Third-Party Payer Track

Managing Morphine Equivalent Dose and Red Flagging Red Flags

Presenters:

- **Michael B. Stack**, Principal, Amaxx Risk Solutions
- **Brigette Nelson**, PharmD, MS, BCNP, Senior Vice President, Workers' Compensation Clinical Management, Express Scripts
- **Andrew Roberts**, PharmD, PhD, Assistant Professor of Pharmacy Sciences, Creighton University School of Pharmacy and Health Professions;
- **Asheley Cockrell Skinner**, PhD, Associate Professor, Duke Clinical Research Institute

Moderator: Karen L. Kelly, District Director, Congressman Harold "Hal" Rogers (KY-5th District), and Member, Rx and Heroin Summit National Advisory Board

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Disclosures

- Brigette Nelson, PharmD, MS, BCNP; Andrew Roberts, PharmD, PhD; Asheley Cockrell Skinner, PhD; and Karen L. Kelly have disclosed no relevant, real, or apparent personal or professional financial relationships with proprietary entities that produce healthcare goods and services.
- Michael B. Stack – Speaker's bureau: Express Scripts

Disclosures

- All planners/managers hereby state that they or their spouse/life partner do not have any financial relationships or relationships to products or devices with any commercial interest related to the content of this activity of any amount during the past 12 months.
- The following planners/managers have the following to disclose:
  - John J. Dreyzehner, MD, MPH, FACOEM – Ownership interest: Starfish Health (spouse)
  - Robert DuPont – Employment: Bensinger, DuPont & Associates-Prescription Drug Research Center

Learning Objectives

1. Explain Morphine Equivalent Dose (MED) and the importance of understanding dosage for both individual and cumulative MED.
2. Describe pharmacy benefit management solutions that decreased the number of injured workers using narcotics and of prescriptions over 120 MED.
3. Evaluate the effectiveness of dichotomous flags of high-risk opioid use to distinguish between patients that experience unintended overdose events and those that do not.
4. Identify alternative claims-based screening methods to more precisely target necessary interventions to patients at highest risk of preventable overdose.
5. Provide accurate and appropriate counsel as part of the treatment team.

Pharmacy Pain Points: Ensuring Safety of Morphine Equivalent Dose

Session: Managing Morphine Equivalent Dose and Red Flagging Red Flags

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Michael Stack, Principal, COMP Club, Amaxx Workers' Comp Solutions

Speaker's bureau: Express Scripts

Brigette Nelson, MS, PharmD, BCNP, Senior Vice President, Clinical Account Management, Workers' Compensation

Wishes to disclose her employer as a provider of a MED Management Program. She will present this content in a fair and balanced manner.

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Learning Objectives

1. Explain Morphine Equivalent Dose (MED) and the importance of understanding dosage for both individual and cumulative MED.
2. Describe pharmacy benefit management solutions that decreased the number of injured workers using narcotics and of prescriptions over 120 MED.

Agenda

- Overview of opioid epidemic, injured worker safety, and prescriber practices
- What is Morphine Equivalent Dose (MED)?
- MED Success Stories from the real world
- Payer Best Practices

National Epidemic of Opioid Misuse

In the U.S., overdoses of prescription opioids result in more than **15,000 deaths** and **1.2 million emergency room visits** each year.[1, 2]

Tolerance

Physical Dependence

Addiction

To compound the problem...

1. Centers for Disease Control and Prevention. NCHS Health E-stat. Trends in Drugpoisoning Deaths Involving Opioid Analgesics and Heroin: United States, 1999-2012 http://www.cdc.gov/nchs/data/hestat/drug_poisoning/drug_poisoning.htm#figures. Accessed March 23, 2015. **2.** Centers for Disease Control and Prevention. Vital signs: overdoses of prescription opioid pain relievers – United States, 1999-2008. MMWR. 2011;60:1487-92.

Opioid Prescribing Practices

Physicians may not always have a complete picture of patients' care, as patients may seek treatment from multiple physicians.

In one study of individuals who overdosed on opiates: [3, 4, 5, 6, 7]

- **40%** saw multiple physicians
- **40%** saw one physician, but received a higher dose of opioids
- **20%** saw one physician, but received a low dose of opioids

Help is available…

3. Edlund MJ, Martin BC, Fan MY, Braden JB, Devries A, Sullivan MD. An analysis of heavy utilizers of opioids for chronic noncancer pain in the TROUP Study. J Pain Symptom Manage. 2010;40:279-89. **4**. Katz N, Panas L, Kim M, et al., Usefulness of prescription monitoring programs for surveillance – analysis of Schedule II opioid prescription data in Massachusetts, 1996–2006. Pharmacoepidemiol Drug Safety. 2010;19:115-23. **5**. Dunn KM, Saunders KW, Rutter CM, et al. Opioid prescriptions for chronic pain and overdose. Ann Intern Med. 2010;152:85-92. **6**. Bohnert AS, Valenstein M, Bair MJ, et al. Association between opioid prescribing patterns and opioid overdose-related deaths. JAMA. 2011;305:1315-21. **7.** Hall AJ, Logan JE, Toblin RL, et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. JAMA. 2008;300:2613-20.

