



CareFusion

# Integrated Analytics Solutions

Your shortcut to performance excellence



# Integrated Analytics Solutions

for Alaris® System

Your key to actionable  
infusion information

## Executive summary

Below is a summary of all of the Guardrails® alerts activity within your facility for the time periods.

- I. **Guardrails® alerts overview: Guardrails® alerts occurring in the current period as compared to the previous period and clinician response to alert:**
  - The total number of Guardrails® alerts in the current period (n=4,641) increased by 4.3% compared to previous period (n=4,448)
  - In the current period 84.1% of alerts (n=3,904) had a clinician response of “override”; this is a 1.0% increase compared to the percent of overridden alerts in the previous period
- II. **Guardrails® Suite usage vs. basic infusions without Guardrails® Suite protection:**
  - Guardrails® Suite usage, the percentage of infusions that take advantage of hospital defined clinical best practices for drug delivery, was 82% in the current period; this is a 1% decrease compared to the previous period of 83%
- III. **“Good Catches” – common programming errors:**
  - There were 44 “Good Catches” in the current period, which is a 36% decrease compared to the previous period
- IV. **Harm Index – based on drug risk and programmed dose:**
  - A total of 53 potential Preventable Adverse Drug Events (PADEs) were averted in the current period – a potential saving of \$463,750\*; of those PADEs, 47 were related to the top 10 drugs
  - Information about Severe Harm Alerts provides nursing educational opportunities
- V. **Top overrides – where practice guidelines and current practice diverge:**
  - The Top 5 Drugs with highest number of overrides accounted for 16% of all overrides that occurred in the current period
  - Evaluate these alerts for potential opportunities to optimize the Guardrails® data set or to provide nursing education

# Executive summary

Continued

Notable in the Current Period		
Current Period	Previous Period	
Most frequent error	Errors on the increase	Errors on the decline
<ul style="list-style-type: none"> <li>Decimal Point Errors (n=16)</li> <li>Rate/Dose Errors (n=16)</li> </ul>	High Rate Errors increased from 8 to 9	<ul style="list-style-type: none"> <li>Rate Dose Errors decreased from 26 to 16</li> <li>Rate Dose Errors decreased from 29 to 16</li> </ul>

Drug Name	Profile(s)	Guardrails® alert type	Guardrails® limit	Below/above limit	# of alerts	Observations
<a href="#">Propofol</a>	Critical Care	Continuous Dose	50 mcg/kg/min	Above	258	90% of the alerts occurred when users programmed between 55 mcg/kg/min to 80 mcg/kg/min.
<a href="#">Insulin</a>	Critical Care	Continuous Dose	20 unit/h	Above	98	72% of the alerts occurred on a single device.
<a href="#">Vancomycin</a>	Oncology/ Inf Plus; Critical Care; PCU; Med/Surg	Primary Int. Duration	50 Min	Below	94	64% of alerts occurred when users programmed a duration that is no more than 10% below the limit.
<a href="#">Ampicillin</a>	Med/Surg; PCU; L-D/ OB; Critical Care	Secondary Int. Dose	2 gram	Above	87	100% of the alerts occurred when users programmed 3 grams.

## Types of alerts

- Reprogramming: alert was noted and nurse changed dose/rate
- Overrides: alert was noted, but nurse elected to stay with original dose/rate
- Cancelled infusions: nurse cancelled the infusion

Total alerts = 4,641		Current Period		Previous Period		Difference
Total Guardrails® alerts (%)	Event Type	Alerts	Percent	Alerts	Percent	Percent
	Reprogramming	319	6.9%	1,103	7.5%	-0.6%
	Overrides	3,904	84.1%	3,699	83.2%	1.0%
	Canceled Infusions	418	9.0%	416	9.4%	-0.3%
	Total	4,641	100%	4,448	100%	

### Key takeaways

- There is a slight increase in the total Guardrails® alerts in the current period compared to the previous period. The percentage of alerts resulting in an override also increased
- As a percentage, overrides are high and will contribute to nuisance alerts. A review of Guardrails® limits is recommended

## “Good Catches”

Events that were programmed incorrectly and caught by the Guardrails® alerts.

