What Physicians Need in CDS

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Let me tell you a story.....

Advancing Clinical Decision Support
A Clinician's Perspective

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Sepsis Wolf

- 10th most common cause of death in US
- Leading cause of death in ICU
- 18 billion dollars/year
- Sepsis is the body’s response to infection
  - Severe sepsis: multiple organ dysfunction
  - Septic shock: hypotension
  - Septicemia: bloodstream infection
- Estimated 800,000 cases of severe sepsis per year in the US
- Rate increasing by 1.5% per year – estimated additional 1 million cases by 2020
- Mortality 30-40%
The obedient child laid her down by the side
Of her Grandmother dear (as she thought);
But all at once, “Granny!” Red Riding Hood cried,
“What very long arms you have got!”
He answered, “The better to hug you, my child."
“But, Granny, what very large ears!”

“The better to hear you,” the voice was still
But the poor little girl had her fears. [mild,
“Grandmother, you seem to have very large
“The better to see you, I trow.”] [eyes!]
“What great teeth you have got!” and the
wicked Wolf cries,
“The better to eat you up now!”
Sepsis/Wolf Recognition

- What big eyes you have
- What big ears you have
- What sharp teeth you have
- What long nails you have
- WBC count
- Fever
- Tachycardia
- Respiratory rate elevation

### Evaluation for Severe Sepsis Screening Tool

**Instructions:** Use this optional tool to screen patients for severe sepsis in the emergency department, on the wards, or in the ICU.

1. **Is the patient's history suggestive of a new infection?**
   - Pneumonia, empyema
   - Urinary tract infection
   - Acute abdominal infection
   - Meningitis
   - Soft tissue or wound infection
   - Intraabdominal infection
   - Other ______

   _Yes_  _No_

2. **Are any two of the following signs & symptoms of infection both present and new to the patient? Note: Laboratory values may have been obtained for inpatients but may not be available for outpatients.**
   - Temperature > 38.3 °C
   - SBP < 65 mmHg
   - Tachyypnea > 20 bpm
   - Tachycardia > 90 bpm
   - WBC count ≤ 4.000 µL-1
   - Leukopenia (WBC count ≤ 4.000 µL-1)
   - Hypoglycemia (serum glucose ≤ 100 mg/dL)

   _Yes_  _No_

*If the answer is yes to both either question 1 and 2, suspicion of infection is present.*

- Obtain tissue and blood cultures, CBC with differential, basic chemistries, hepatitis
Cloud Technology

Think of the crawler as a physician on constant rounds, continuously analyzing clinical parameters (The Cloud) and adding them up to determine if SIRS/Sepsis is possibly present (The Alerts).
You tell me a story........
KNOWLEDGE MODEL
Compliance with Bundle Elements

Lactate
Blood Cultures
Antibiotics
Fluids/Vaso
CVP >8
ScVO2
Command Central
Clinical Decision Support

- Time to Detection
- Time to Initiation
  - Antibiotics
  - Fluids
  - Vasopressors
- Time to Organ Stabilization
  - Lactic Acid normalization
  - Urine output targets
  - Organ dysfunction resolution
- Time to de-escalation
Clinical Decision Support
Future State

• Preventions Systems
• Early Detection Systems
• Early Intervention Systems
• Organ response Systems
• De-escalation Systems

• Save Grandma