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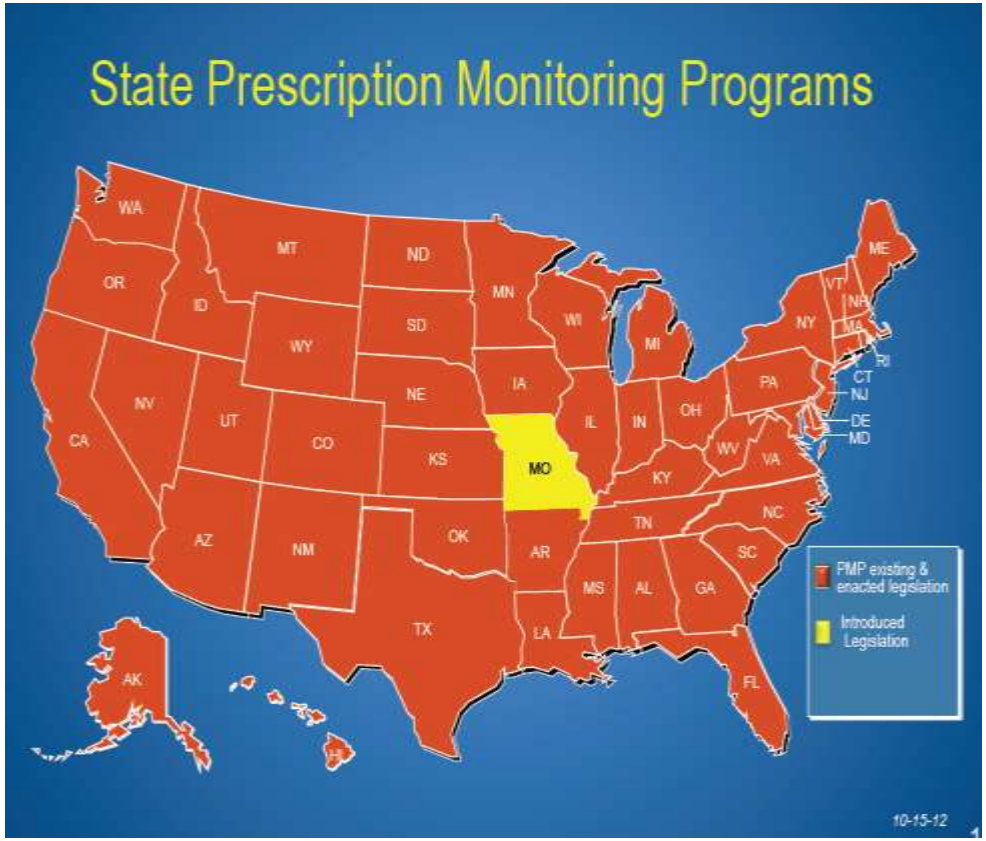
PDMP Data Improves Patient Care and Clinical Decisions

Prescription Drug Monitoring Program (PDMP)

- Important safety check for injured workers AND prescribers
- 49 states have a PDMP
- Majority of states voluntary use

Goals

- Identify and reduce doctor shopping
- Reduce drug and medical costs related to inappropriate prescribing
- Reduce drug diversion



PDMP Center of Excellence Briefing: Mandating PDMP participation by medical providers: current status and experience in selected states, Rev 2, Oct 2014. Brandeis University.

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Morphine Equivalent Dose

Opioid	Approximate Equianalgesic Dose (oral and transdermal)*
Hydromorphone	7.5 mg
Oxymorphone	10 mg
Oxycodone	20 mg
Morphine (reference)	30 mg
Hydrocodone	30 mg
Tapentadol	75 mg
Codeine	200 mg
Tramadol	300 mg
Fentanyl transdermal	12.5 mcg/hr

*Adapted from Von Kroff 2008 & FDA labeling

Morphine Equivalent Dose is a key management tool to **mitigate risk and identify issues** for opioid utilization.

50 – 120mg MED is the established threshold as an indicator of risk

Morphine Equivalent Dose Solution

One part of a multi-faceted suite of programs to aggressively manage opioid utilization to protect patient safety and assure clinical appropriateness.