“Good Catch” Category	Number of alerts		
	Current Period	Previous Period	Difference
Total “Good Catches”	44	69	-25
0/Decimal Point Errors	<u>3</u>	4	-1
Decimal Point Errors	<u>16</u>	26	-10
Double Digit Entry Errors	<u>0</u>	2	-2
Rate/Dose Errors	<u>16</u>	29	-13
High Rate Errors	<u>9</u>	8	1

### Key takeaways:

- The number of total “Good Catches” decreased in the current period compared to the previous period; this decrease was mainly due to an increase in Decimal Point Errors and Rate/Dose Errors

# Harm Index

IV Medication Harm Index is an assessment tool for use in evaluating the harm potential associated with a reprogramming event involving an IV medication.

The Harm Index is comprised of two elements that characterize medication harm:

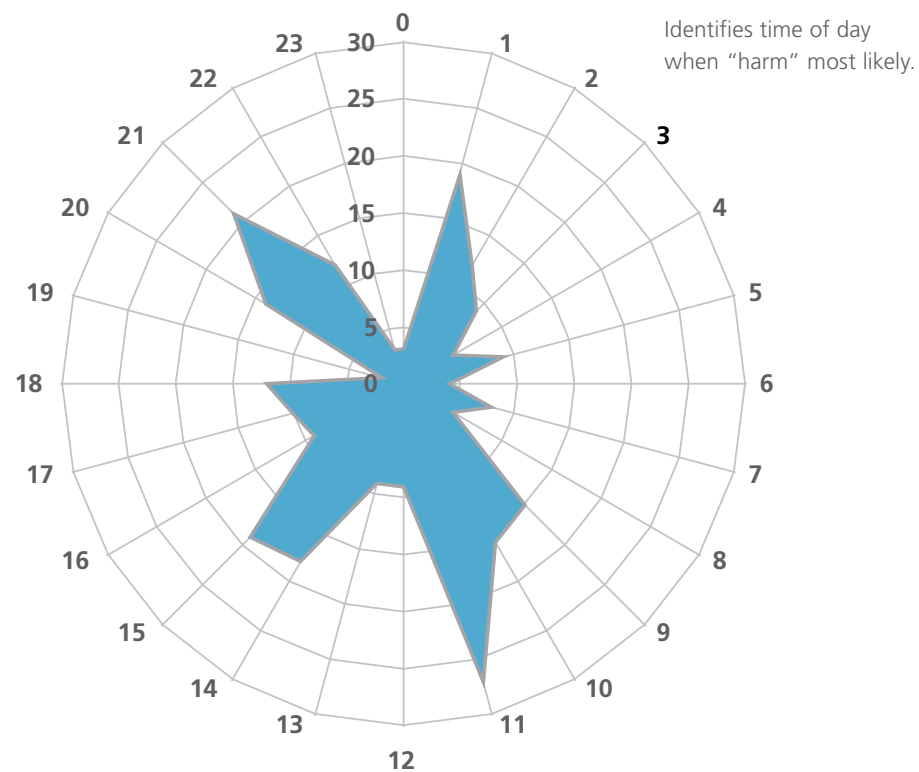
- The inherent risk of the infused drug
- How much the programmed dose is over the Guardrails® limit

## Harm Index Overview Report

### Top 10 Harm Index drugs

Drug name	Minimal	Moderate	Severe	Total
Insulin drip	151	16	15	182
midazolam	0	4	9	13
potassium chloride	0	3	7	10
NORepinephrine	7	2	1	10
fentanyl	2	5	2	9
heparin	2	2	3	7
magnesium sulfate	0	0	6	6
lorazepam	1	3	2	6
propofol	3	1	2	6
EPIneprine	3	0	0	3
Total	169	36	47	252

## Harm Index Chronogram



### Key takeaways:

- A total of 53 severe potential Preventable Adverse Drug Events (PADEs) were averted in the current period; 47 of these PADEs came from the top 10 drugs
- The potentially harmful events occurred more frequently at 11 a.m.
  - Evaluate nursing and pharmacy workflow to determine if opportunity areas exist

# Integrated Analytics Solutions

for the Pyxis® MedStation® system

Your key to actionable  
medication information

*Healthcare professionals struggle with data overload and are generally short of time. A service like this synthesizes all the data and provides actionable information to make it easy to improve performance.*



## Executive summary

Below is a summary of all of the Pyxis® MedStation® system activity within your facility for the time periods.

