IV Dilaudid: Less is More

VHHA “Brown Bag” Series Lunch & Learn
February 26, 2018

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Presenters

Brenda Woodcock, RN, MSN, WHNP
CNO

Diana Willman, Pharm.D., BCPS
Director of Pharmacy

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Southside Regional Medical Center

- 300 licensed beds
- Specialty Services:
  - Bariatrics
  - Cardiology
  - Oncology
  - Total Joint and Spine
- Serves the Tri-Cities:
  - Level III Trauma Center; 60,000 ED visits/year
  - Invasive Cardiology
  - Primary Stroke Center
  - Radiation Oncology
  - Women's Services: Labor & Delivery, NICU

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Southside Regional Medical Center

Accredited Comprehensive Weight Loss Surgery Center 2015-2018

Certified Primary Stroke Center 2012-2018

Accredited Cardiac Cath Lab & Chest Pain Center with Percutaneous Coronary Intervention 2018-2020

Gold Seal of Approval® for Hip and Knee Joint Replacement 2018-2020

Accredited Cancer Center 2018-2020

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IV Dilaudid (Hydromorphone): Less Is More

Objectives

- Describe safety concerns with IV hydromorphone at our facility
- Discuss implementation of hydromorphone usage guidelines at SRMC
- Demonstrate impact on prescribing and adverse events
- Describe future opportunities for a wider “safety net”

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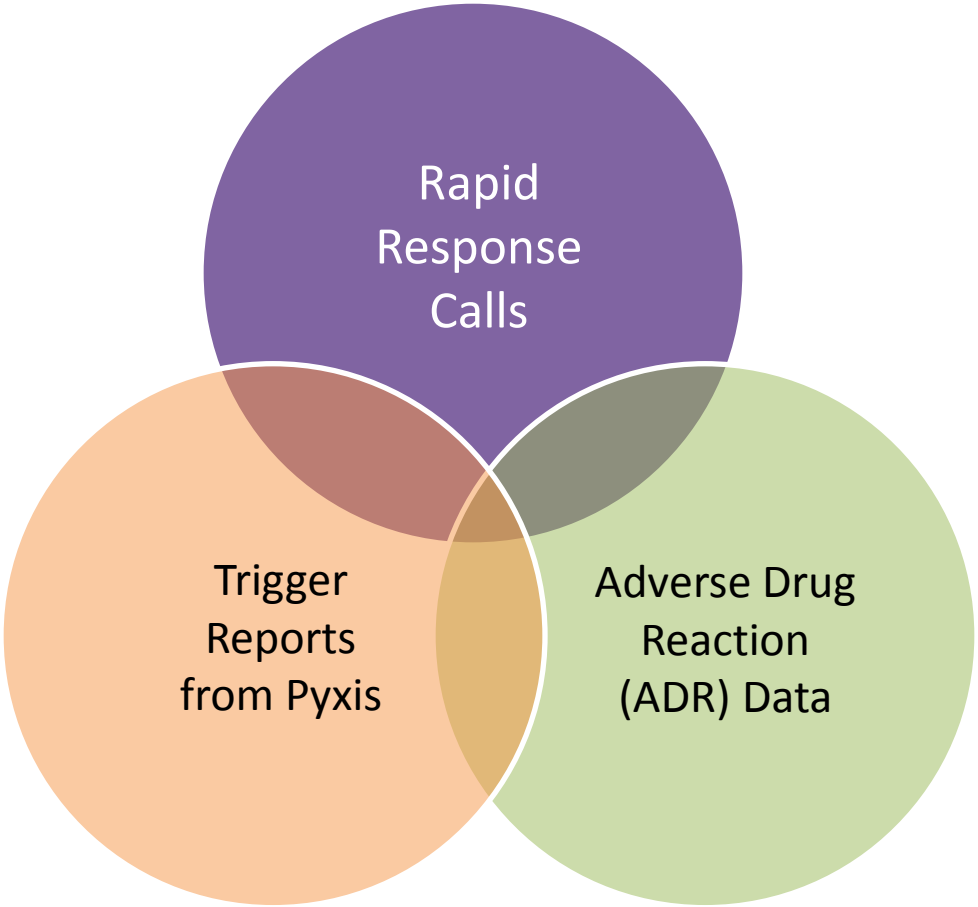
Background