Calculates individual and cumulative MED at point of sale

Allows for customizable MED thresholds and routing for review

Promotes clinical appropriateness and improves patient safety

Point of Sale Rx Utilization

Retrospective Utilization

End-to-End, Interdisciplinary Solution to Increase Positive Outcomes

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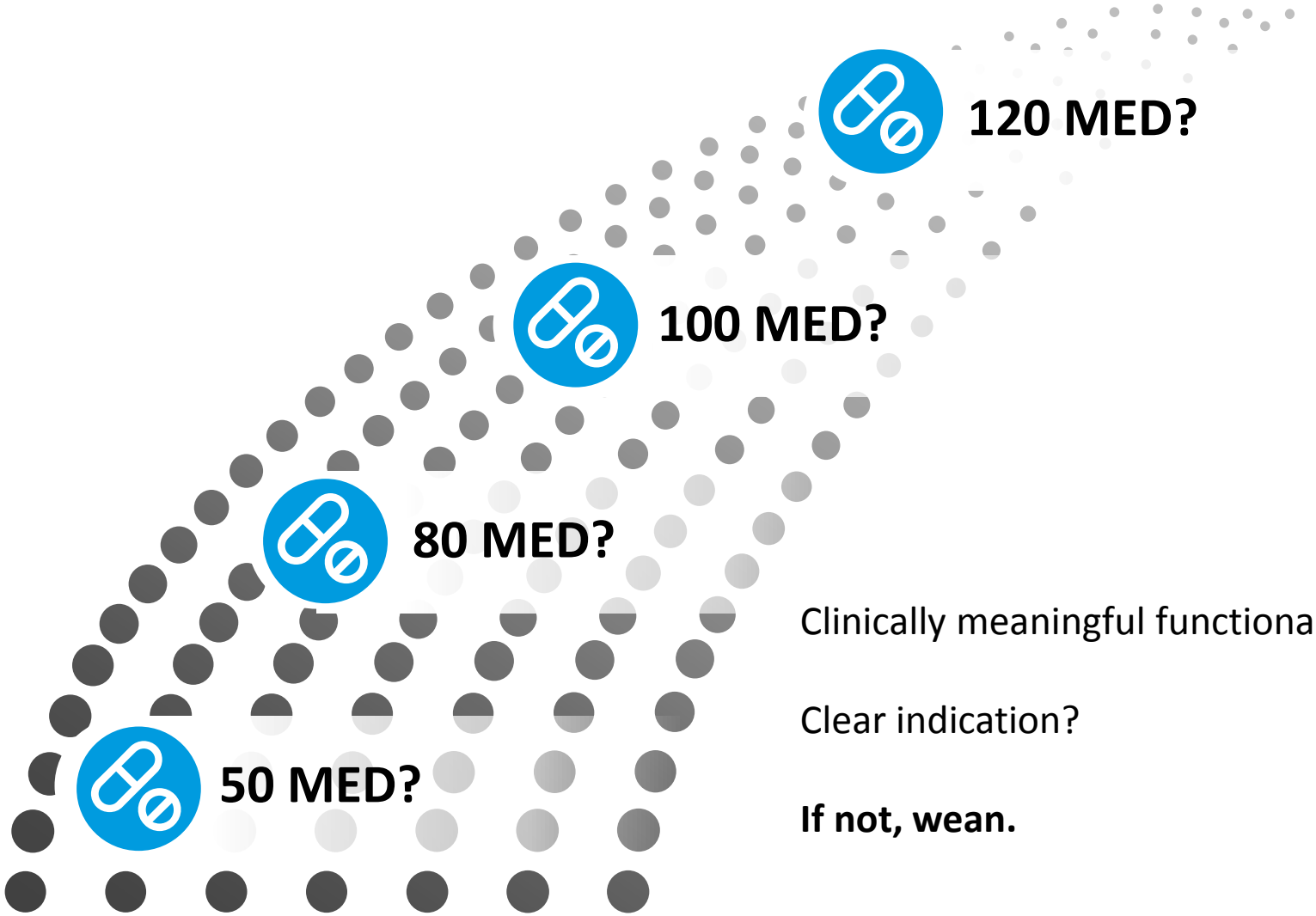
What is the Magic Number?



Clinically meaningful functional improvement?

Clear indication?

If not, wean.

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How an MED Solution Works

Client sets MED threshold

Recommendations provided based on state and regulatory board guidance.

Client notified of safety concern at point of sale

Real –time alerts to the client to identify individual and cumulative MED levels

Retrospective review allows for detailed clinical assessment

Review of patient data and prescriber data to identify potential red flags in therapy or prescribing behavior

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Proactive Solutions Lead to Better Patient Outcomes

Payer implemented Point of Sale MED Solution in February 2015.

After one year, Payer experienced:

46.1% decrease in patients receiving opioids

51.5% drop in script count with an MED ≥ 120

Payer utilizes MED data to triage into comprehensive pain management program to aggressively manage opioid utilization.

