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Enhanced Dynamic Documentation & Improved Clinical Workflows on the Cerner EMR

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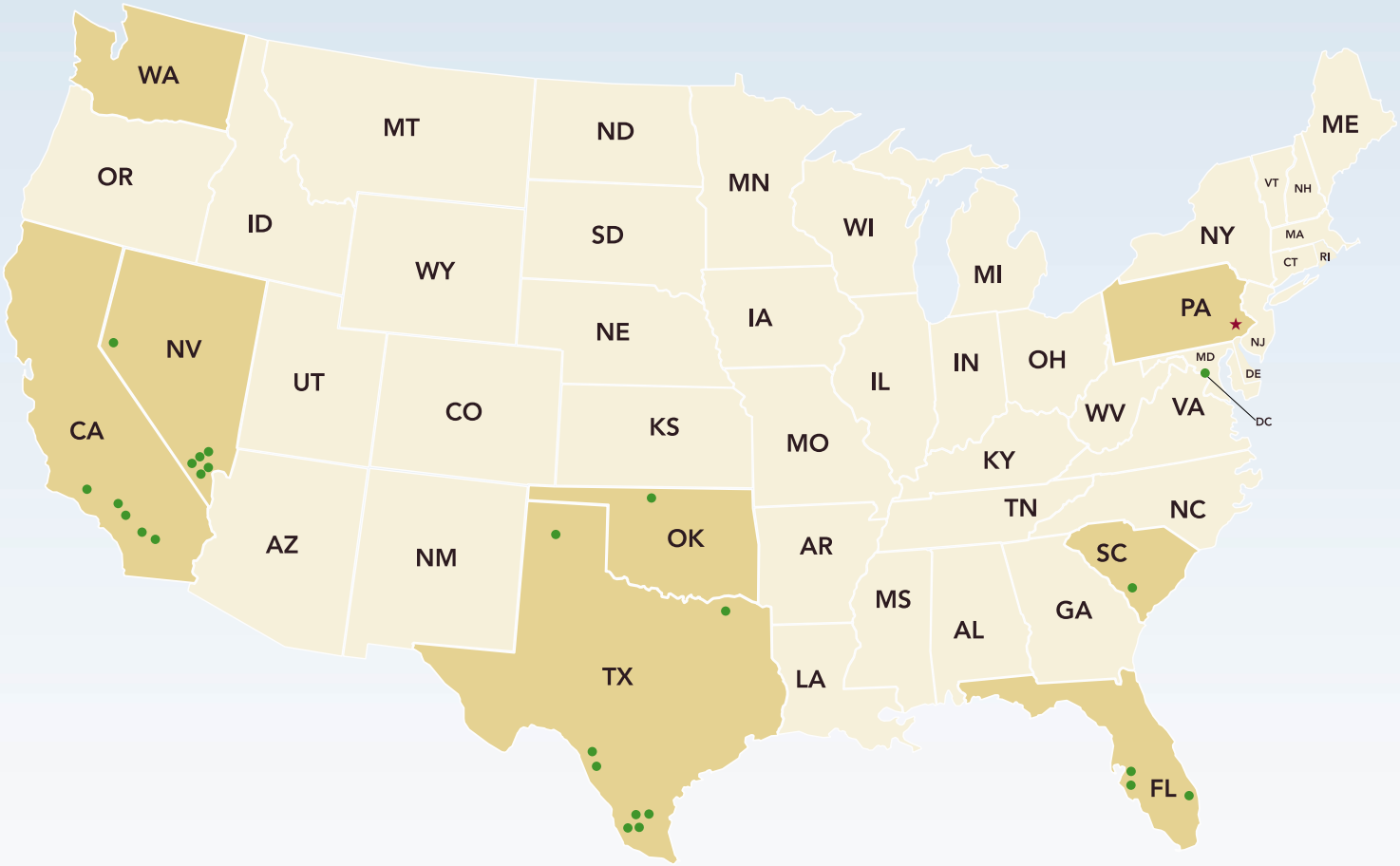
UHS®



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Corporate Information

- Subsidiary of UHS, headquartered in King of Prussia, PA
- Created as response to multiple requests for our software from other Cerner clients.

Advanced Clinical Decision Support Modules

- Expedited development of custom Views, Advisors, Applications
- Follow Cerner best practices for development & implementation
- Offer a full spectrum of services to make this software work for customers

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Leveraged Clinical Informatics Team

- Corporate Clinical Informatics Team:
  - 4 full-time MDs
  - 8 full-time Clinical Informaticists
  - 12+ FTEs full time developing software

- Used Cerner MPage development toolkit & Cerner best practices to create significant enhancements to nursing workflows and dynamic documentation (11 new components and 60+ smart templates)

- Recognized with five innovation awards in past 3 years from Cerner, HIMSS & Industry Publication

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Implementation Strategy

- UHS has 26 Acute Care facilities across the U.S.

- Three (3) production domains (East, Central, West)

- Timeline

Design and configure	January, 2010 – April 2011
Installation @ 25 hospitals	May, 2011 – July, 2013

- Phase 1 – Completed, Core clinical modules
- Phase 2 – Completed, Inpatient CPOE
- **Phase 3 – Completed, Inpatient Physician Documentation with Dragon Direct**
- Currently engaged in both Ambulatory and Rev Cycle with Cerner

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Approach to Physician Documentation

- Started planning for physician documentation (Phase 3) in early 2014
- Inpatient physicians were mostly using dictation with mix of electronic & handwritten progress notes
  - Hybrid chart (EMR + Paper Record)
- Primarily Independent Medical Staff (95%+)
- Goal was to transition physicians off dictation and to the EMR

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Physician Alignment

- Over 6,000 active medical staff practice at the 26 UHS facilities
- UHS employs only ~475 Providers (115 clinics)
- Rest are independent physicians that split patients with competitors
- Challenge for us is to create a better EMR experience for physicians and nurses practicing in our facilities
  - We are mindful of alerts

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Available Software Modules - Physicians

Product	Category	Key User	Brief Product Description
Enhanced Dynamic Documentation	Mpage	Physician	Comprehensive inpatient physician documentation with significant automation and embedded clinical decision support
Quality Advisor *	Advisor	Physician	Checks for Quality Measure(AMI, CHF, Stroke) adherence on the workflow MPages and allow physician to address any gaps by ordering or documenting an acceptable reason directly in the tool.
Inpatient Physician Notification*	MPage	Physician	Award winning package inclusive of Order Renewal, Catheters & Lines, and Communication MPages
Order History*	MPage	Physician	Addresses challenge of "telling the patient's story" by sequencing orders in reverse chronological order
Blood Management Advisors	Advisor	Physician	Supports evidence-based red blood cell transfusion
TPN Advisor	Advisor	Physician	An interactive advisor that facilitates inpatient total parenteral nutrition (TPN) management
Prescription Routing	Program	Physician	A custom solution that automatically routes prescriptions to printer nearest provider or patient.
Professional Fee Billing Component	MPage	Physician	Enables providers to efficiently enter and submit charges directly from within the enhanced dynamic documentation platform.