IV Dilaudid a commonality

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Safety Concerns

- Order sets
- Utilization of high doses, high frequency
- Peak effect vs. “stacking”
- Adverse events in younger patients
- Education opportunities
  - Potency
  - Risk factors for oversedation
  - Combination use with benzodiazepines
- Inconsistent monitoring

Action Plan

- Met with Medical Staff from key departments
- Developed guidelines for use
- Committee approvals
- Education plan
- Letter to Medical Staff
- Monitoring

Risk Factors	Med	Dose	Level Severity
• opiate naïve	Dilaudid IV Fentanyl Patch Haldol IM/PO	1mg IV q1h PRN pain 25mcg patch 50mg IM/ 10mg PO	6
• 68yo • Obese • Asthma • Post-op • opiate naïve	Dilaudid Oxycodone	1mg q4h prn pain 10mg PO	4
• post-op spinal surgery	Dilaudid IV Fentanyl Patch Morphine	1mg IV q5min prn pain 50mcg patch 30 mg PO x 2	5
-	**Dilaudid** Trazodone Temazepam	**2mg IV q6h PRN pain** 50mg QHS 30 mg QHS	4
• Intoxicated • Concussion s/p MVA	Dilaudid IV Lorazepam IV	1mg IV x 2 1mg IV x 1	4
• HD pt • CHF – on home 02 • Presented with AMS	Dilaudid IV Morphine IV Hydralazine IV	1mg q3hrs prn 2mg q1h prn 25mg IV QID	4
• Admitted with lethargy • Smoker/ heroine user	Dilaudid IV Benadryl IV	1mg x1 25mg IV x1	4
• post-op	**Dilaudid PCA (d/c)** Dilaudid IV	Demand: 0.3mg q10min 1mg q2h prn pain	4
• 62yo • opiate naïve • severe dehydration • CKD	Dilaudid IV Morphine IV Oxycodone PO	1mg q4h prn pain 1mg q4h prn pain 5mg PO q4h prn pain	5
-	**Dilaudid IV**	**2mg q2h prn pain**	6

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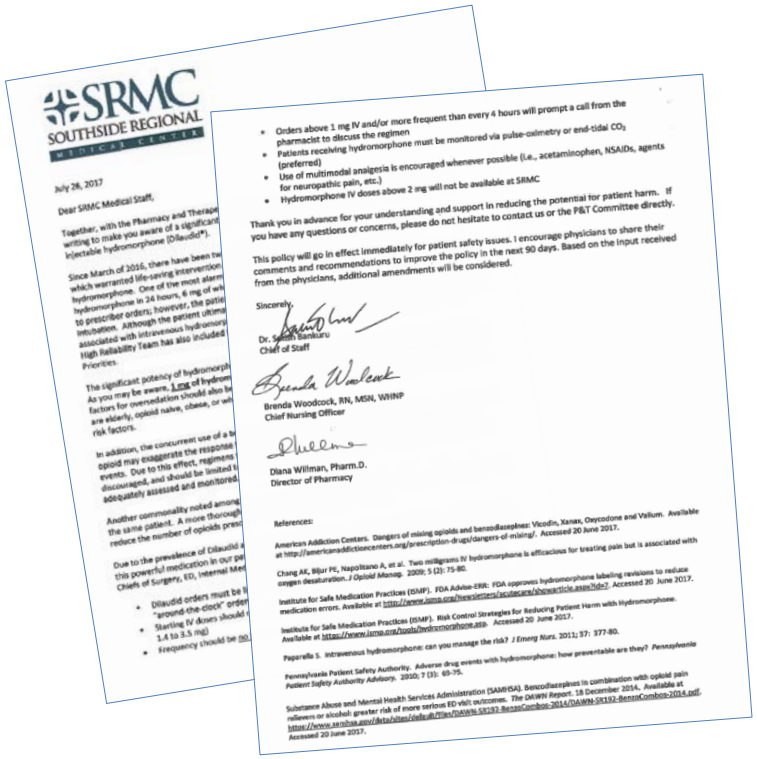
Implementation



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July 26, 2017

Dear SRMC Medical Staff,

Together, with the Pharmacy and Therapeu
writing to make you aware of a significant
Injectable hydromorphone (Dilaudid®).

