usefulness, lack of widespread acceptance

#### Myths

- "Diagnosis is the dominant decision-making issue in medicine."
- "Clinicians will use knowledge-based systems if the programs can be shown to function at the level of experts."
- "Clinicians will use stand-alone decision-support tools."

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**Slide 9**

## Clinical Decision Support Systems
### Are They Being Used?

- Provision does not guarantee uptake
- Factors that have an impact on CDSS use
  - Availability of hardware
  - Technical support and training
  - Integration of systems into workflows
  - Relevance and timeliness of clinical messages
  - Endorsement by colleagues
  - Degree of perceived threat to autonomy
  - Degree of interference with doctor-patient interactions

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**Slide 10**

### Clinical Decision Support Systems
### Are They Being Used?

- Integration with workflow
  - Ease of navigation and use
  - Timing and frequency of prompts
  - Perception of time
- Presentation
- Content
  - Relevance
  - Information quality
  - Information type
  - Links to supportive information
  - Local constraints

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**Slide 11**

### CDSS and CPOE
### Recommendations for Success

- Seamless integration of CPOE with CDSS into systems and workflow
- Access to Internet-based and other online support material
- Designing systems specifically for the clinical area
- Measuring the impact of CDSS to ensure overall benefit
- Ensuring that CPOE systems provide error and interaction checking
- Ensuring that CPOE systems facilitate weight- and physiology-based dosing

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**Slide 12**

### Clinical Decision Support Systems
### Recommendations for Success

- Using interruptive alerts discriminately (only for high severity events)
- Providing a simple, vendor-independent interface for institutional customization of CPOE alert thresholds
- Maximizing the use of automated systems and passive data capture
- Ensuring the widespread availability of CPOE and CDSS using secure wireless and portable technologies, where appropriate

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**Slide 13**

Decision Support
Key Functions

**Slide 14**

Decision Support
Administrative Function

- Supports clinical coding and documentation
- Example: authorization of procedures and referrals

**Slide 15**

Decision Support
Complexity Management Function

- Assists with the details of managing clinical complexity
- Examples:
  – Keeping patients on research and chemotherapy protocols
  – Tracking orders
  – Referral follow-up
  – Preventive care

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Slide 16

## Decision Support
## Cost Control Function

- Supports control of costs
- Examples:
  - Monitoring medication orders
  - Avoiding duplicate or unnecessary tests

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Slide 17

## Decision Support
## Decision Support Function

- Supports clinical diagnosis and treatment plan processes and promotes use of best practices
- Examples:
  - Condition-specific clinical practice guidelines
  - Population-based management
  - Clinical calculation
  - Disease registries and patient tracking tools
  - Summary screens
  - Order sets

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Slide 18

## Summary

- Clinical decision support systems (CDSS) integrate a medical knowledge base, patient data, and an inference engine to generate care-specific advice.
- Despite potential usefulness, there has not been widespread clinician acceptance of CDSS
- In planning to implement CDSS, IT professionals need to know that it will be used by clinicians and that its use will alter clinical decision-making, change behaviors, and improve patient outcomes.
- Four key functions of CDSS are: administrative, managing clinical complexity and details, cost control, and decision support.

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