*Can be implemented individually or as part of Enhanced Dynamic Documentation

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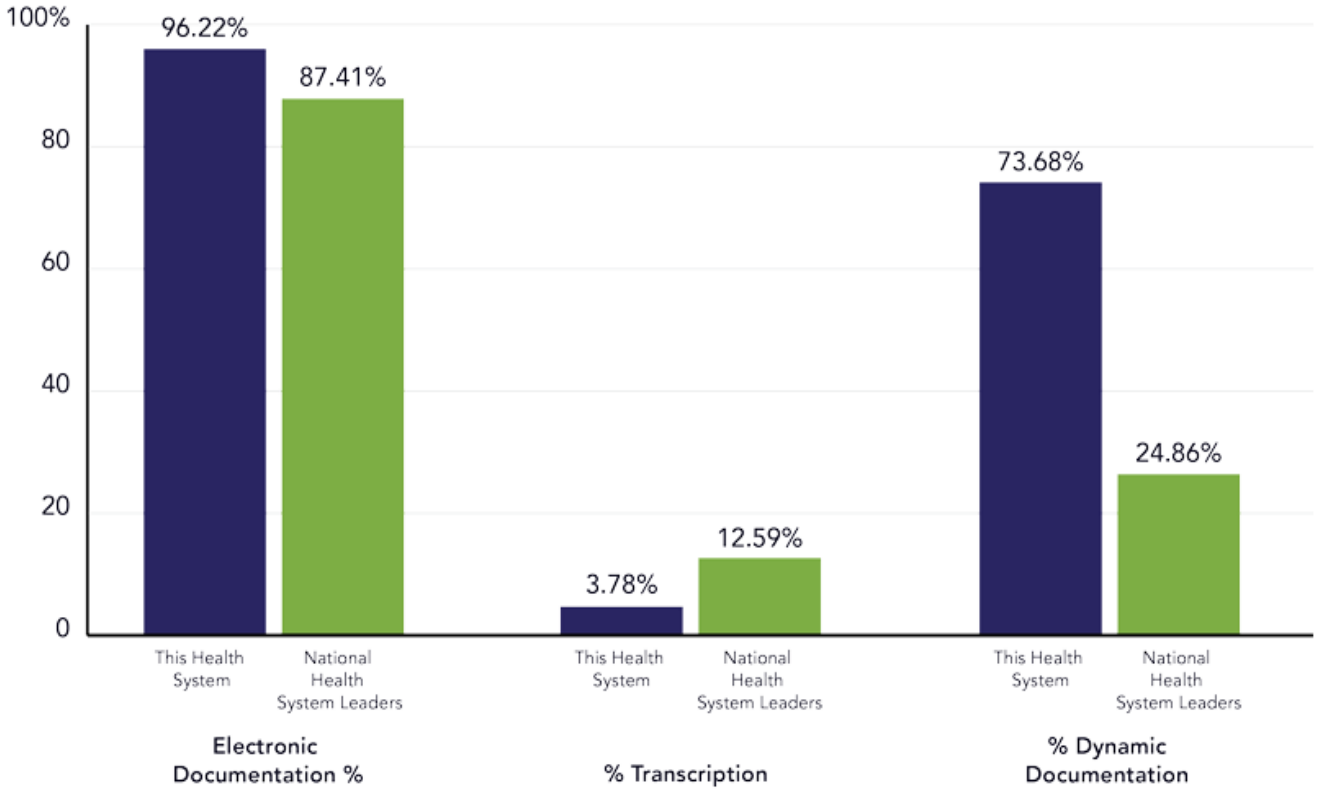
Enhanced Dynamic Documentation Results

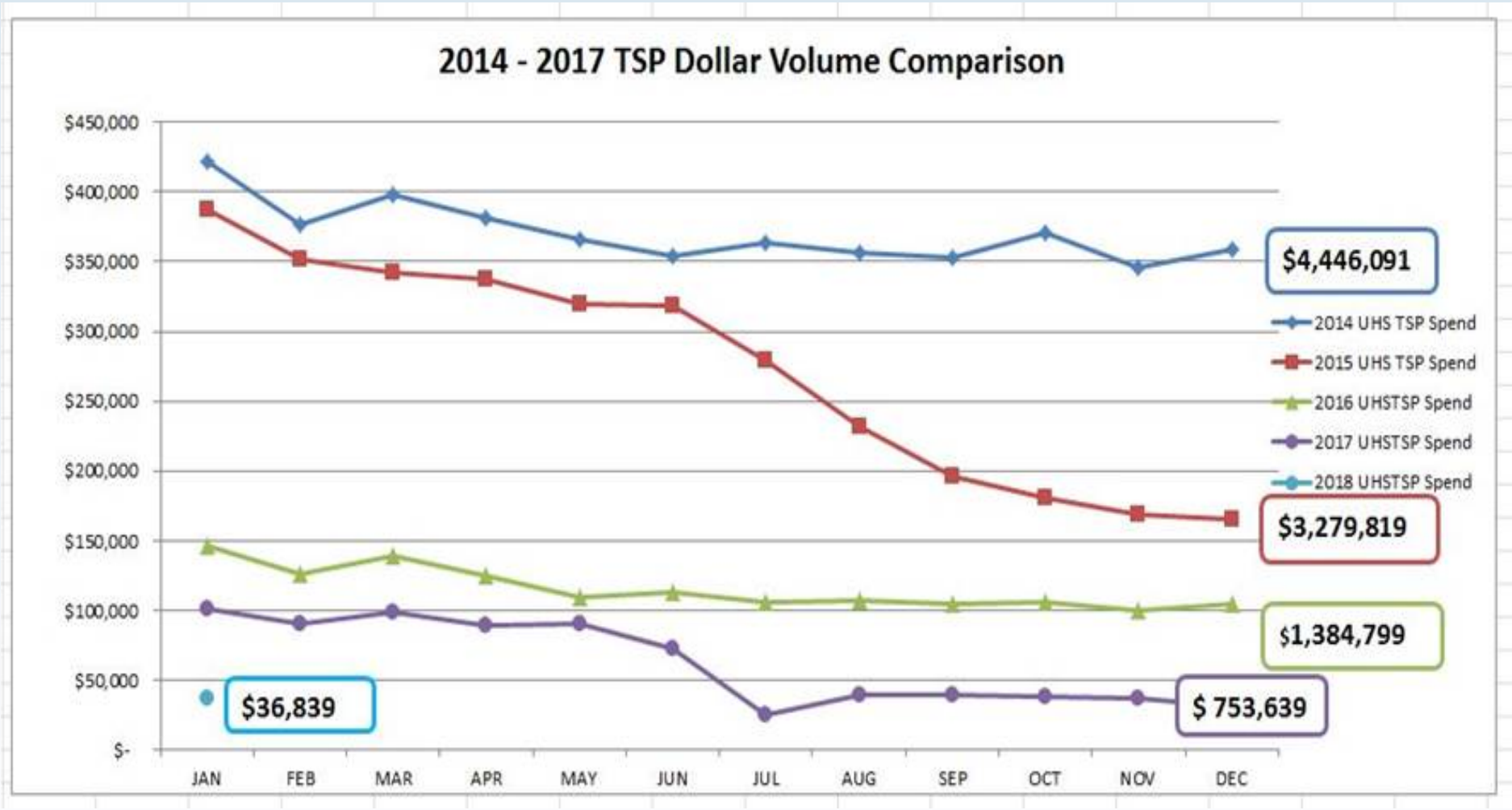
Comparing Enhanced Dynamic Documentation Results to Industry Leaders and National Average