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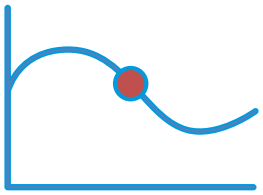
On the Horizon: Predictive Analytics for Opioid Utilization

PAIN POINT

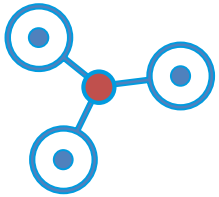
Traditional opioid abuse programs identify suspicious activity that's already happened — by which time behavior modification is extremely difficult

PROSPECTIVE / REAL-TIME

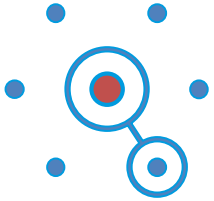
Identify risk behaviors at the first fill and throughout treatment, then engage



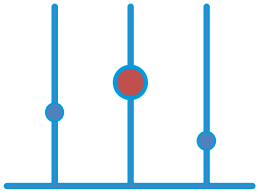
Track changes in patient-level risk over time



Score patient risk for misuse based on their behavior profile



Risk score used by payer to triage patients



Adjust type of patient intervention as risk changes

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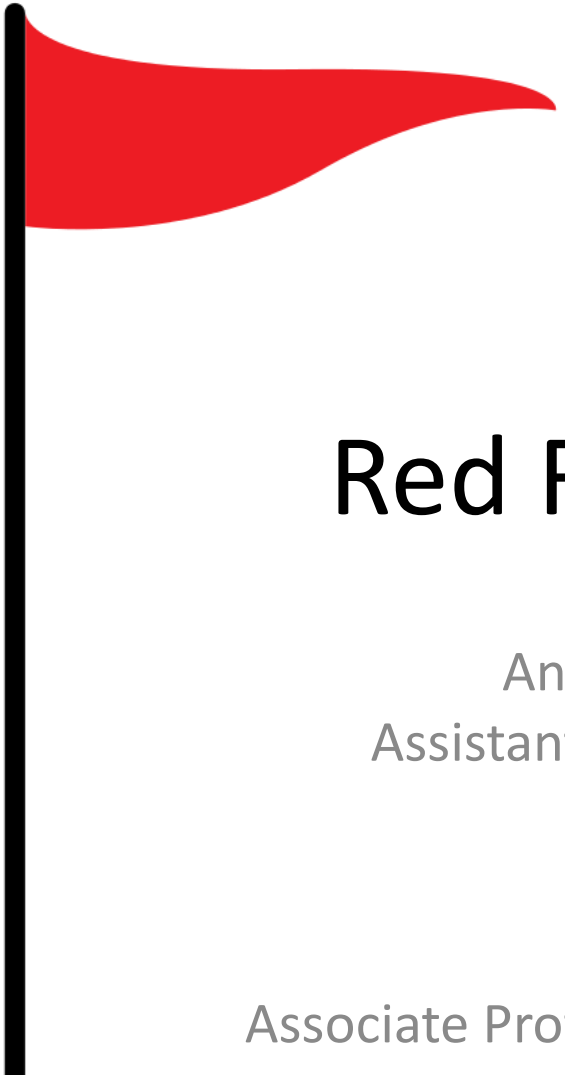
Source: Coalition Against Insurance Fraud's 2007 report, "Prescription for Peril: How Insurance Fraud Finances Theft and Abuse of Addictive Prescription Drugs"; Available at: http://www.insurancefraud.org/downloads/drugDiversion.pdf

Payer Best Practices

- Close collaborative partnership with pharmacy benefit manager.
- Leverage data from pharmacy benefit manager in conjunction with Prescription Drug Monitoring Programs.
- Leverage formulary and point of sale programs.
- Use data for triage into client medical management program.
- Communicate with patients and physicians.



