

HOSPITAL
FOR
SPECIAL
SURGERY

Opioid consumption after anterior cervical spine surgery: what is the appropriate minimum quantity?

MIDWEST
ORTHOPAEDICS
at RUSH

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Overprescribing leads to **high numbers of leftover pills** in the home...



Opioid Addiction
2016 Facts & Figures

“People often **share their unused pain relievers**, unaware of the dangers of nonmedical opioid use. Most adolescents who misuse prescription pain relievers are given them for free by a **friend or relative**”

Pain management must allow for a **functional recovery** while **minimizing leftover medications**...what constitutes the “appropriate minimum quantity”?

Methods – Study sample

- **PURPOSE:** To prospectively record daily opioid use and pain levels after one- or two-level ACDF or CDA at two high-volume spine centers
- Prospective, observational study
- One- or two level ACDF or CDA
- Exclusions: <18 years old, non-English speakers, daily opioid use in the six months prior to surgery
- Seven fellowship trained spine surgeons across two institutions

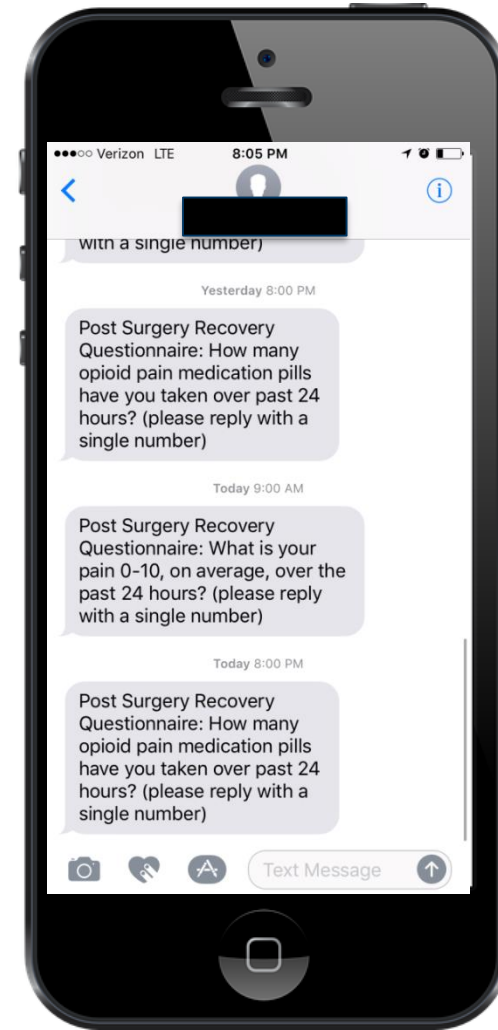


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Methods – Data collection

- Automated **SMS-based data collection platform**
- Daily opioid consumption, daily NRS pain scores
- At six weeks or cessation of opioid use: number of pills remaining, method of disposal, side effects
- Prescription, refill data, pain satisfaction taken from state registry and/or EMR