Crossings' Enhanced Dynamic Documentation solution has resulted in:

- High electronic documentation adoption of **96 percent – 10 percent higher** than national health system leaders
- Reduction in transcription to **3.8 percent – 9 percent lower** than national health system leaders
- Significant use of dynamic documentation of **73.7 percent – 49 percent higher** than national health system leaders



Transcription Service Providers (TSP)
Expense Reduction After MD Documentation Project



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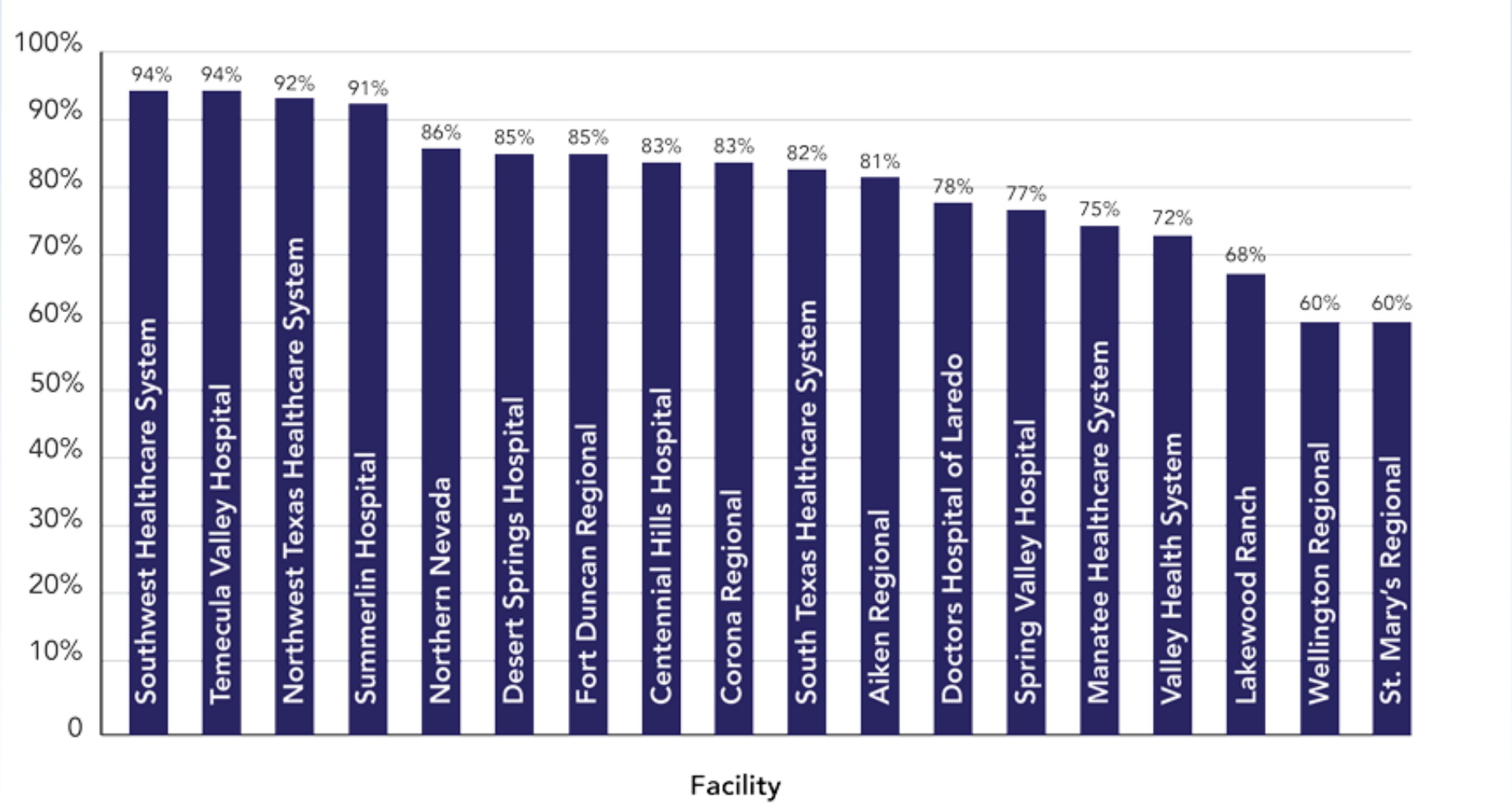
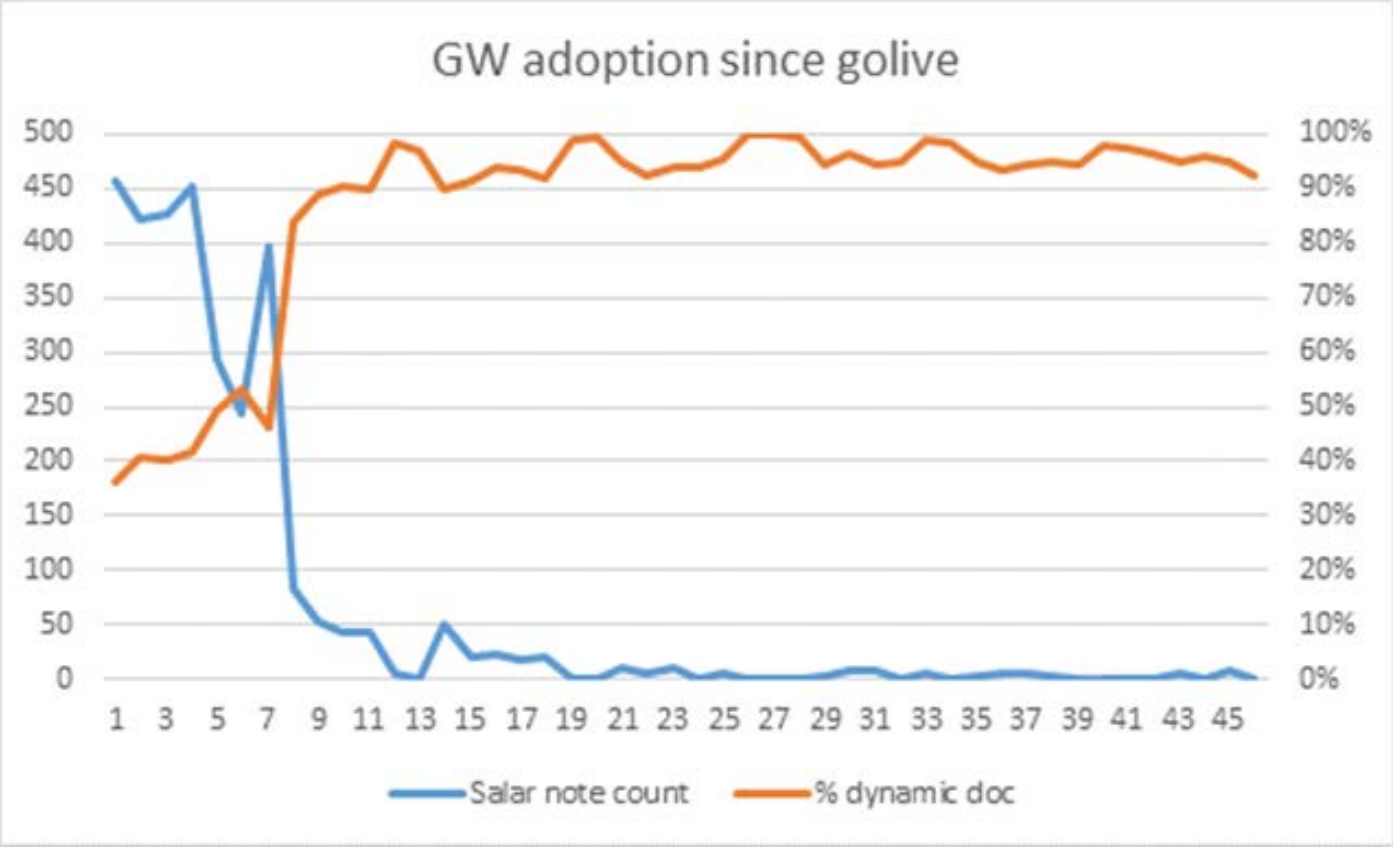
Enhanced Dynamic Documentation Results Transcription Reduction by Facility