Since March of 2016, there have been tw
which warranted life-saving intervention
hydromorphone. One of the most alarm
hydromorphone in 24 hours, 4 mg of wh
to prescriber orders; however, the patie
intubation. Although the patient ultima
associated with intravenous hydromorp
High Reliability Team has also included
Priorities.

The significant potency of hydromorph
As you may be aware, 1 mg of hydrom
factors for overdedation should also be
are elderly, opioid naive, obese, or wh
risk factors.

In addition, the concurrent use of a b
opioid may exaggerate the response
events. Due to this effect, regimens
discouraged, and should be limited t
adequately assessed and monitored.

Another commonality noted among
the same patient. A more thorough
reduce the number of opioids pres

Due to the prevalence of Dilaudid a
this powerful medication in our pa
Chiefs of Surgery, ED, Internal Me

- Dilaudid orders must be li
"around-the-clock" order
- Starting IV doses should
1.4 to 3.5 mg)
- Frequency should be no

- Orders above 1 mg IV and/or more frequent than every 4 hours will prompt a call from the pharmacist to discuss the regimen
- Patients receiving hydromorphone must be monitored via pulse-oximetry or end-tidal CO_2 (preferred)
- Use of multimodal analgesia is encouraged whenever possible (i.e., acetaminophen, NSAIDs, agents for neuropathic pain, etc.)
- Hydromorphone IV doses above 2 mg will not be available at SRMC

Thank you in advance for your understanding and support in reducing the potential for patient harm. If you have any questions or concerns, please do not hesitate to contact us or the P&T Committee directly.

This policy will go in effect immediately for patient safety issues. I encourage physicians to share their comments and recommendations to improve the policy in the next 90 days. Based on the input received from the physicians, additional amendments will be considered.

Sincerely,

Dr. Sastry Bankuru
Chief of Staff

Brenda Woodcock, RN, MSN, WHNP
Chief Nursing Officer

Diana Willman, Pharm.D.
Director of Pharmacy

References:

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Pennsylvania Patient Safety Authority. Adverse drug events with hydromorphone: how preventable are they? *Pennsylvania Patient Safety Authority Advisory.* 2010; 7 (3): 69-75.

Substance Abuse and Mental Health Services Administration (SAMHSA). Benzodiazepines in combination with opioid pain relievers or alcohol: greater risk of more serious ED visit outcomes. *The DAWN Report.* 18 December 2014. Available at https://www.samhsa.gov/data/sites/default/files/DAWN-SR192-BenzoCombos-2014/DAWN-SR192-BenzoCombos-2014.pdf. Accessed 20 June 2017.

Safe Use of IV Hydromorphone (Dilaudid®)

New SRMC Guidelines

1 mg of hydromorphone injection = 7 mg morphine injection

- Dilaudid is for PRN use only with proper pain scales (i.e., no scheduled or "around-the-clock" orders)
- Starting IV doses should range from 0.2 to 0.5 mg for most patients (i.e., IV morphine equivalent of 1.4 to 3.5 mg)
- Doses should be no more frequent than every 4 hours for non-ED patients
- Pharmacist will contact prescriber for new orders above 1 mg IV and/or more frequent than every 4 hours
- Patients receiving hydromorphone must be monitored via pulse oximetry or end-tidal CO_2 (preferred)
- Use of multimodal analgesia is encouraged whenever possible (i.e., acetaminophen, NSAIDs, agents for neuropathic pain, etc.)
- Hydromorphone IV doses above 2 mg will not be available at SRMC

7.26.17

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Changes in Dilaudid Prescribing

- Decrease in IV Dilaudid starting dosages
  - ✓ 46% decrease in 2 mg orders
  - ✓ 26% decrease in 1 mg orders
  - ✓ 71% increase in 0.5 mg orders
  - ✓ Several 0.25 mg and 0.2 mg orders
- Reduction in Dilaudid utilization
- Greater interval between doses

2 mg Order Frequency	# BEFORE	# AFTER
Every 6 hours	8	5
Every 4 hours	76	64
Every 3 hours	41	5
Every 2 hours	34	3
Hourly	2	0
Once	78	53
Total	239	130