Red Flagging Red Flags

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Disclosure

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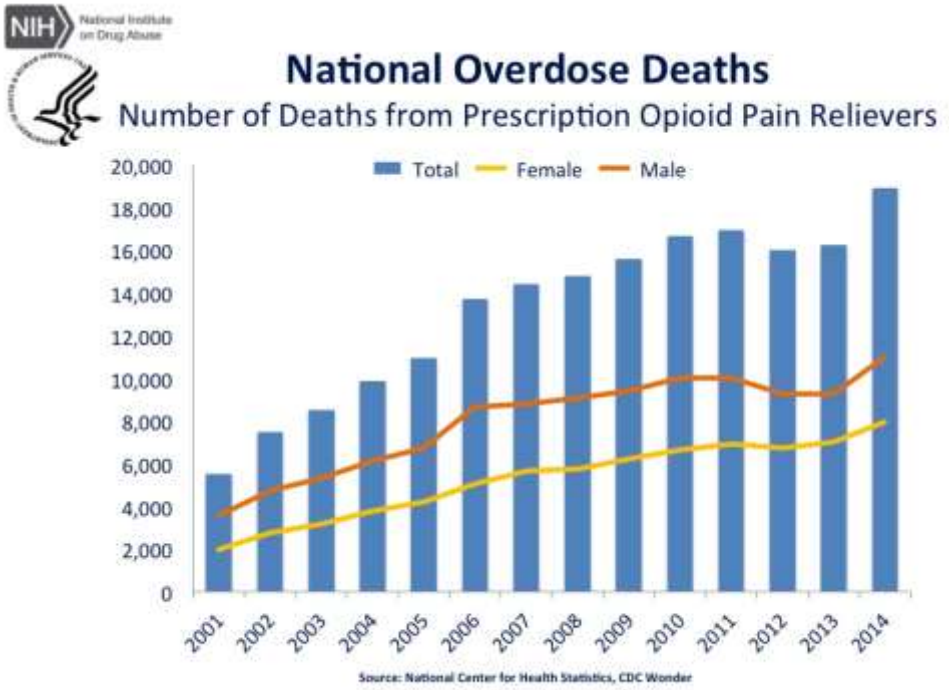
1. Evaluate the effectiveness of dichotomous flags of high-risk opioid use to distinguish between patients that experience unintended overdose events and those that do not.
2. Identify alternative claims-based screening methods to more precisely target necessary interventions to patients at highest risk of preventable overdose.

A Talk in Two Parts

Part 1: Getting to know Medicaid lock-in programs (MLIPs) through a case study

Part 2: Questioning why we flag patients for opioid abuse interventions, such as MLIPs, with simplistic opioid use thresholds

“All Hands On Deck”



- 18,893 deaths in 2014
- Opioid deaths rose 369% in last 15 years
- Medicaid patients have 5-7x higher likelihood of overdose mortality

http://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates

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Medicaid Lock-In Programs

- What do MLIPs do?
  1. Flag high-risk patients exceeding controlled substance (CS) use thresholds
  2. "Lock" them in to a single prescriber and pharmacy for Medicaid coverage of CS services

- What's the goal?
  - Minimize CS abuse, misuse
  - Improve care coordination of high-risk patients

What Do We Know About MLIPs?

J Manag Care Pharm. 2014 May;20(5):439-446c.

- At least 46 states operate an MLIP
- MLIP design varies widely state-to-state
- Dearth of peer-reviewed MLIP evidence

Why Care Now?

Momentum rapidly building to expand the reach of lock-in programs to combat Rx abuse

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The Case of North Carolina

- In 2009, GAO identified NC as 1 of 5 states with unusually high CS prescription claims

- In response, NC implemented an MLIP in October 2010

NC MLIP Eligibility

Patients who exceed at least ONE of the following thresholds	
a. Benzodiazepines and certain anxiolytics	> 6 claims in 2 consecutive months
b. Opiates	> 6 claims in 2 consecutive months
c. Prescribers of opiates and/or benzodiazepines and certain anxiolytics	> 3 prescribers in 2 consecutive months

Study Purpose (Part 1)

- Evaluate the programmatic impact of the North Carolina (NC) MLIP on medical care use and expenditures

Study Design

- Pre-post MLIP enrollment comparison
  - October 2009 – June 2013
    - One year prior to the initiation of the MLIP through the first two years of implementation
- Controls
  - Multiple observations used to minimize the effects of regression to the mean
  - Enrollment in the MLIP occurs for a group of individuals each month, minimizing temporal effects

Analytic Approach

- Statistical models took advantage of longitudinal nature of data
- Analysis based on restricted maximum likelihood (REML) estimation mixed effects regression model
  - Controlled for within-individual correlations and time effects

Use and Cost Outcomes

- (1) Any claim and (2) total costs for:
  - All medical care
  - Inpatient care
  - Outpatient hospital care (e.g., emergency)
  - Office-based

Population

6148 individuals | 211,666 months of data

Demographics (n=6148)	
AGE	35 years
SEX	
Female	69%
Male	31%
RACE	
White	78%
Black	17%
Other	5%

Use of Medical Care

6,148 individuals | 211,666 months of data

Effect of NC MLIP enrollment on use of medical care	
	Any Medical Claim (OR)
All medical care	0.48
Inpatient hospital	0.64
Outpatient hospital	0.55
Office	0.65
Home services	0.74

OR=Odds ratio

Medical Care Expenditures

6,148 individuals | 211,666 months of data

Effect of NC MLIP enrollment on medical expenditures	
	Change in Expenditures (dollars)
All medical care	-647
Inpatient hospital	-36
Outpatient hospital	-262
Office	-68
Home services	-14

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Discussion (Part 1)

- MLIPs appear to successfully reduce patient use of and Medicaid spending on medical care

- Not clear if this represents appropriate reductions or unmet needs for care

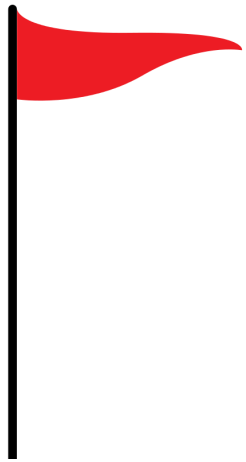
A Logical Follow-Up Question

We know MLIPs successfully enroll high utilizers.