Crossings' Enhanced Dynamic Documentation Solution resulted in average reduction of 69% across facilities



Enhanced Dynamic Documentation Results Transcription Reduction at Academic Medical Center – First 45 days



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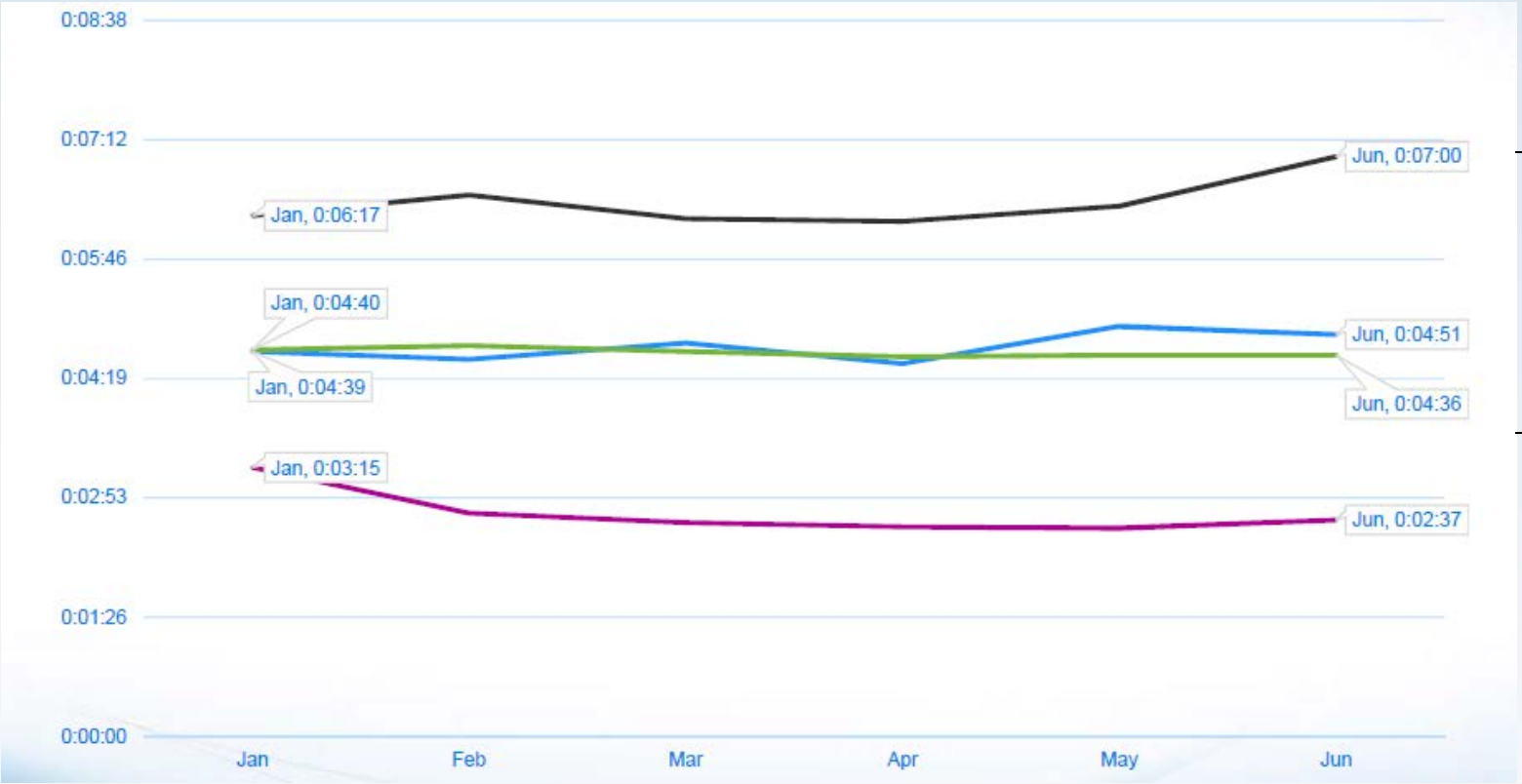
Documentation Time in EMR



