



ANNUAL

# RESEARCH MEETING

## Impact of Medicare Readmissions Penalties on Targeted Surgical Conditions

**Karan R. Chhabra, MD MSc**

National Clinician Scholars Program  
Center for Healthcare Outcomes and Policy  
University of Michigan Institute for Healthcare Policy and Innovation

Department of Surgery  
Brigham and Women's Hospital



# Readmissions in the crosshairs

## Common



30d readmission rates:

**21%** (medical)

**15%** (surgical)

## Costly



**\$17B**  
in annual Medicare spending

## Preventable



**1/5** to **1/3**  
potentially avoidable

## Quality Marker



Associated with surgical **complications** and **mortality**

# The Hospital Readmissions Reduction Program

## *Medical Conditions*



CHF



AMI



PNA

## *Surgical Conditions*



Hip



Knee



CABG

Policy announced  
(medical penalties)

March 2010

Medical penalties  
implemented

October 2012

Joint replacement  
penalties  
announced

August 2013

Joint replacement  
penalties  
implemented

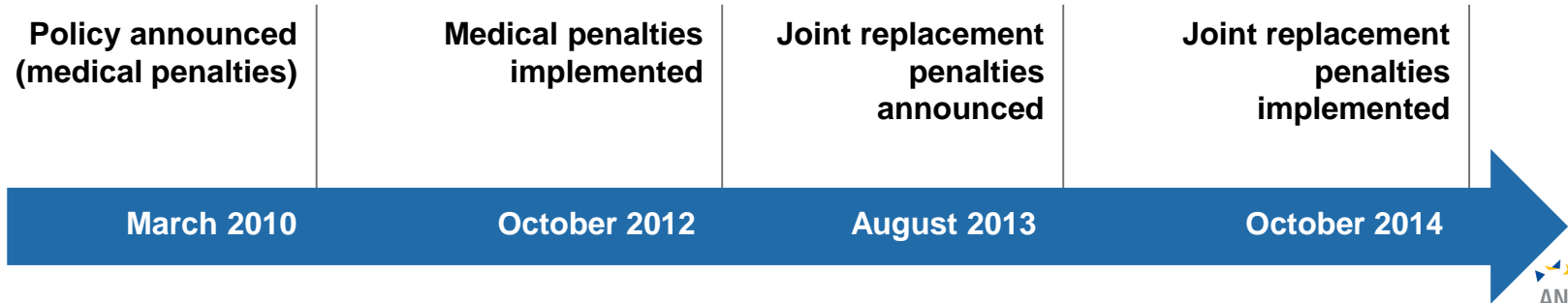
October 2014



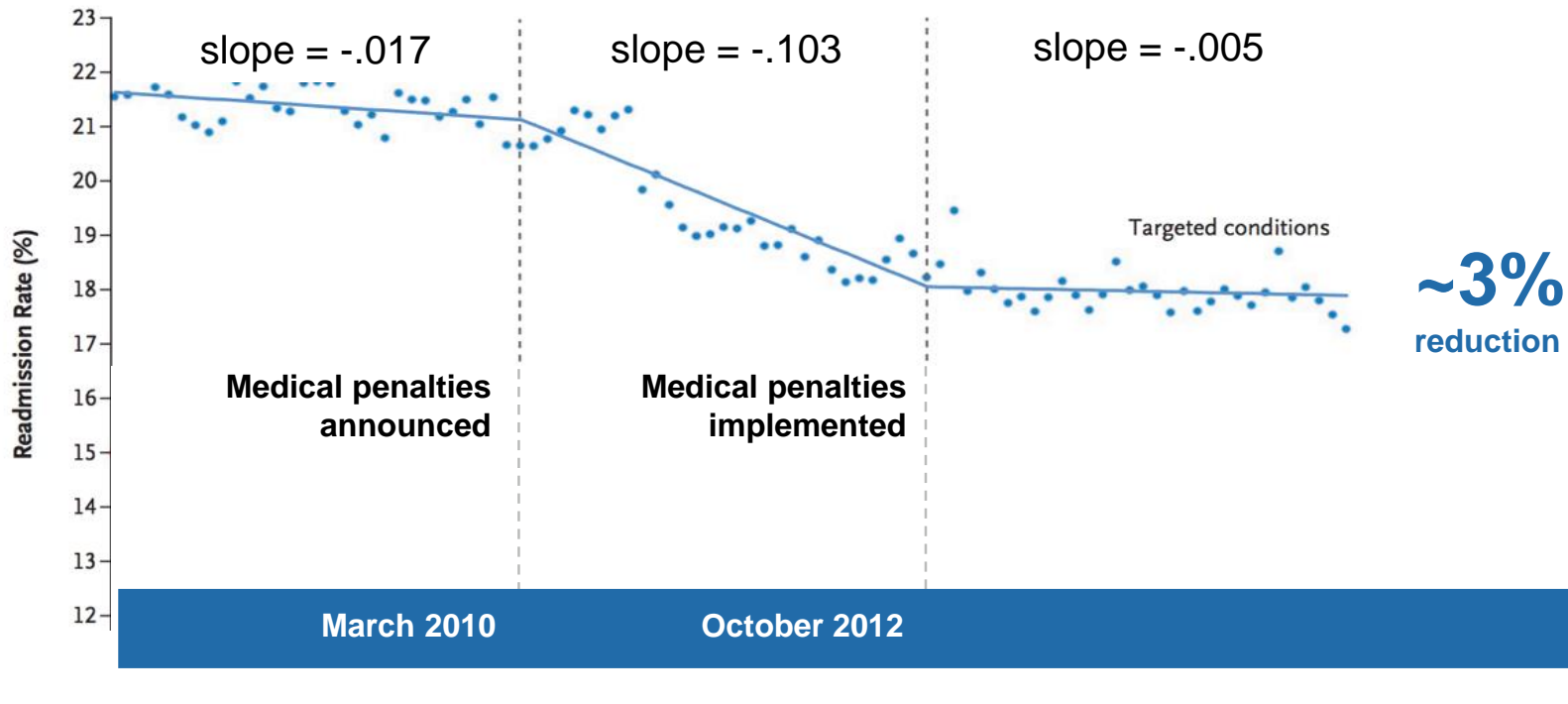
# The Hospital Readmissions Reduction Program