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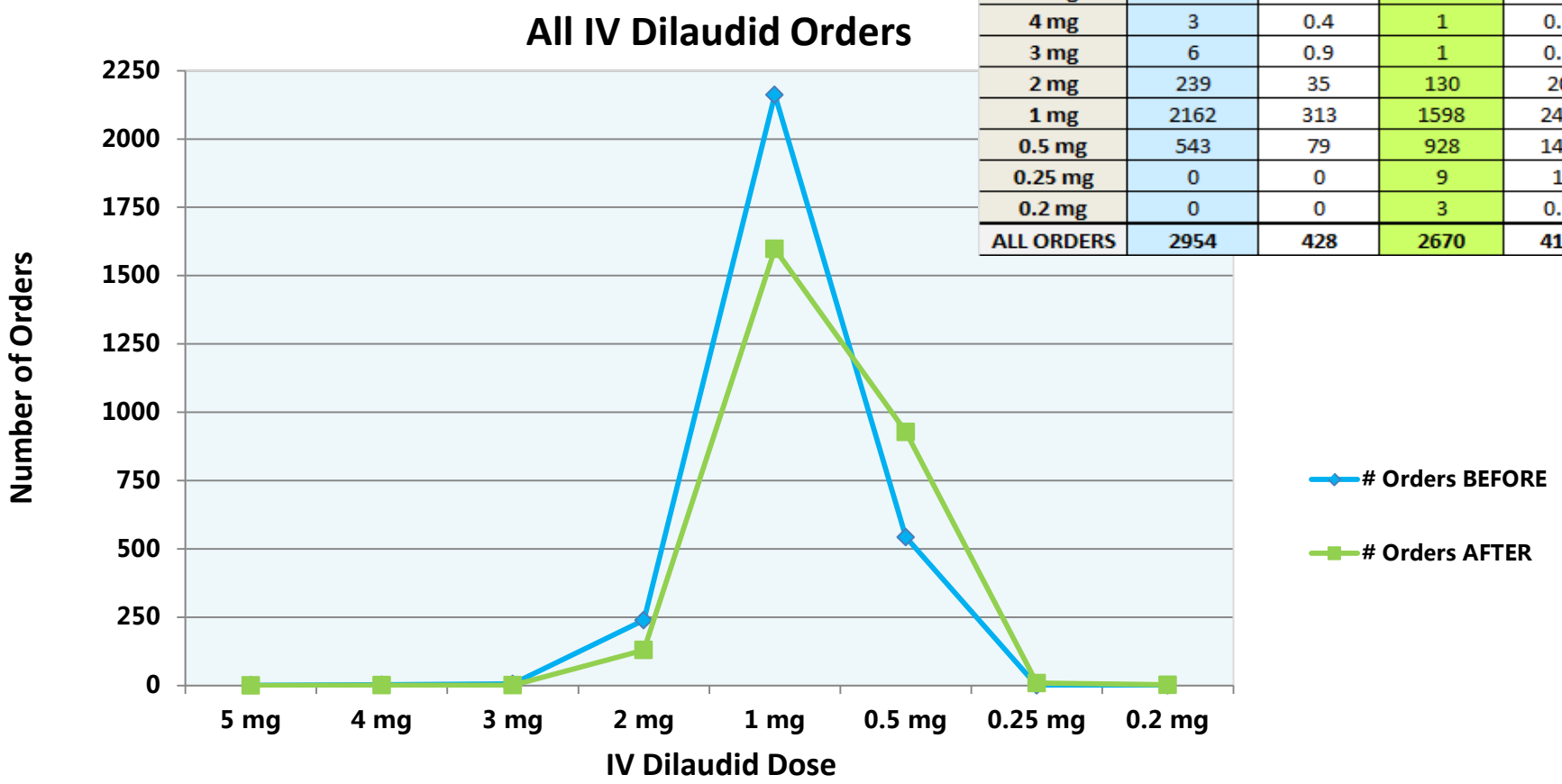
Before: 9/1/16 to 3/31/17 | After: 8/1/17 to 2/14/18

Changes in Dilaudid Prescribing

IV DOSE	# Orders BEFORE	Avg/ Month	# Orders AFTER	Avg/ Month
5 mg	1	0.1	0	0
4 mg	3	0.4	1	0.2
3 mg	6	0.9	1	0.2
2 mg	239	35	130	20
1 mg	2162	313	1598	246
0.5 mg	543	79	928	143
0.25 mg	0	0	9	1
0.2 mg	0	0	3	0.5
ALL ORDERS	2954	428	2670	411