No Crossings Enhancements

Crossings Enhancements

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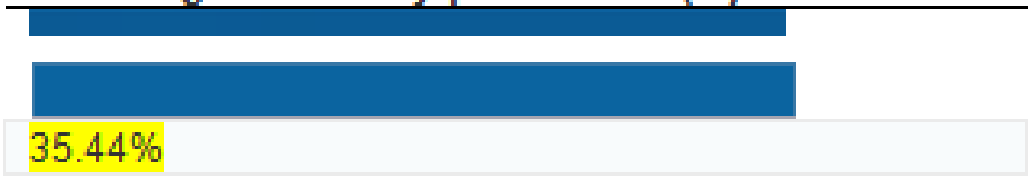
UHS Discharge Summary Turn Around Time

Facility Statistics - Turn Around Time 2015

AVG TAT(hr)	MIN TAT(hr)	MAX TAT(hr)	MEDIAN TAT(hr)
203.73	-506.15	3784	10.85

Discharge Summary prior to DC (%)

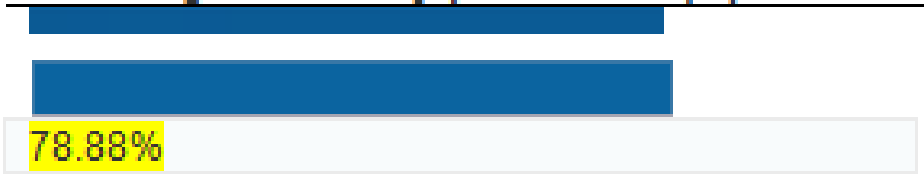


35.44%

Facility Statistics - Turn Around Time 2017

AVG TAT(hr)	MIN TAT(hr)	MAX TAT(hr)	MEDIAN TAT(hr)
5.22	-561.17	556.03	-2.85

Discharge Summary prior to DC (%)



78.88%

Physician Satisfaction Survey

- Survey conducted by 3rd party organization
- Scores benchmarked to national physician satisfaction scores
- 25 hospitals included (community, academic, etc.)
- MD's had EMR Satisfaction at 75th percentile
- Best results across all categories surveyed
- Results after less than 24 months using Voice Recognition and the customized Physician documentation

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Quotes from Physicians about Enhanced Dynamic Documentation

- "That is an outstanding piece of software" (Chief Medical Officer)
- "For lack of a better descriptor, you guys rock! I'm in love with your solution." (CMIO)
- "The transition to the Crossings' provider workflow tools was significantly easier than expected" (Chief of Staff)
- "I love this system. It is really the best thing you have introduced Cerner wise" (Orthopedic Surgeon)
- "I am so glad you showed me this. Knowing that we can save Op Reports as templates and personalize them to each patient will save me a lot of time." (OB/GYN)
- " This is the best thing I've seen from our Cerner EMR" (Urologist)

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Benefits to physicians

- Positive impact of real time documentation on patient care
  All team members have immediate access to the note
- Automatically pulls data into documentation
  Saves time and minimizes transcription errors
- Non-disruptive reminders
- Collaborative components (e.g. hospital course)
  Allows multiple providers to complete the discharge summary over time
- Lighter message center inbox
- Removes duplicative work

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Benefits to Health System

- Clinical, Efficiency, Communication, Quality, Patient Safety benefits
- Reduction of Transcription Expense
- Increased Provider Satisfaction
  - Strong results from UHS Physician Satisfaction survey
- Access to optimized workflows not on Cerner's development roadmap
- Comprehensive and improved EHR experience for Clinicians

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Role of Documentation in Quality

- Hospitals and now Physicians are being measured on the quality of care delivered

- Metrics being monitored include:
  - **Severity of Illness (SOI)**
    - Indication of the complexity of your patients based on your documentation
  - **Risk of Mortality (ROM)**
    - Calculated based on the diagnosis and the degree of complexity (SOI)
  - **Observed/Expected Mortality (O/E Mortality)**
    - Compares observed mortality rates to the risk of mortality (ROM) rates calculated based on SOI documentation
  - **Length of Stay (LOS)**
    - Expected LOS is calculated based on the SOI documented.

- Each metric is dependent upon provider documentation that reflects accurate severity of illness

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What is DQR?

- DQR is an automated decision-support tool within physician documentation that analyzes clinical notes and responds in real time

- DQR prompts the physician for clarifications only when there is high confidence for additional diagnosis to most accurately reflect severity of illness (SOI)

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Document Quality Review (DQR)

Sepsis?

Physician documents Left Lower Lobe pneumonia with no other co-morbidities Documented

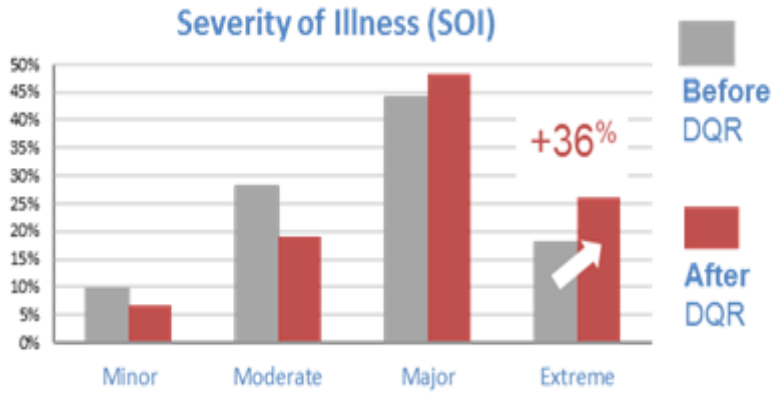
Current MS DRG 195 Simple Pneumonia & Pleurisy W/O CC/MCC

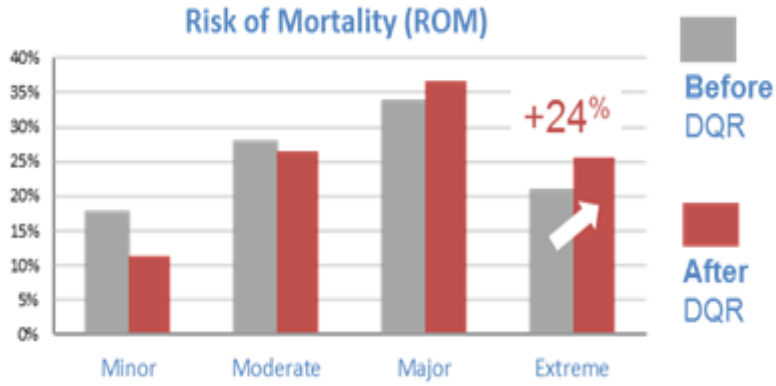
Clarification is fired from DQR noting that clinical documentation suggests the patient has sepsis. If accepted by the physician the DRG will be MS DRG 871 Septicemia/severe Sepsis w/o MV 96+ Hrs w MCC

Example	CODE	MS DRG	Mortality Expected	Complication Expected	Ave LOS Expected	Expected Readmission Rate
Pneumonia	J18.9	195	0.55%	5.91%	3.33	7.89%
Sepsis + Pneumonia	A41.9 J18.9	871	14.80%	20.12%	6.90	16.12%

*Expected (Exp) Outcome Values based on specific Population with Proprietary analysis of Severity may vary with different population and assessment methods. For illustrative purposes only; based on real data.