Do MLIPs capture patients who will experience a preventable overdose?

Part 2 Study Question

How good of a shot do opioid abuse interventions have at achieving a public health benefit when using simple opioid use thresholds to assess overdose risk?



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Methods: Design, Data, & Population

- Retrospective cohort study: Oct. 2008 – Sep. 2010
- North Carolina Medicaid claims data

- Study population
  - Adult NC Medicaid beneficiaries
  - ≥1 opioid claim from 10/1/08 to 8/2/09
  - Continuous NC Medicaid coverage for ≥60 days following index opioid claim
  - Cohort randomly split into measure development and validation subsets

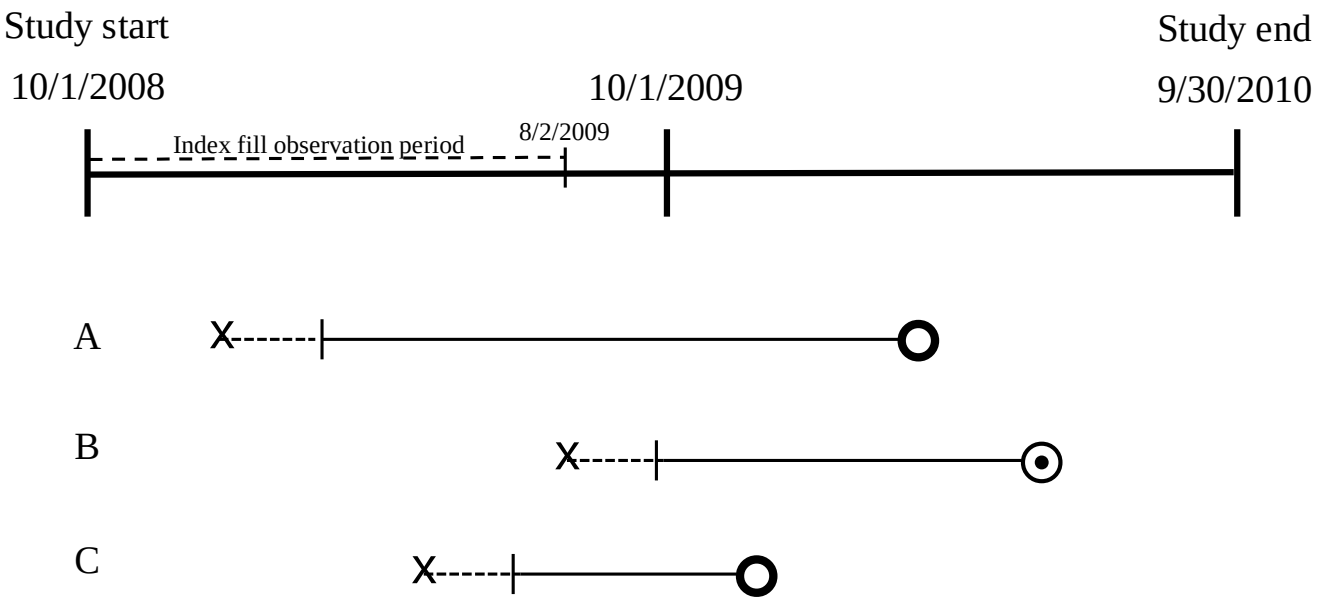
Methods: Measures

- Primary outcome: Accidental opioid overdose

- Opioid exposure measures (assessed for 60 days after index)
  - # of opioid claims
  - # of unique opioid dispensing pharmacies used
  - Mean daily opioid dose in morphine milligram equivalents (MME)
  - Mean daily acetaminophen (APAP) dose from opioid/APAP combos

Dunn KM, Saunders KW, Rutter CM, Banta-Green CJ, Merrill JO, Sullivan MD, et al. Opioid prescriptions for chronic pain and overdose: a cohort study. Annals of Internal Medicine. 2010;152(2):85-92.