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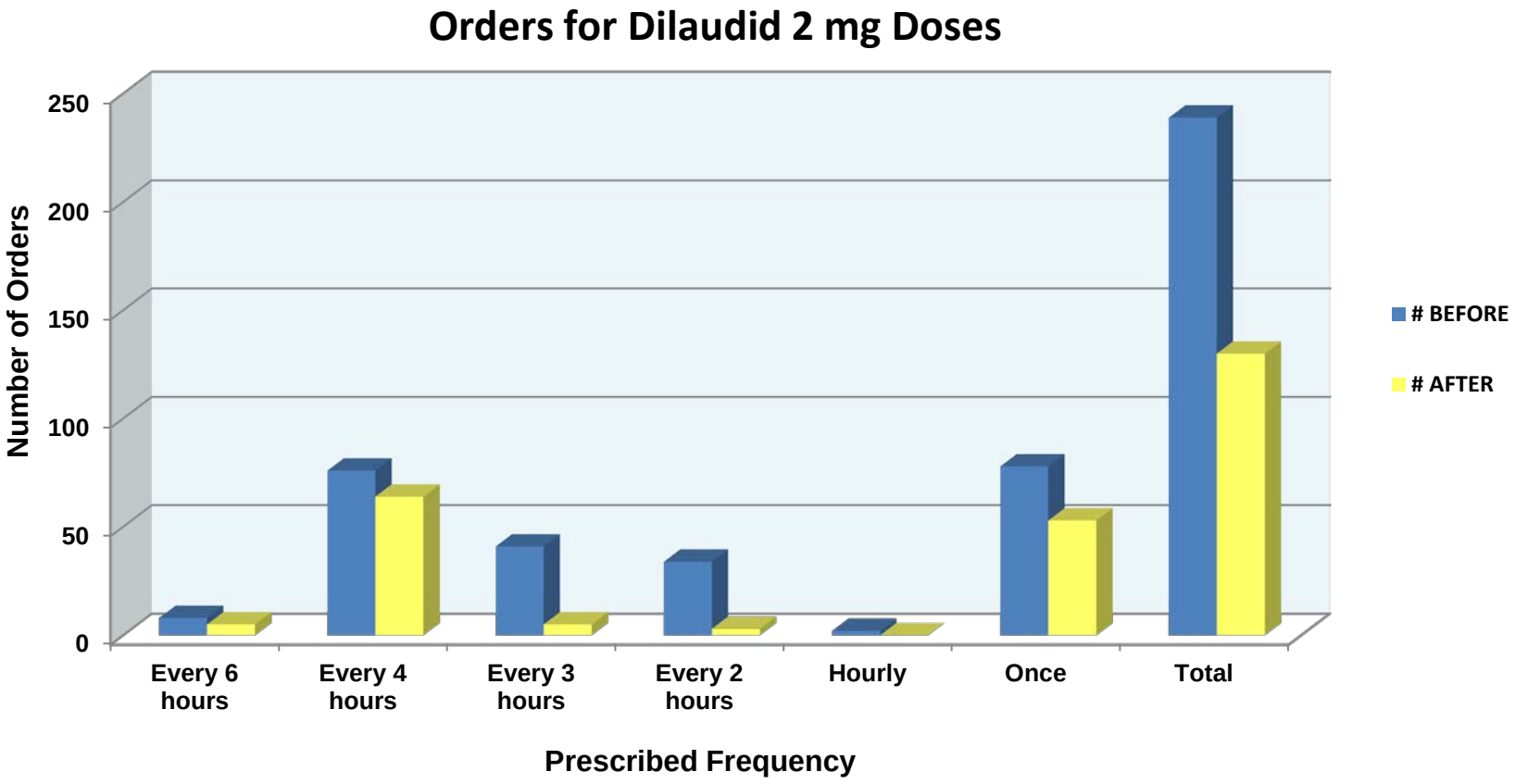
Changes in Dilaudid Prescribing