UHS Document Quality Review (DQR) Pilot





- Overall shift in capture of SOI and ROM from Minor/Moderate to Major/Extreme
- 36% improvement in capture of Extreme SOI
- 24% improvement in capture of Extreme ROM
- 12% CMI uplift across accepted encounters

Source: Metrics captured during a nine-week ROI study from June through August 2016 at two UHS facilities.

Available Software Modules – Nursing & Departmental

Product	Category	Key User	Brief Product Description
Table of Contents	MPage	Nurse	Provides infrastructure to enable alerting & enhanced navigation
Electrolyte Advisor	Advisor	Nurse	An interactive advisor that facilitates inpatient electrolyte management
Interdisciplinary Rounding	MPage	Nurse	Allows comprehensive concurrent documentation of interdisciplinary team rounding and transitional care planning
Patient Care Dashboard	Mpage	Nurse	A comprehensive dashboard of key nursing and patient care metrics that allows the healthcare team to see relevant clinical information and performance indicators from three unique views.
Measurements HT/WT/Allergy	Advisor	Nurse	Streamlines data entry immediately upon arrival and upon daily documentation
Perinatal/Related Records MPage	MPage	Nurse	Utilizes existing Cerner Related Record functionality to ensure pediatricians, obstetricians and maternal fetal nurses have a singular view of all necessary information from both mother and baby's electronic charts.
Powerform Search	MPage	Nurse	Enables quick search of Powerforms with ability to save favorites
Smart Template Wizard/Content	MPage	IS	This MPage allows staff without CCL experience to build basic smart templates as well as utilize the Smart Templates pre-developed by UHS.
Emergency Dept. Triage	MPage	ED	Facilitates enhanced ED communication, throughput and efficiency.

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Appendix

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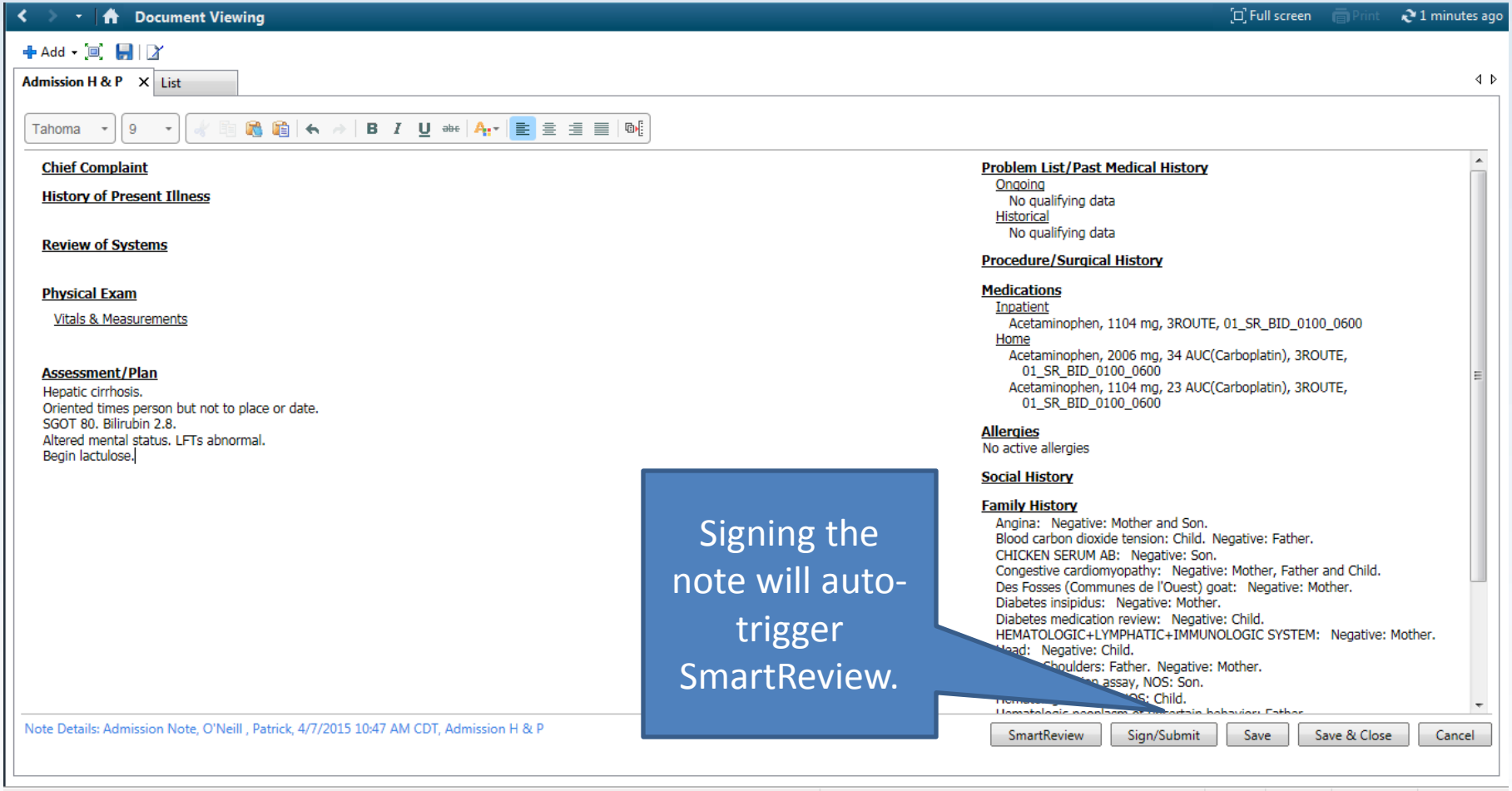
How does DQR work?