Penalty: **Up to 3%** of base DRG rate based on “excess” observed/expected readmissions in prior 3 years.

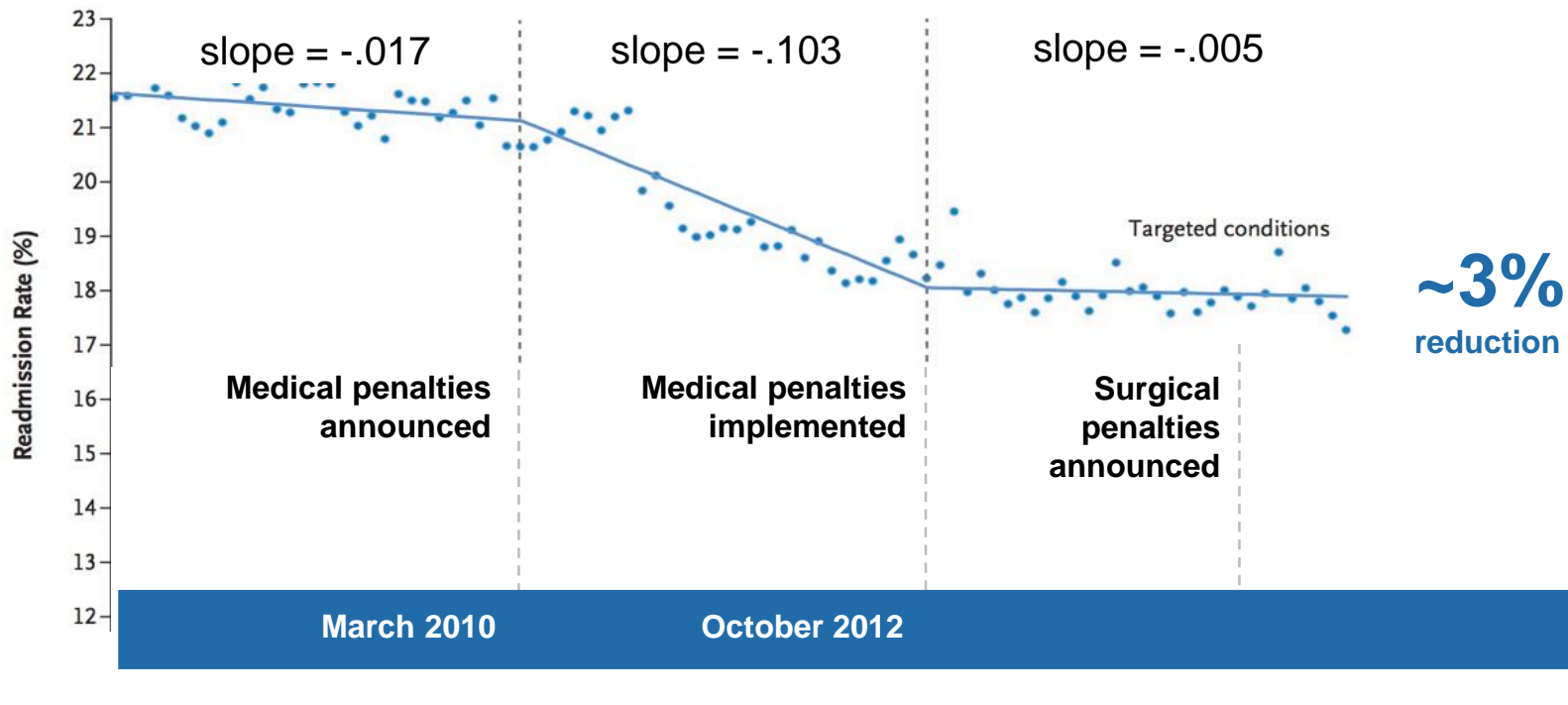
Average payment adjustment =  
**-0.6%**