Before: 9/1/16 to 3/31/17 | After: 8/1/17 to 2/14/18

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Additional Findings

- NO serious adverse events (Level 5-8)
- NO reports of inadequate pain control
- Changes in Narcan utilization
- Pulse oximetry for 100% of IV Dilaudid patients
- Increased awareness across multiple disciplines

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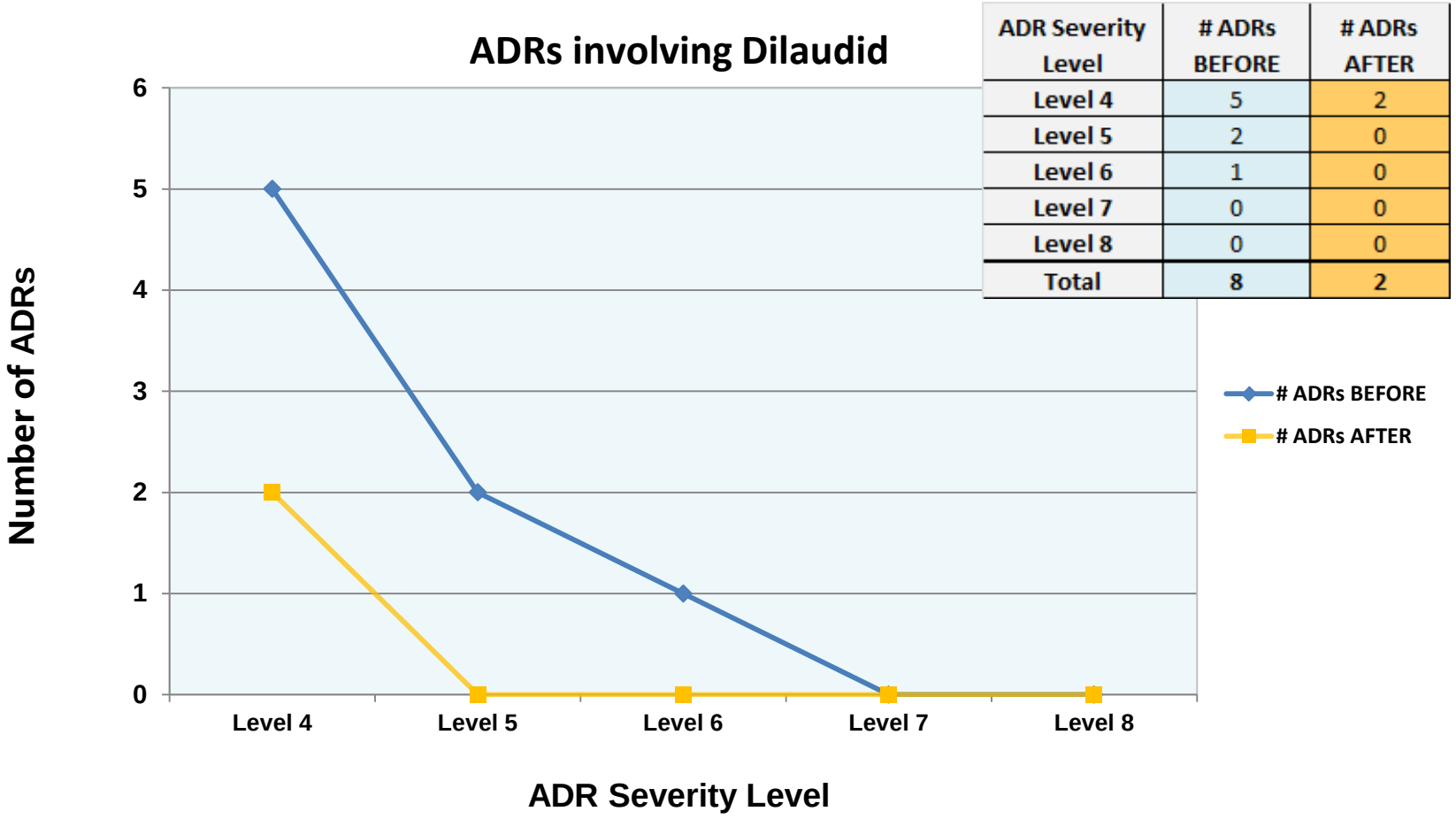
Adverse Drug Reaction (ADR) Trend