Methods: Design Visualized



Methods: Threshold Development

- Selecting best-performing opioid exposure measure(s)
  - Survival receiver operating characteristic (ROC) curves
- Selecting optimal measure threshold
  - Examine joint sensitivity & specificity
  - Plot bivariate Cox model log-likelihoods at each measure cutpoint

Methods: Validating Thresholds

- Bivariate Cox models predicting accidental opioid overdose

- Descriptive statistics
  - Proportion of subjects flagged
  - Time-dependent sensitivities & specificities

Results: Select Cohort Characteristics

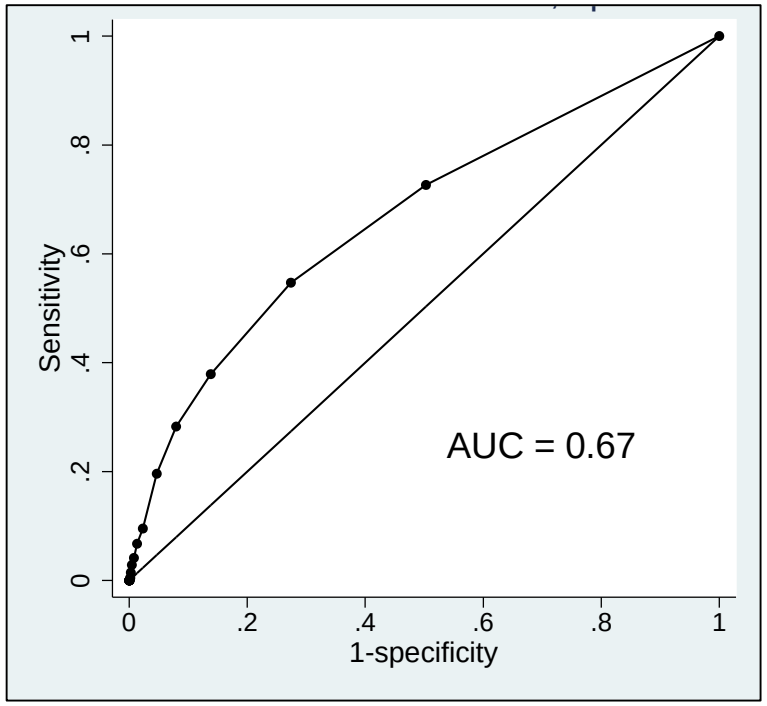
	Overall (n=139,335)
Demographic characteristics	
Age, mean (SD)	34.3 (12.2)
Female, n (%)	107172 (76.9%)
Race, n (%)	
White	77414 (55.6%)
Black	51364 (36.9%)
Other/unknown	10557 (7.6%)
Days of follow-up, mean (SD)	275 (129)
Opioid exposures, mean (SD)	
Opioid prescription count	2.1 (1.6)
Pharmacy count	1.2 (0.5)
Average MME/day	22.3 (70.1)
Average APAP mg/day	569 (780)
Primary outcome event, n (%)	
Unintentional overdose, opioid	376 (0.3%)

Note: No statistically significant differences between testing and validation subcohorts

