



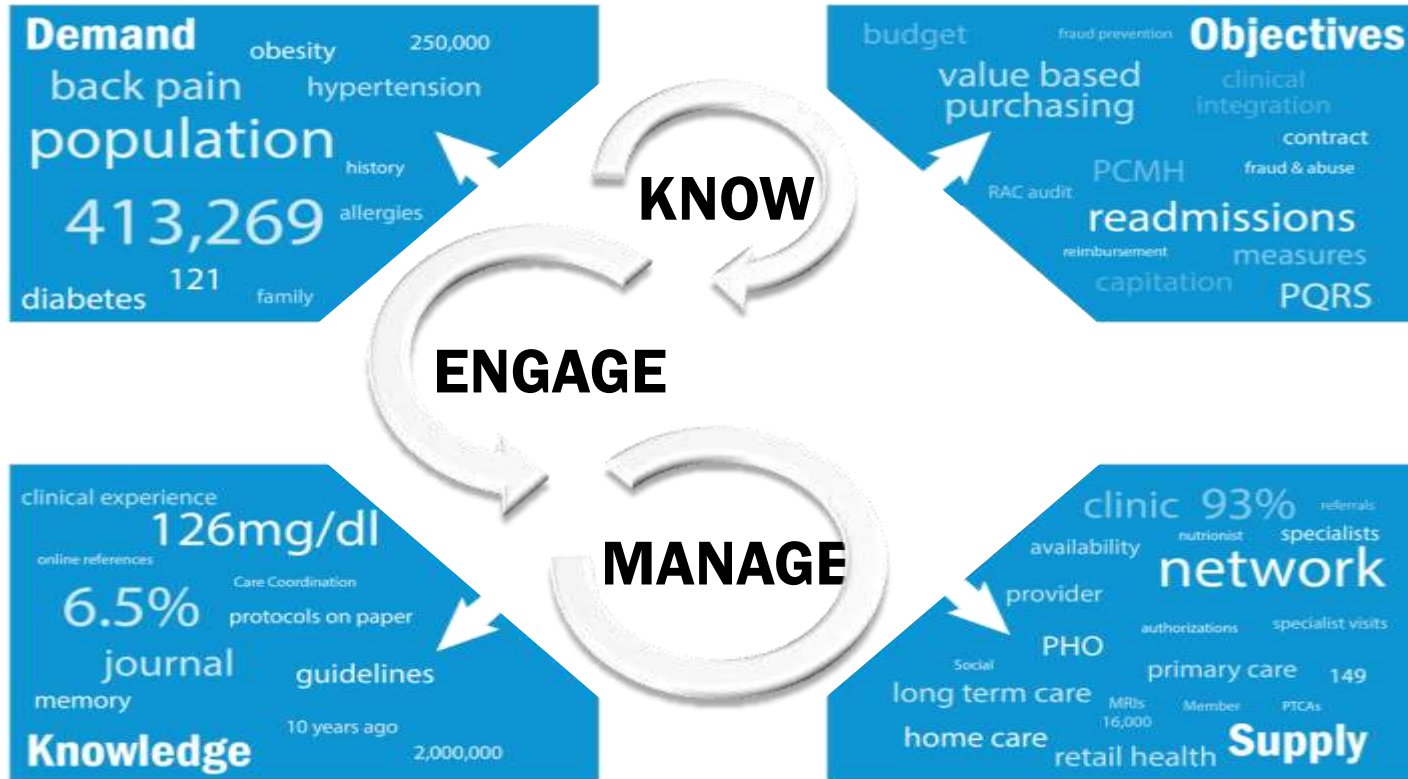
Population Health and Big Data

The journey to a healthy community

Doug Rogers

Director, Population Health

Population Health Dynamics



New Knowledge Development

*Enable new knowledge creation and reduce the lag from
research to adoption*

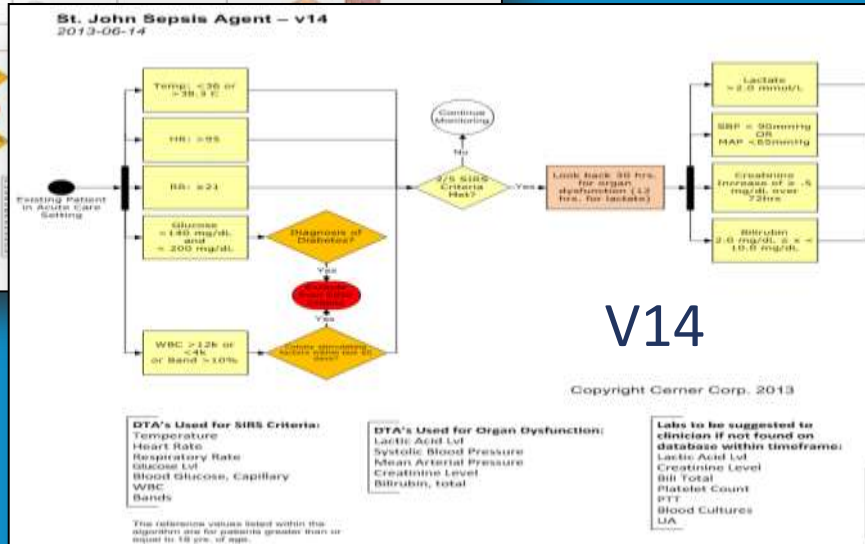
- Bring together retrospective data from multiple sources
- Enable retrospective research and data analysis
- Power simulation and shadowing of predictive algorithms
- Facilitate rapid deployment of new knowledge into the clinical workflow

Sepsis Identification:

Identify

Monitoring

- Over 130 facilities
- 32,960 persons per hour
- 791,040 lives per day



V14

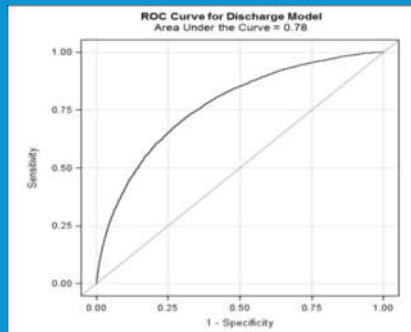
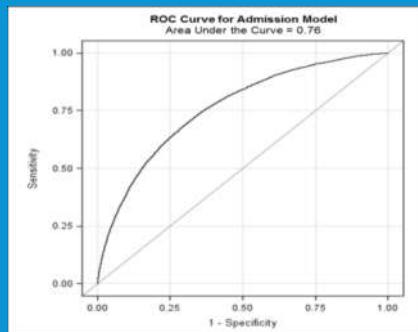
Operating Characteristics