ADR Severity Level	# ADRs BEFORE	# ADRs AFTER
Level 4	5	2
Level 5	2	0
Level 6	1	0
Level 7	0	0
Level 8	0	0
Total	8	2

Before: 9/1/16 to 3/31/17 | After: 8/1/17 to 2/14/18

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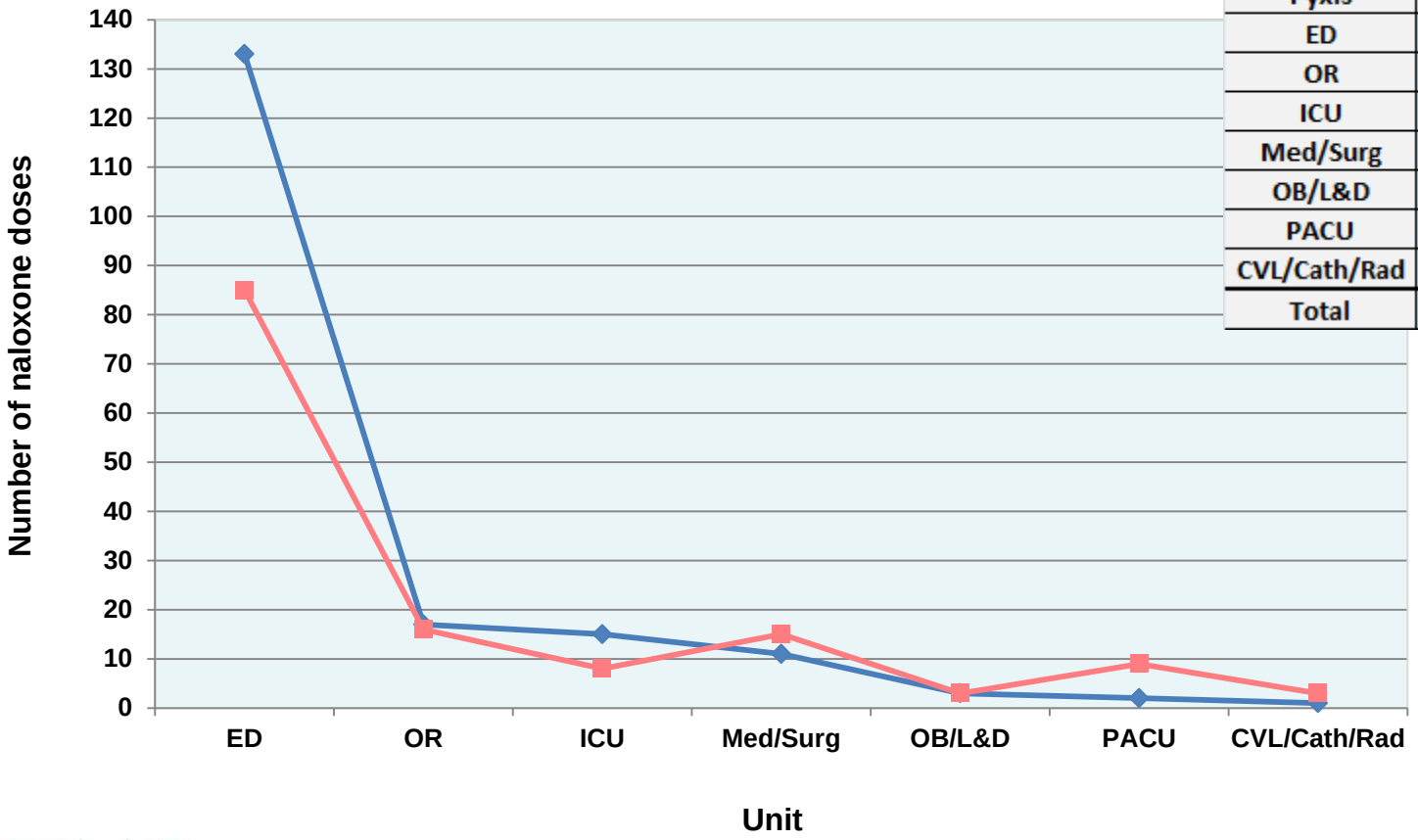
Naloxone (Narcan®) Utilization



