

IMPROVE PATIENT & HOSPITAL OUTCOMES WITH ANALYTICS

POKE-R

PREVENT PAIN AND ORGANISMS FROM SKIN AND CATHETER ENTRY AND RADIOLOGY

HEALTHCARE CUSTOMER USE CASE





Improving Patient Care Through Analytics

POKE-R

Prevent Pain and Organisms from Skin and Catheter Entry and Radiology

Major events and surgeries are not the only sources of trauma during a hospital encounter. Many small, less invasive events such as shots, line placements, blood draws, and imaging studies happen throughout a patient's hospital stay. Many of these less traumatic events have the potential to negatively impact patient outcomes by increasing the risk of hospital-acquired infections through skin invasions and exposure to organisms, reducing the patient experience by causing pain and frustration, increasing cost and causing other complications.

This use case provides insight into how Fusion Consulting helped our client reduce such events when they are not clinically required. We identified hospital-acquired infections as a key clinical event that affect clinical outcomes. To address hospitalacquired infections, we created an analytic program called Prevent Pain and Organisms from sKin and catheter Entry and Radiology (POKE-R).

Below we will identify the data points for analysis and the outline some of the technical challenges, solutions and results documented from the analytic program.

PAGE | 03

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AFFECTED JOB CAPACITIES

- Chief Medical Officer (CMO)
- Chief Nursing Officer
- VP of Patient Care
- Director of Clinical Quality
- Inpatient Clinical Services Director

USE CASE EXAMPLE

Every time a line, drain, tube or airway (LDA) is placed in a patient, every time blood is drawn from a patient, every time medication is administered to a patient, there is increased risk for hospital acquired infection, increased pain to the patient, and increased opportunity for blood loss. This can reduce both clinical outcomes and patient experience. The problem is amplified in neonatal and pediatric patients where it is more challenging to place a line and where even a small amount of blood loss can cause complications.

Taking further steps, we identified which clinical events are actually POKE-R events. We then monitored patients for the count of POKE-R events and we analyzed upcoming scheduled events. The goal is to allow the clinician to reduce the number of POKE-R invasions performed.

We have built an enterprise data warehouse using software provided by the EHR combined with custom extensions. This data warehouse allows us to get to a substantial amount of detailed information which is conformed across the hospital encounter. Next, we built custom reporting tables or views for each of our programs. This enabled simpler reporting and better performance. We faced several challenges in this but worked to overcome.

Action Type	POKE Source	Provider	POKE Details	Sched. Time ²	Future Poke Count
Injection	Medication Administration	*Unspecified	FUROSEMIDE 10 MG/ML INJECTION SOLUTION	00:35	2
Injection	Medication Administration	*Unspecified	CEFTAZIDIME 6 GRAM SOLUTION FOR INJECTION (100MG/ML IVPB)	05:00	1
Injection	Medication Administration	*Unspecified	FUROSEMIDE 10 MG/ML INJECTION SOLUTION	12:35	1
Injection	Medication Administration	*Unspecified	CEFTAZIDIME 6 GRAM SOLUTION FOR INJECTION (100MG/ML IVPB)	13:00	1

* Sorted by scheduled poke time for today.

* Pokes that are highlighted are scheduled to have already occurred based on the current time

Patient Poke Dashboard as of January 31, 2018 Pokes for the past 7 days, today, and the next two days. For: schlunger, EuZABETH - 50 pokes in past 7 days



Poke Trend for 12 Full Months by Department



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PAGE | 04

For POKE-R only, two extractions were added specifically for this project. We added an extension and modified EHR workflow specifically for Lines, Drains, and Airways (LDA) to know how many attempts the Line, Drain, or Airway placement took. Furthermore, physician-performed LDAs such as central lines were documented in a different manner so we created a special extract to get the placement times and attempts. Finally, it was not enough to know when a specimen was taken. We needed to know which procedure orders shared blood draws and which required separate blood draws. If 5 lab draws show the same collection time, it is important to know whether they were separately drawn, or all of the tests used the same blood collection.

With these extensions, all of the data needed to mine the POKE-R information was available in the data warehouse. However, before we could search for the POKE-R events, we had to configure which events were defined as POKEs. We did not want to hard-code this information and we did not want the information determined or maintained by IT personnel as it is clinical in nature. Therefore, we established an interface to configure POKE-R.

We needed to define every event which was a

POKE-R event and whether it was painful. This needs to be configured using attributes of the data elements. The following attributes were identified by the clinician as identifying POKEs:

- 1. Medication Administration: Route and Administration Event
- 2. Lab Test: Specimen Type and Specimen Source
- 3. Procedure Order: Type and Code

We created a simple secure interface for the Patient Safety and Reliability leadership to provide and administer this clinical information. This interface contains the data points listed above prepopulated from the actual clinical data warehouse. The user can then choose which values for each data point indicate a POKE and can combine data points.

Another thing that was very important was to determine the scheduled POKE-R events. Our goal was to show the clinician the upcoming POKE-R schedule so that treatment could be altered to reduce the POKEs. To do this we brought in every scheduled medication administration, procedure, surgery, image or lab test.

RESULTS

Through analytics we successfully facilitated various goals such as enabling the clinician to reduce the number of POKE-R invasions performed, and identify which clinical events were POKE-R events to improve patient outcomes. We monitored patients for the count of POKE-R events and we analyzed upcoming scheduled events. Furthermore, we ensured that accurate and meaningful information was readily available to the appropriate personnel, including timely information to clinicians so they can ultimately alter treatment, and retrospective trend analysis to enable and track performance improvement and identify opportunities for additional process improvement.

We have evaluated early progress of the analytics in improving clinician behavior and patient outcomes. The following results vs patient encounters prior to the analytics rollout has been a successful reduction within the hospital POKE-R events:

POKE-R: Reduction in POKE-R events in the PICU by 8.3%.



REUSE OPPORTUNITY OF USE CASES

POKE-R analytics can be used in an inpatient hospital setting to help facilitate clinical decision making. Most importantly it provides the medical staff with visibility into the patients' daily care and provides opportunities to reduce the risk of potential infection, reduce unnecessary expenditures/charges to the patient that are not clinically necessary, and improve the overall satisfaction of the patient. The same use case or program has been proven to work in pediatric critical care environments and is best suited for areas of the hospital that provide acute care services to patients.

HAVE QUESTIONS? WANT TO DISCUSS YOUR CURRENT PROJECTS ...



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Our Healthcare)LUTIONS

customers unlock data, from their EHRs and other data sources, to provide a vendor agnostic approach to achieving clinical outcomes. As part of this approach, Fusion provides a measurable ROI to help evaluate key areas for improvement and a framework to align clinical quality, efficiency, utilization, productivity and financial objectives.

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REFERENCES

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