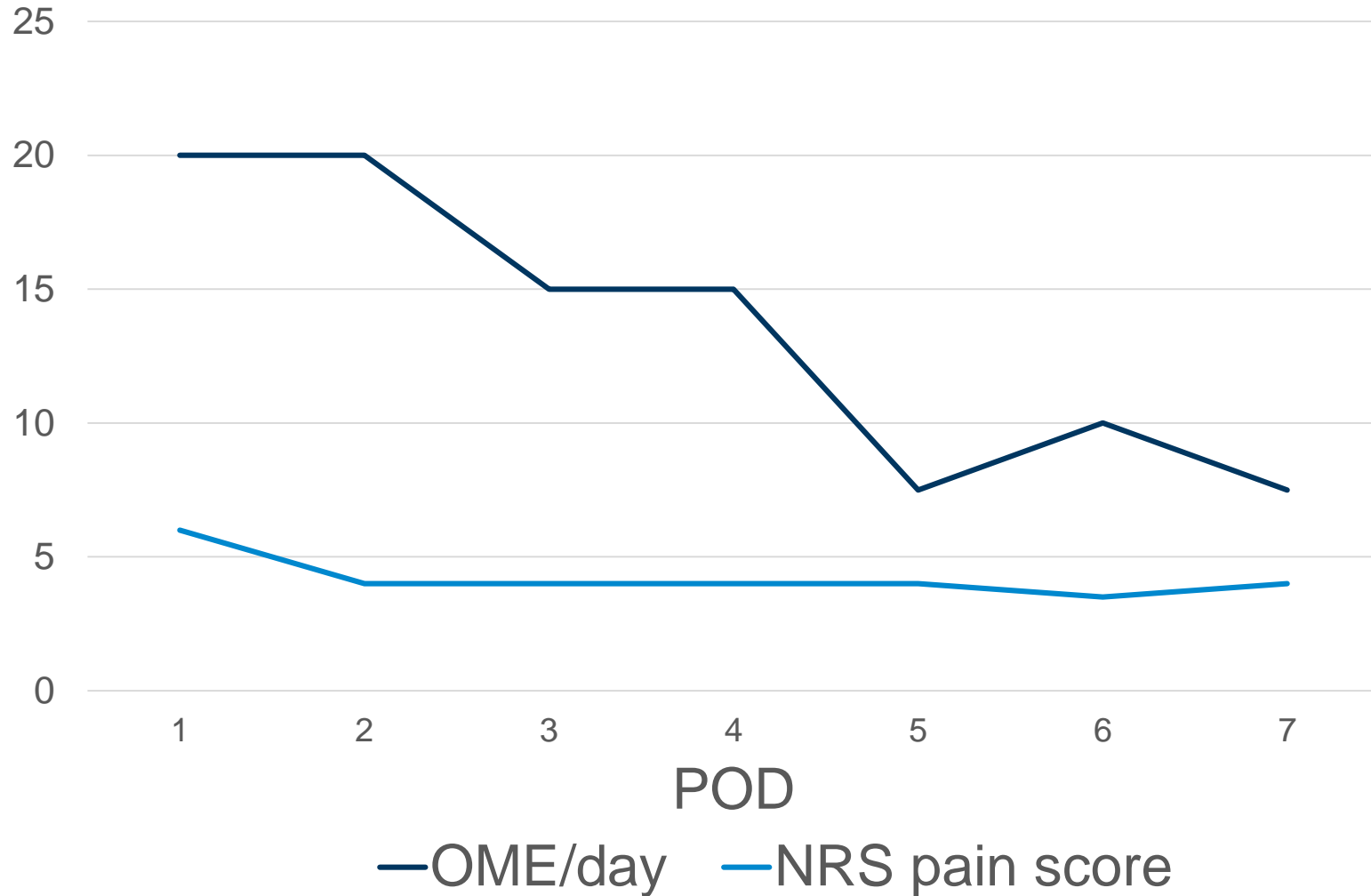


Results – Study sample

		N (48)	% or range
Age (yrs)*		50.2 (10.9)	27-77
BMI*		27.4 (4.2)	19.8-36.8
Gender			
	Male	27	56.3%
	Female	21	43.8%
Surgery			
	ACDF	32	66.7%
	CDA	16	33.3%
Number of Levels			
	1	31	64.6%
	2	17	35.4%
Length of stay (days)			
	≤1	45	93.8%
	2	3	6.3%
History of psychiatric disorder		9	18.8%
History of intermittent opioid use*		9	18.8%
Current smoker		3	6.3%
Marijuana use		4	8.3%
Greater than 7 drinks/week		6	12.5%
Type of opioid prescribed			
	Tramadol	10	20.8%
	Oxycodone	26	54.2%
	Hydrocodone-acetaminophen	11	22.9%
	Other	1	2.1%