- Sensitivity 68-91%
- Specificity 91-97.6%
- PPV up to 68%

Readmission Prediction Model

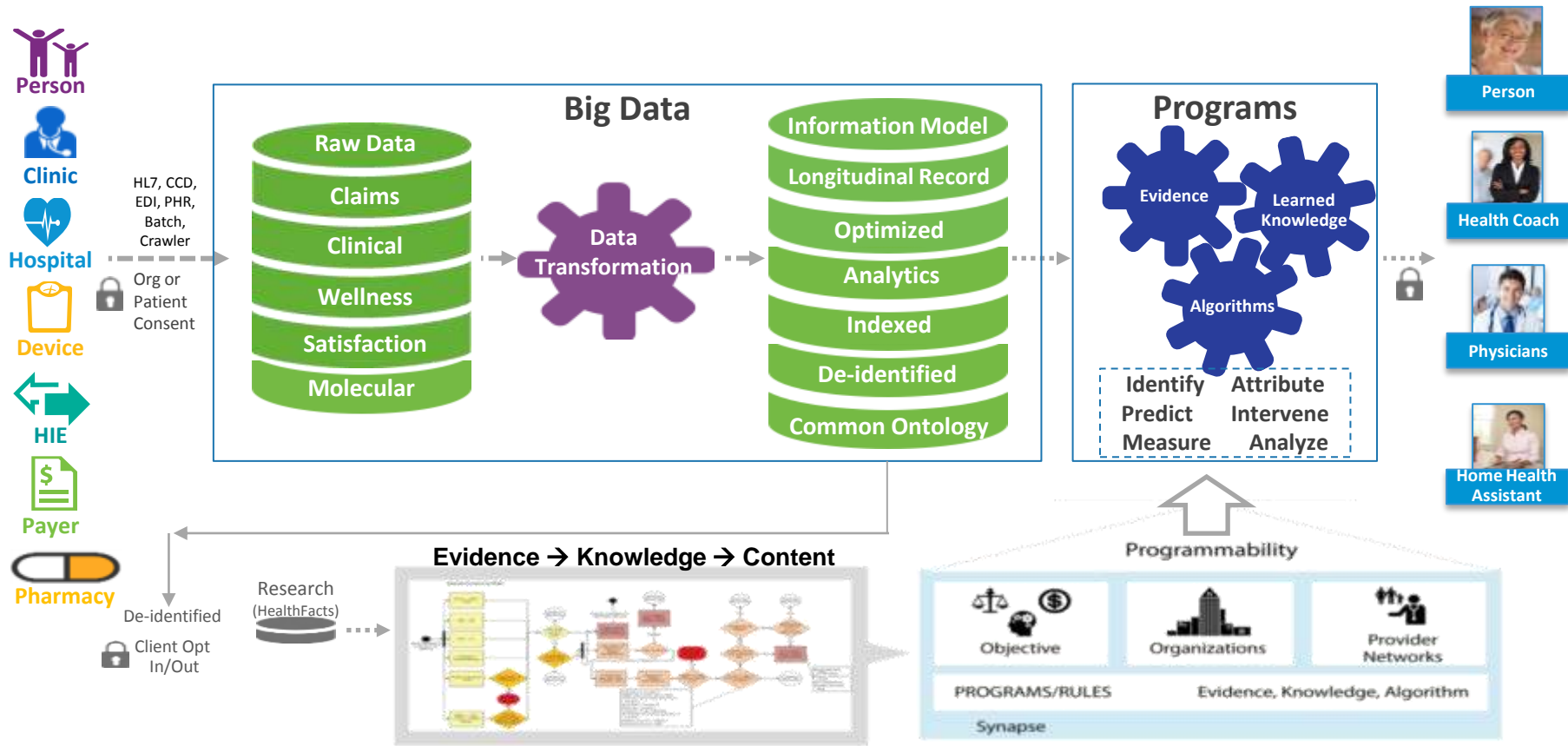
Variables	Admission Model	Discharge Model
Demographics	✓	✓
Utilization	✓	✓
Lab Tests	✓	✓
Experimental	✓	✓
H&P	✓	✓
Medications	✓	✓
Conditions		✓
Procedures		✓
Length of Stay		✓
Discharge Disposition		✓

- ✓ High predictive ability
- ✓ Utilized reliable & clinically-related data
- ✓ Internal validation
- ✓ Scalable in large populations



Dataset	Performance Measures	Admission Model	Discharge Model
Development	Discrimination Ability C-Statistic	0.76	0.78
	Calibration (Model Fit) Hosmer-Lemeshow goodness-of-fit test (P-value)	36.0 (P<0.001)	31.1 (P<0.001)
	Overall Performance Brier Score (% improvement over random prediction)	0.062 (7.6%)	0.060 (9.1%)
Internal Validation	Discrimination Ability C-Statistic	0.75	0.77
	Calibration (Model Fit) Hosmer-Lemeshow goodness-of-fit test (P-value)	23.5 (P=0.003)	19.9 (P=0.01)
	Overall Performance Brier Score (% improvement over random prediction)	0.063 (6.6%)	0.061 (9.1%)
External Validation (With Recalibration)	Discrimination Ability C-Statistic	0.76	0.78
	Calibration (Model Fit) Hosmer-Lemeshow goodness-of-fit test (P-value)	6.1 (P=0.641)	14.3 (P=0.074)
	Overall Performance Brier Score (% improvement over random prediction)	0.061 (8.9%)	0.060 (9.1%)

Population Health Platform – Health Intent





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