Narcan Doses Vended from Pyxis	# Doses BEFORE	# Doses AFTER
ED	133	85
OR	17	16
ICU	15	8
Med/Surg	11	15
OB/L&D	3	3
PACU	2	9
CVL/Cath/Rad	1	3
Total	182	139

Before: 9/1/16 to 3/31/17 | After: 8/1/17 to 2/14/18

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Lessons Learned

Dilaudid Orders 2/9/18 4:08 A

Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	201	W			HYDROmorphone	IV, 02/08/18 15:21:00 EST, Bolus Dose, Initial (mg): 0, Pt Admin Bolus dose (mg): 0.2mg, Basal Rate (mg/hr):	Ordered
	201						
Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	202	A			HYDROmorphone	0.5 mg, Soln-Inj, IV Push, q6H-int PRN for pain-moderate to severe, Routine, First Dose: 02/08/18 18:32:00 ES	Ordered
	202						
Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	205	A			HYDROmorphone	0.2 mg, Soln-Inj, IV Push, q4H-int PRN for pain-breakthrough, Routine, Order Duration: 5 day(s), First Dose: 0	Ordered
	205						
Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	209	A			HYDROmorphone	0.5 mg, Soln-Inj, IV Push, Once PRN for pain-breakthrough, Routine, First Dose: 02/07/18 9:35:00 EST	Ordered
	209						
Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	211	A			HYDROmorphone	1 mg, Soln-Inj, IV Push, q4H PRN for pain-severe 7 to 10, Routine, First Dose: 02/06/18 13:27:00 EST	Ordered
	211						
Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	213	A			HYDROmorphone	1 mg, Soln-Inj, IV Push, q6H PRN for pain-severe 7 to 10, Routine, First Dose: 02/05/18 11:41:00 EST	Ordered
	213						
Unit	Rm	Be	Patient Name	FIN	Order	Order Details	Status
VAS 2E	219	A			HYDROmorphone	1 mg, Soln-Inj, IV Push, q4H-int PRN for pain-severe breakthrough, Routine, Order Duration: 5 day(s), First Do	Ordered
	219						

- **Less is more!**
- Make no assumptions on knowledge base
- Engage key physician leadership prior to committees
- “Unified front”
- Respiratory Therapy report
- Supply lower dosages in Pyxis
- Align EMR / order sets / products
- Shortages

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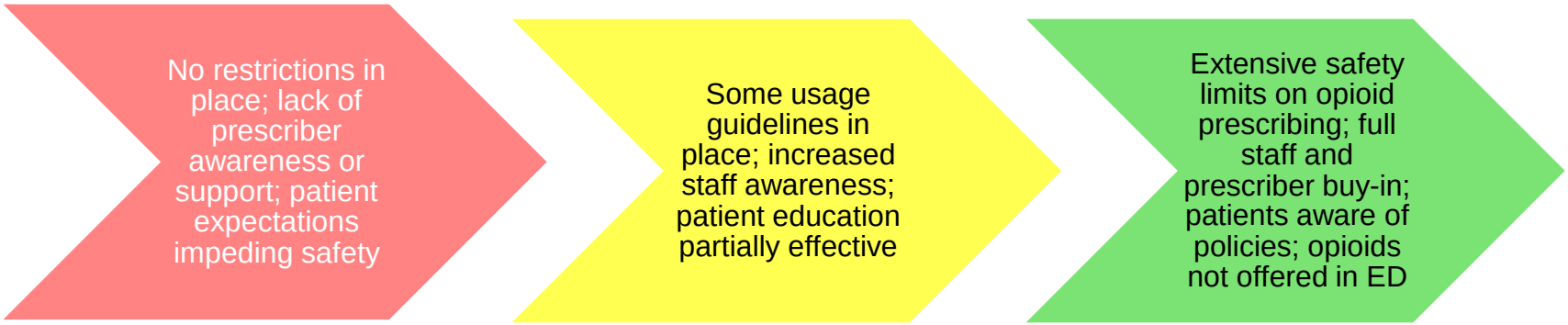
Opioid Safety Continuum



Where is your facility on this spectrum?
What else can be done?

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Opportunities / Next Steps

- 72-hour discontinuation of IV opioids
- Review additional practices (i.e., lorazepam for sedation)
- Ongoing education for all clinical staff
- Patient expectations
- Continue to monitor ADR data

Questions?

Thank you

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