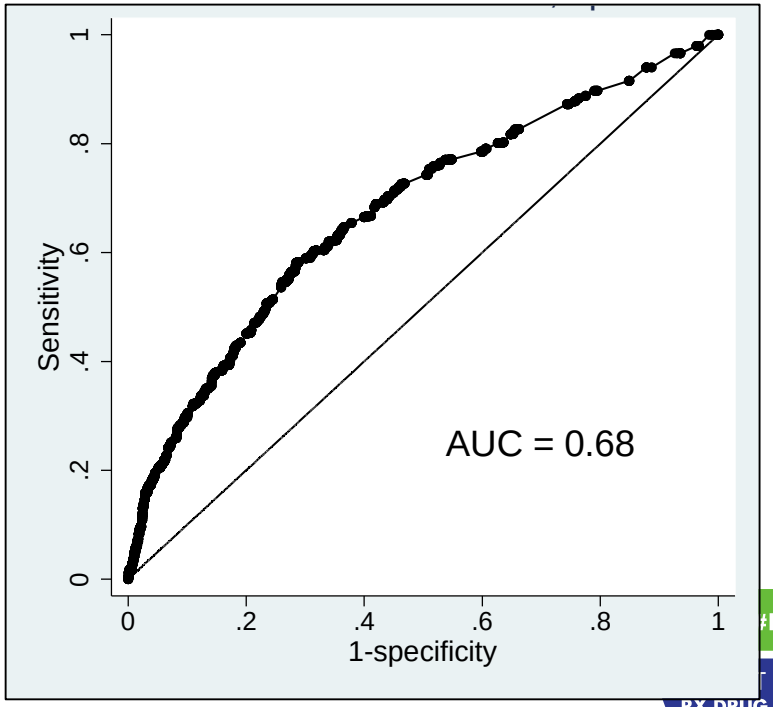
Results: Selecting Best Measures

- Two opioid exposure measures did *NOT* fail in ROC analysis

Opioid fills



Mean MME/day



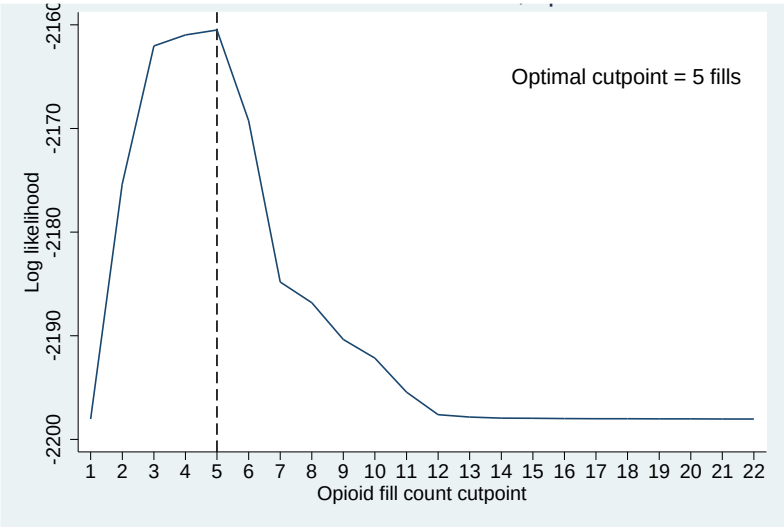
Results: Selecting Best Thresholds

- Maximized joint sensitivity and specificity led to very inclusive thresholds

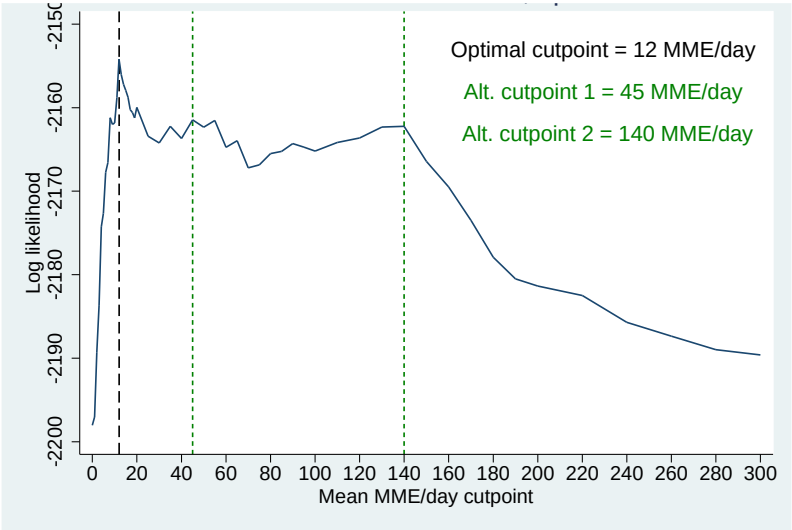
	Opioid Rx count	Mean MME/day
Optimal ROC cutpoint[1]	≥3 fills	≥10 MME/day
Subjects meeting cutpoint, n (% of total testing sample)	19,166 (27.5%)	23,122 (33.2%)

Results: Selecting Best Thresholds

- Comparing Cox model log-likelihood values uncovered more feasible thresholds



≧5 opioid claims



≧12, 45, or 140 MME/day

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Results: Validating Performance

Bivariate Cox models predicting accidental overdose

	Criterion met (N=69,667) n (%)	Hazard ratio	95% CI	LL
Individual measures				
≥5 opioid fills	5525 (7.9%)	4.09	(2.93 , 5.72)	-1864.2
≥12 MME/day	19926 (28.6%)	3.99	(2.93 , 5.44)	-1850.3
≥45 MME/day	7541 (10.8%)	4.36	(3.21 , 5.92)	-1853.8
≥140 MME/day	1980 (2.8%)	6.88	(4.71 , 10.05)	-1857.9

Results: Validating Performance

Sensitivity in capturing patients with overdose

	Criterion met (N=69,667)		Experienced opioid overdose (N=174)			
	n	(% of total cohort)	n	(% within criterion)	Sensitivity	Specificity
Individual measures						
≥5 opioid fills	5525	(7.9%)	47	(0.9%)	0.255	0.921
≥12 MME/day	19926	(28.6%)	112	(0.6%)	0.592	0.715
≥45 MME/day	7541	(10.8%)	66	(0.9%)	0.329	0.892
≥140 MME/day	1980	(2.8%)	33	(1.7%)	0.159	0.972

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Limitations

- Medicaid claims cannot observe:
  - Diversion
  - Overdose events not generating medical claims

- Replication with more recent data needed

Discussion

- The best performing simple claims-based opioid use thresholds poorly captured those who experienced a preventable opioid overdose

- For example, ≧5 opioid claims in 60 days:
  - Flagged 8% of opioid users
  - Failed to capture 75% of patients who will have a preventable overdose

Implications

- Simple opioid thresholds limit the potential public health benefit of policy/clinical interventions

- Finding the highest risk patients requires nuance
  - Smarter predictive modeling
  - More comprehensive patient data, including PDMPs
  - Provider insights/referral

- MLIPs and similar programs must prioritize public health outcomes over economic savings

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Thank you!

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