### Color key

<span style="color: red;">■</span>	Possible problem
<span style="color: yellow;">■</span>	Area to watch
<span style="color: green;">■</span>	Performance OK

Executive summary			
Indicators	Current Period	Previous Period	Difference
<b>Diversion and Inventory Loss</b>			
Avg. # of Cancellation Transactions per MS/month	24	40	-16
Number of CS Discrepancies	347	346	1
CS Transactions by Generic Name for User >2SD (House-wide)	496	486	10
CS Transactions by Generic Name for User >2SD (Station)	804	750	54
Doses Dispensed from Pyxis®	276,200	270,150	6050
<b>Inventory Management</b>			
Stock-out Percentage	1.2%	1.7%	0.5%
Vend/Refill Ratio	8.5	7	1.5
# of Pockets without removal for >90 days	78	85	-7
Avg. Remove Out-Dates/Station	26	21	5
# of Drugs > 2 loads/unloads	155	195	-40
Avg. # of Blind Stock-outs/Station	0.9	0.7	0.2
<b>Safety/Compliance</b>			
Profile Overrides (%)	4.5%	9.5%	-5%
CS Pockets Inventoried per Policy (%)	98%	92%	6%
Avg. Non-CS Discrepancies/Station	119	92	27
CS Discrepancies Resolved within 24 Hours (%)	95%	76.7%	18.3%
<b>System Maintenance</b>			
Avg. # of Temp Users/Station	1.4	1.3	0.1
# of Repeat Temp Users	119	92	27
# of Active User ID's w/out Activity in past 90 days	0	8	8
# of Unknown Meds in Formulary	40	0	40
Users Using Pyxis® BioID (%)	94.9%	94.6%	0.3%

## Diversion and inventory loss

The following users consistently appeared on the top percentiles for the following Key Performance Indicators (KPIs):

- Percent of Cancelled transactions (Controlled Substance— CS only)
- Number of CS Discrepancies
- CS Transactions by Generic Name for User >2SD (Station)
- CS Transactions by Generic Name for User >2SD (House-wide)
- Doses Dispensed through Pyxis® MedStation® system (CS only)

### Diversion Watch List

User Name	Aggregate Percentile	Percent of Cancelled transaction (CS only)		Number of CS Discrepancies		CS Transactions for User > 2SD (House-wide)		CS Transaction for User > 2SD (Station)		Doses Dispensed through Pyxis® MedStation® system (CS only)	
		Percentile	Percentage	Percentile	Number of CS Discrepancies	Percentile	Average SD Score	Percentile	Average SD Score	Percentile	Number of Doses
<a href="#">Smith1, John1</a>	100	95	7.6%	95	9	99	5.2	97	3.8	90	93
<a href="#">Smith1, Jane1</a>	100	79	6.0%	92	7	75	2.1	90	3.1	82	81
<a href="#">Jones1, Tom1</a>	100	75	4.9%	96	12	84	3.5	95	3.4	98	137
<a href="#">Fredricks1, Tammy1</a>	99	25	1.5%	0	0	84	3.5	94	3.3	87	84

**Recommended next steps\*:** Please review the User Summary and User Details on the relevant KPI reports for potential diversion issues or educational opportunities.

# Inventory management

The following stations consistently appeared on the top percentiles for the following Key Performance Indicators (KPIs):

- Stock-out Percentage
- Vend to Refill Ratio
- Number of Pockets w/o Removals for >90 days
- Avg. Remove Out-Dates/Station
- Number of Meds with greater than 2 Loads/Unloads
- Avg. Number of Blind Stock-outs/Station

Acting on these stations will maximize inventory management.