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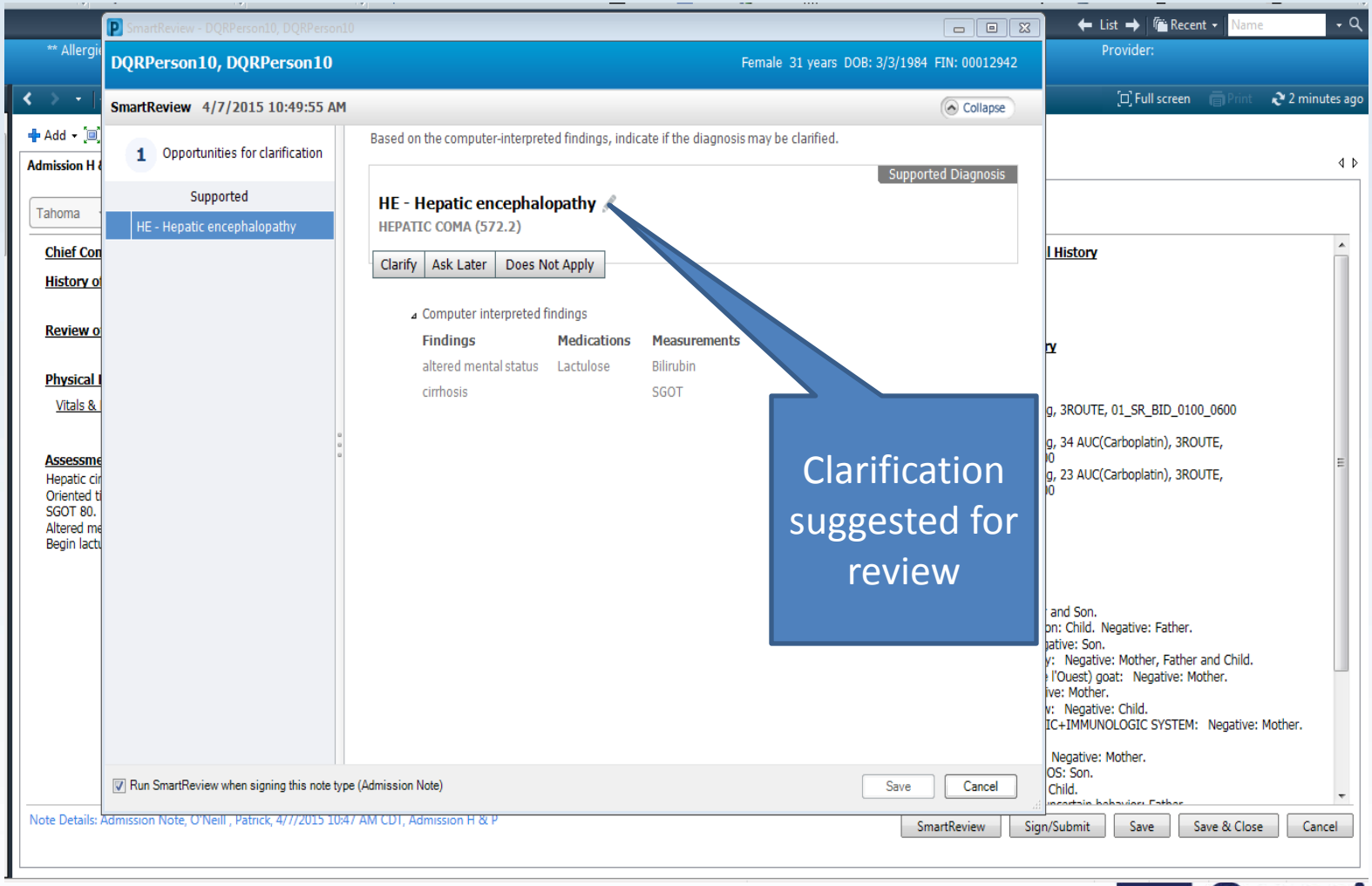
Clarification Found



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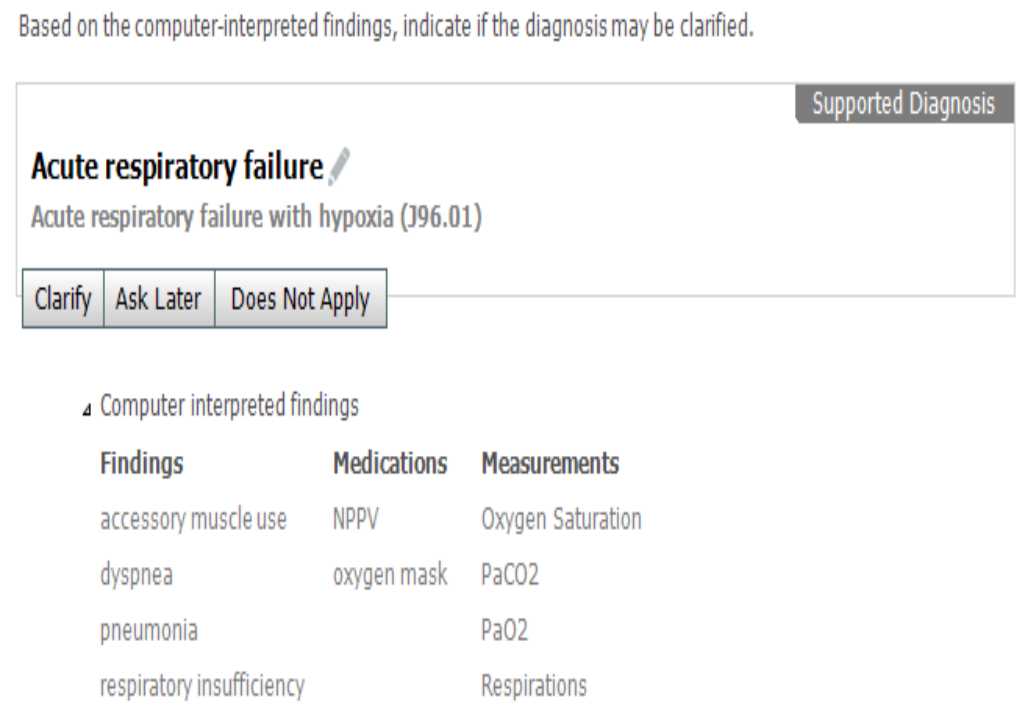
DQR Options for Supported Diagnoses

- **Clarify:** Choose this if you agree with recommendations
- **Does Not Apply:** choose this only if you are sure the diagnosis proposed is incorrect
- **Ask Again Later:** Choose this if unsure.