Results – Post op opioid consumption and pain scores*

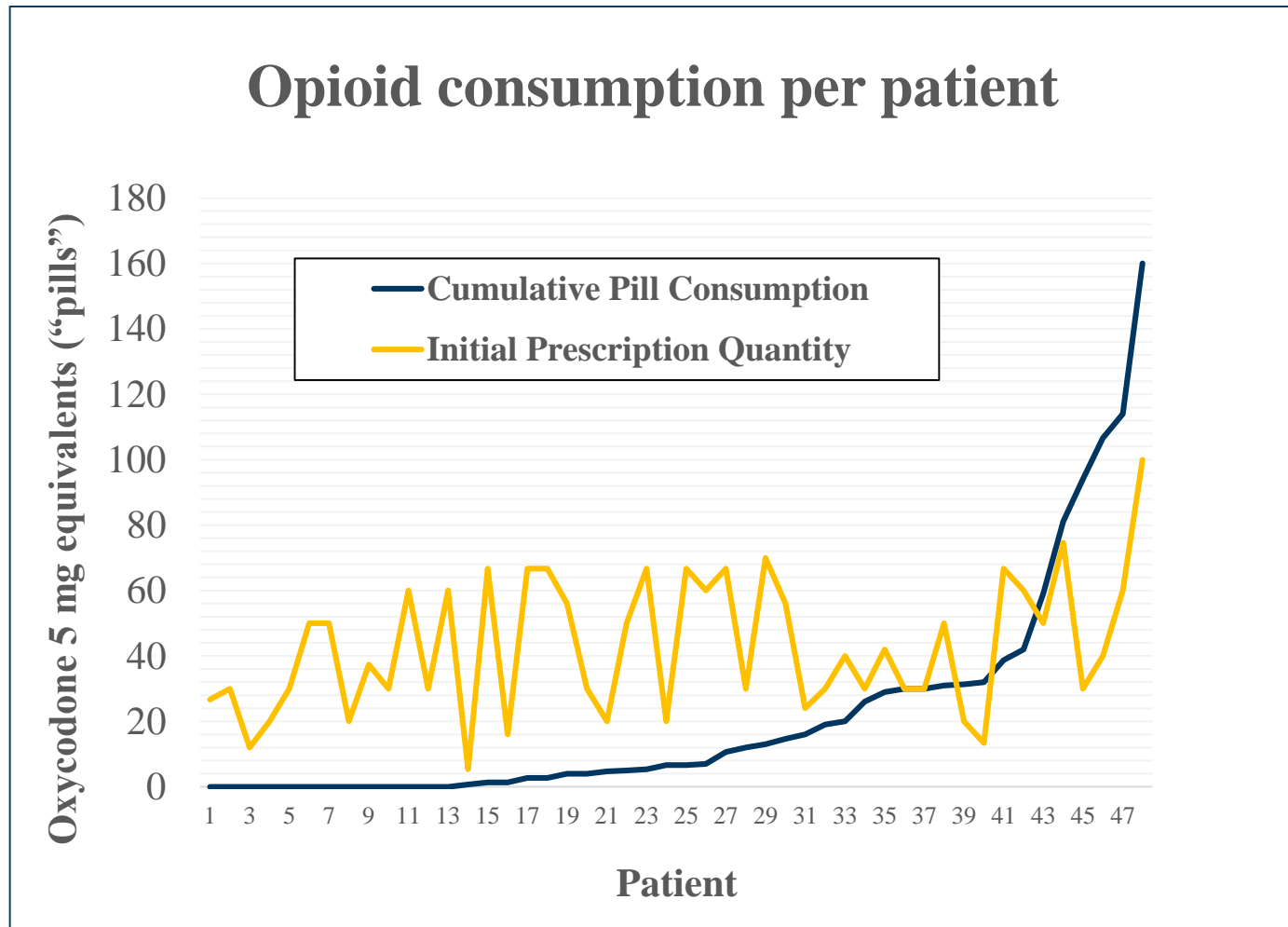
***excludes
the 27%
that didn't
take
opioids**



**50%
stopped
taking
opioids in
first week**

**91.4%
stopped by
POD12**

Results – Opioid consumption vs. initial prescription, per patient



- Opioid use comparable between 1 and 2 level surgeries ($P>0.05$)
- Non-daily preop opioid use associated with top 25% of consumption (50% vs. 9.1%, $p=0.006$)
- 27% of patients used no opioids
- 16% ($n=8$) refills
- Median use: 6.7 pills
- 75th percentile = 30 pills