## Stations to Act On

Station	Aggregate Station Percentile	Stock-out (Percentage)		Vend to Refill Ratio		Number of Pockets w/o Removals >90 days		Number of Removed Out-Dates		Number of Meds >2 Load/Unloads		Number of Blind Stock-outs	
		Percentage	Percentile Score	Vend to Refill Ratio	Percentile Score	Number of Pockets	Percentile Score	Number of Doses	Percentile Score	Number of Meds	Percentile Score	Number of Blind Stock-outs	Percentile Score
<a href="#">6ICU3</a>	100	2.3%	100	6.1	96	109	85	195	90	1	90	24	97
<a href="#">6ICU1</a>	99	1.8%	95	6.3	95	110	87	238	100	0	0	20	95
<a href="#">11FL2</a>	97	0.9%	91	8.6	94	52	20	130	80	7	100	20	95
<a href="#">6ICU2</a>	96	1.4%	93	8.7	93	80	40	221	97	3	95	14	70
<a href="#">5MSU2</a>	95	0.5%	90	10.2	85	62	35	143	85	1	90	24	97
<a href="#">ED2</a>	94	1.9%	97	4.7	97	123	97	45	50	1	90	12	50
<a href="#">ED3</a>	90	2.1%	98	3.8	100	130	100	68	65	1	90	7	25
<a href="#">CCCU3</a>	90	1.1%	92	8.8	92	96	80	126	75	4	97	12	50
<a href="#">8IMTA2</a>	90	1.1%	92	9.0	91	81	45	134	83	0	0	26	100

# Station detail

Drill down to problem areas

## Station Detail: 6ICU3

Inventory Management for Medication Dispensing Detail

Period: January 1, 2008 to January 31, 2008

Stock-out Percentage (Focus attention on Medications with >1 Stock-out):

Med ID	Drawer/ Sub-drawer/ Pocket	Med Description	Dosage Form	Number of Stock-outs	Number of Vends	Stock-out (%)	Current	
							Min	Max
309	9 / 3	TICARCILLIN/K CLAVULANATE 3.1 GM	VIAL	8	19	42.1%	1	3
616	28 / 3	CISATRACURIUM 2 MG	VIAL	8	38	21.1%	20	40
2527	25 / 4	PIPERACIL/TAZOBAC 3.375GM/50ML 3.375 GM	IVPB	5	112	4.5%	30	80
64	11 / 2	TORSEMIDE 50MG/5ML 50 MG	INJ	4	11	36.4%	20	50
193	27 / 2	CLINDAMYCIN 600 MG	ADDVANT	4	31	12.9%	4	8
79	22 / 4	CEFTRIAZONE ADD-VANT 2000 MG	ADDVANT	3	11	27.3%	1	4
3404	22 / 5	NITROGLYCERIN 50 MG	BOTTLE	3	13	23.1%	3	5
2980	24 / 24	MILRINONE 40MG/100ML D5W 40 MG	BAG	3	21	14.3%	2	4
3379	17 / 12	RIFAXIMIN 200 MG	TAB	3	22	13.6%	4	10
269	11 / 5	NIMODIPINE 30 MG	CAP	3	26	11.5%	20	40
561	4 / 1 / D2	VALPROATE 500 MG	VIAL	3	26	11.5%	7	15
700	24 / 18	D5-1/2NS/ KCL 20MEQ/L 1 BAG	IVSOLN	3	41	7.3%	5	8
1792	6 / 11	LEVOTHYROXINE 200 MCG	VIAL	2	5	40.0%	3	5
2732	24 / 27	PIPERACILL/TAZOBAC 4.5GM/100ML 4.5 GM	IVPB	2	5	40%	4	8
1944	1 / 48	SCOPOLAMINE 0.4 MG	VIAL	2	7	28.6%	1	3
194	23 / 9	CLINDAMYCIN 900 MG	ADDVANT	2	9	22.2%	4	6

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