

Doing Big Things with your Data

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About Augusta Health

- 255 beds
- 280 active medical staff
- 2,100 employees
- **53,000** emergency visits
- **12,000** admissions
- **310,000** outpatient visits
- **444,000** other outpatient registrations (Home Health, Laboratory, Outpatient Surgery, Imaging, etc.)



Why It's Important

- More than 1.5 million people get sepsis each year in the U.S.
- About 250,000 Americans die from sepsis each year.
- One in three patients who die in a hospital have sepsis.

Age-Adjusted Death Rates



What Can Providers Do?

- Think sepsis. Know sepsis signs and symptoms to identify and treat patients early.
- Act fast. If sepsis is suspected, order tests to determine if an infection is present, where it is, and what caused it. Start antibiotics and other clinical interventions immediately.
- Reassess patient management. Check patient progress frequently. Reassess antibiotic therapy 24-48 hours or sooner to change therapy as needed.



Traditional SIRS Criteria

- Temp > 38°C
- Heart rate > 90
- Respiratory rate > 20
- Abnormal White Blood Count

Retrospective Study Population Characteristics

	Derivation Period	Validation Period
Population	10,792	10,750
Positive for Sepsis	339	371
Male	4,459	4,478
Sepsis Readmissions	47	47
Sepsis Expirations	50	62



The Results

	Derivation Period	Validation Period
AUC	0.857	0.842
05º/ CI	0.850 to	0.835 to
3J /0 CI	0.863	0.849

Variable	Coefficient	Р
MAP Check	1.87839	<0.0001
Pulse Check	0.51002	0.0010
Resp Check	1.16987	<0.0001
Temp Check	1.86801	<0.0001
SI Category=1	0.53424	0.0005
SI Category=2	1.32991	<0.0001
SI Category=3	1.40371	<0.0001



Comparison of Traditional SIRS Criteria to SIRS plus MAP and SI

Sample size		10792
Positive group :	State = 1	339
Negative group :	State = 0	10453

	AUC	95% CI
SIRS	0.753	0.745 to 0.761
Elements of		
SIRS + MAP +	0.857	0.850 to 0.863
Shock Index		

The inclusion of the Shock Index and MAP with elements of SIRS criteria increased the resulting c-statistic.





Implemented an Automated Surveillance Process

- An automated process runs an algorithm that will detect high scores based on weights assigned in the Logistic regression analysis.
- Part of that same process sends alerts to the Vocera device of staff assigned to the patient whose score was higher than the proposed cutoff level.



Example of Score

Score Calculation			
Variable	Value from EMR	Beta Coefficient	
MAP Check		1.87839	
Pulse Check	92	0.51002	
Resp Check	22	1.16987	
Temp Check	38.6	1.86801	
SI Category=1	.72	0.53424	
SI Category=2		1.32991	
SI Category=3		1.40371	



SQL Server Integration Services (Part 1)



SQL Server Integration Services (Part 2)



Sepsis Screening Alerting the Right People at the Right Time



Summary

- Custom integration of multiple systems.
- Delivers alert to bedside nurse without any manual intervention.



Mortality Rates and Estimated Total Lives Saved





Geospatial Surveillance

- Hospital acquired infections are costly and automated surveillance is a critical part of infection control methods.
- Visualizations are a tangible method to relay important infection related information to physicians, nurses, and ancillary staff without further translation of data.



Geospatial Surveillance







Select Play to show historical surveillance.



Hospital Infectious Disease Geospatial Surveillance

"If Target can identify a woman who is sixmonth's pregnant by her buying habits, what might we achieve in health improvement with better understanding of data?"



- Use your data to get your patients home faster and make sure they are not readmitted.
- Use your data to find the frail patients in your population using social determinants of health, those very critical pieces of information that impact a patient's health status.



- Use your data to help give your providers focus.
- Use your data to help your administrators decide how to best remain financially viable.



- •Improving the patient experience
- •Reducing the per capita cost of care
- Improving the overall health of your populations



Questions?

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