Strengths & Weaknesses

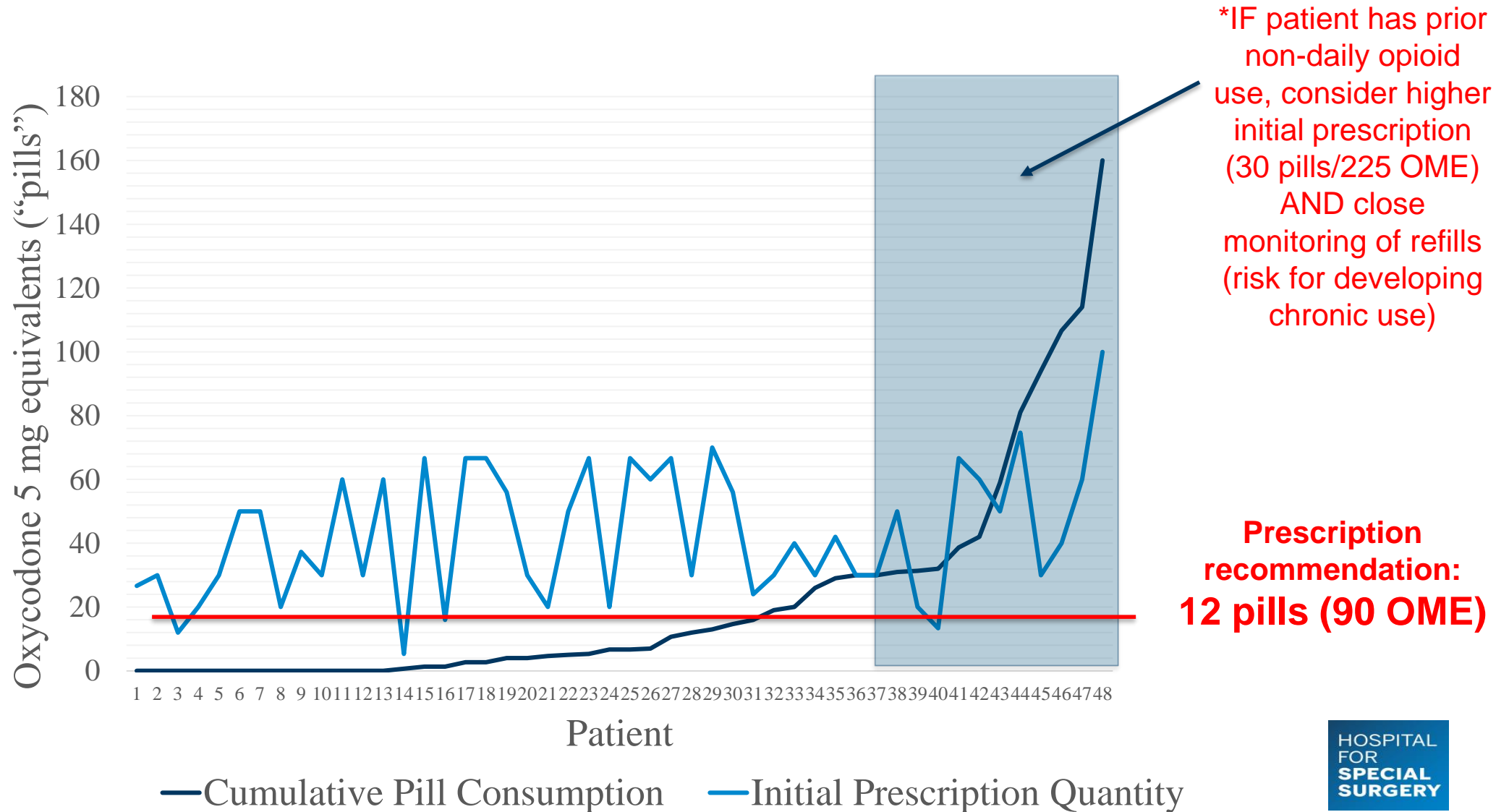
- **Strengths**

- Prospective study with daily, automated data collection (minimize recall bias)
- Generalizable patient population
- Refill/prescription data verified from state registry

- **Weaknesses**

- Underpowered for secondary outcomes of interest (i.e. predictors of increased use)
- Variations in initial prescription quantity
- Variability between surgeries not quantified

Discussion – How much to prescribe? 12 PILLS (90 OME)*



Discussion – Predicting use, patient counseling & education

- **What to do about patients who used 12-30 pills?**
 - Rx amount affects consumption, i.e., patients tend to use what they are given without changes in satisfaction (*Hannon et al J Arthroplasty 2019, Gaddis et al Ann Surg 2019*)
 - Lower prescription amounts have not been consistently associated with increased refills (*Lovecchio et al Spine 2019, Gaddis et al Ann Surg 2019, Sekhri et al Ann Surg 2019*)
- **Prediction of individual opioid use remains difficult, area of future research**
 - Multivariate analysis was underpowered (not reported)
- **Patient counseling & education**
 - Close monitoring of patients using opioids past POD12
 - Patient education on pill disposal, increased access to pill disposal may offset risk of diversion if a higher prescribing amount is used in a guideline