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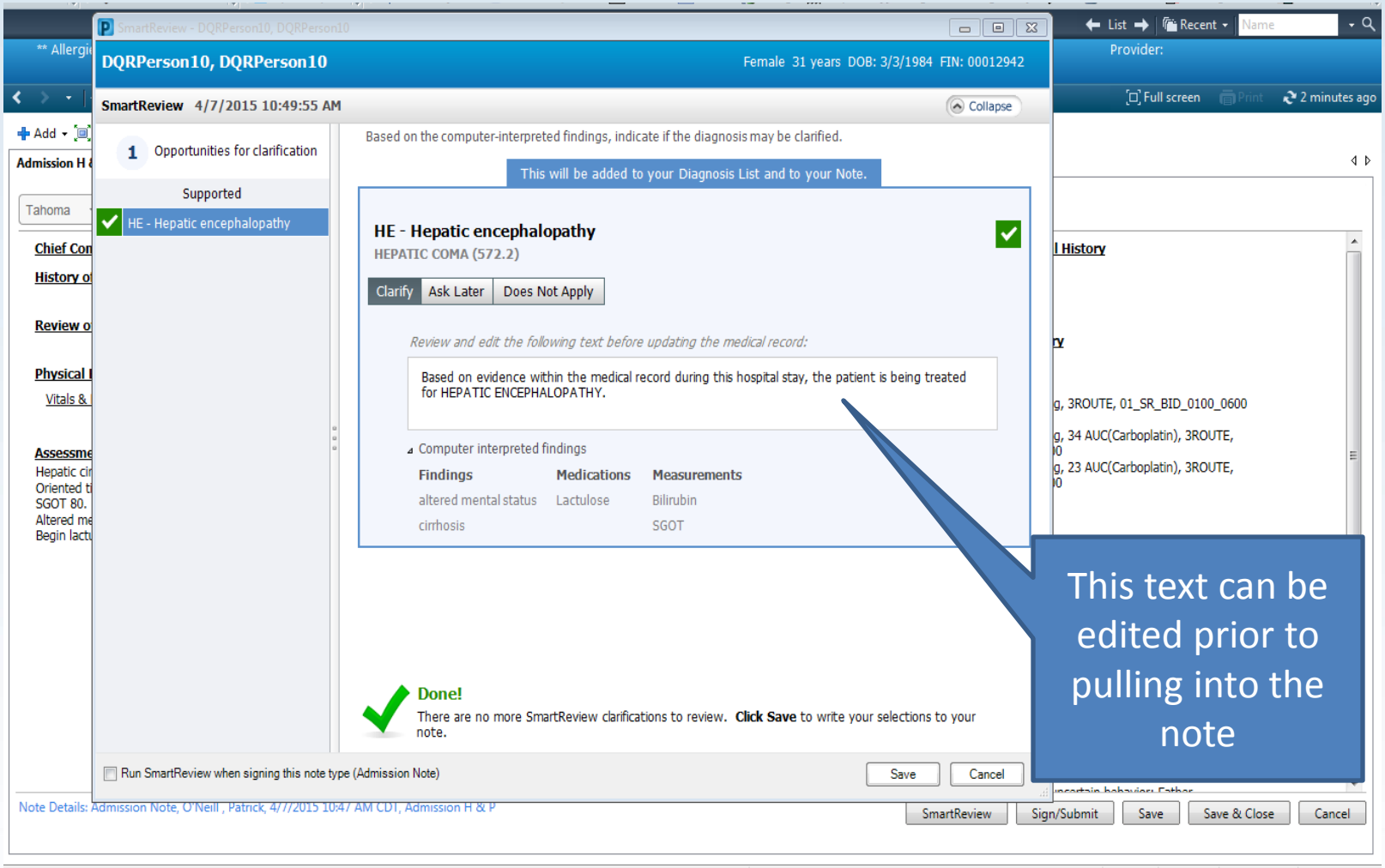
Clarification Accepted



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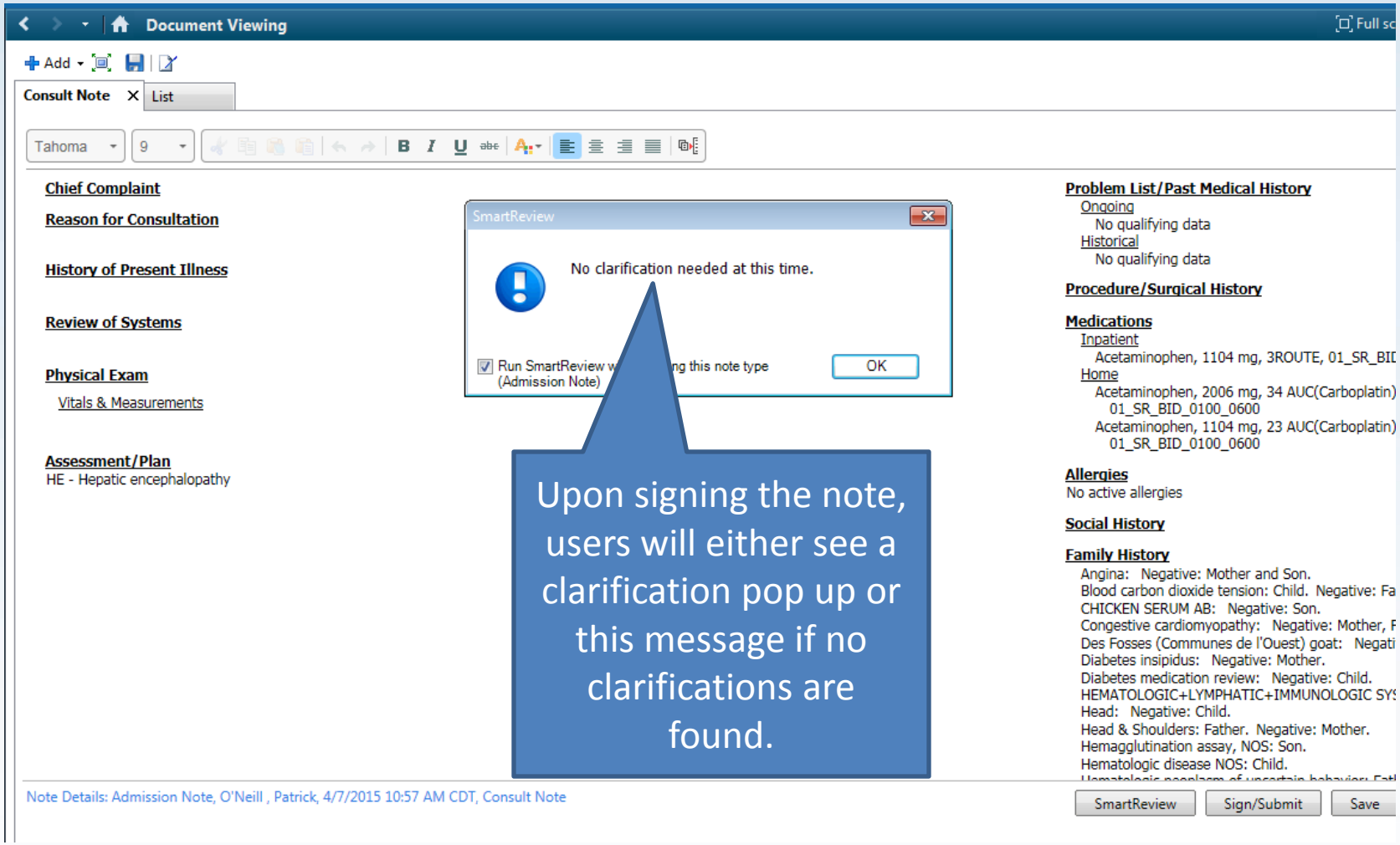

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