# Impact on medical conditions



# Impact on medical conditions



# Growing concern for unintended consequences



**Penalizing  
safety-net hospitals**

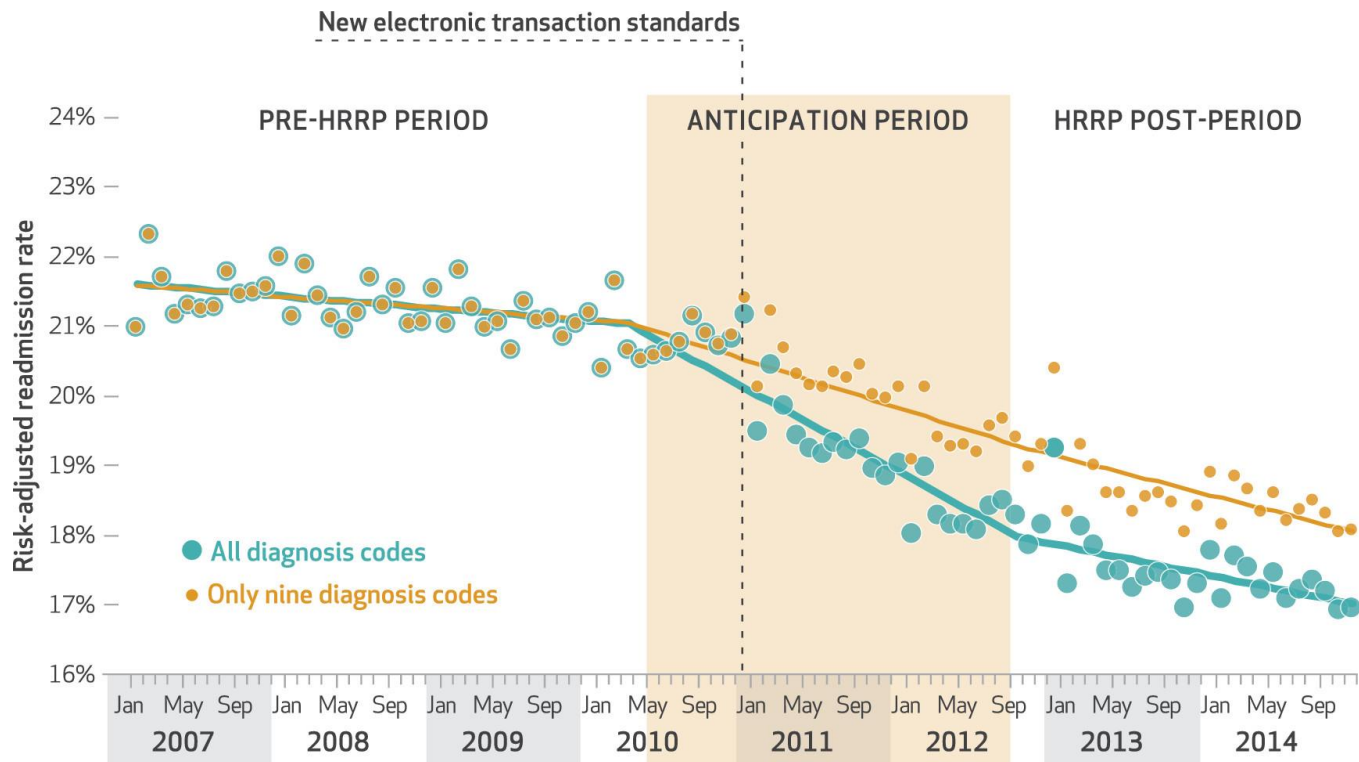


**Increased mortality in  
medical conditions?**



**Overstated benefits  
due to upcoding?**

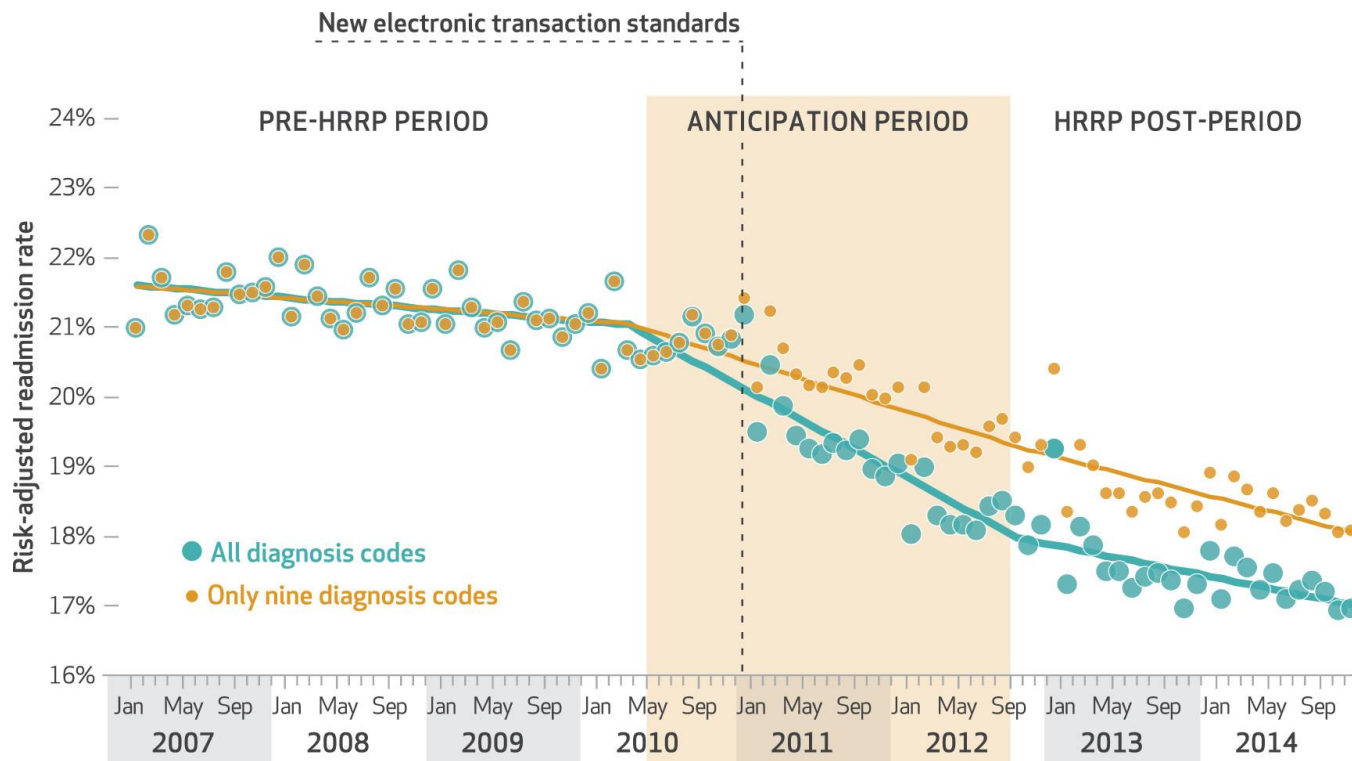
# Upcoding and medical readmissions







# Upcoding and medical readmissions



Restricting to 9 diagnosis codes



48%  
(1 pp)  
smaller  
reduction



# Our questions



Did targeted penalties reduce readmissions after joint replacement?

# Our questions



Did targeted penalties reduce readmissions after joint replacement?

Did the policy have unintended consequences?



Episode spending



Length of stay



Observation status



Post-acute care utilization



Upcoding

# Study Approach: Interrupted Time-Series Analysis

## Cohort

100% FFS Medicare claims for total hip and knee replacements

Episodes from **2008-2016**

Exclusions:

- partial joint replacements
- fractures
- malignancy
- revisions
- device complications

## Outcomes

30-day **readmissions** per CMS definitions

Risk-adjusted for:

- age
- gender
- race
- socio-economic status
- Elixhauser comorbidities
- season

Total 30-day **episode payments**:

- hospital
- physician
- post-acute care
- readmissions

Price-standardized (for intentional differences in Medicare payments) and risk-adjusted



# Patient Characteristics

	<b>Baseline (2008)</b>	<b>Post-HRRP (2016)</b>
<b>Age</b>	74.8	74.0
<b>Comorbidity count (Elixhauser):</b>		
0	11%	11%
1	29%	26%
2	61%	63%
<b>Discharge destination:</b>		
Home	18%	30%
Home health agency	34%	41%
SNF/Rehab	47%	29%

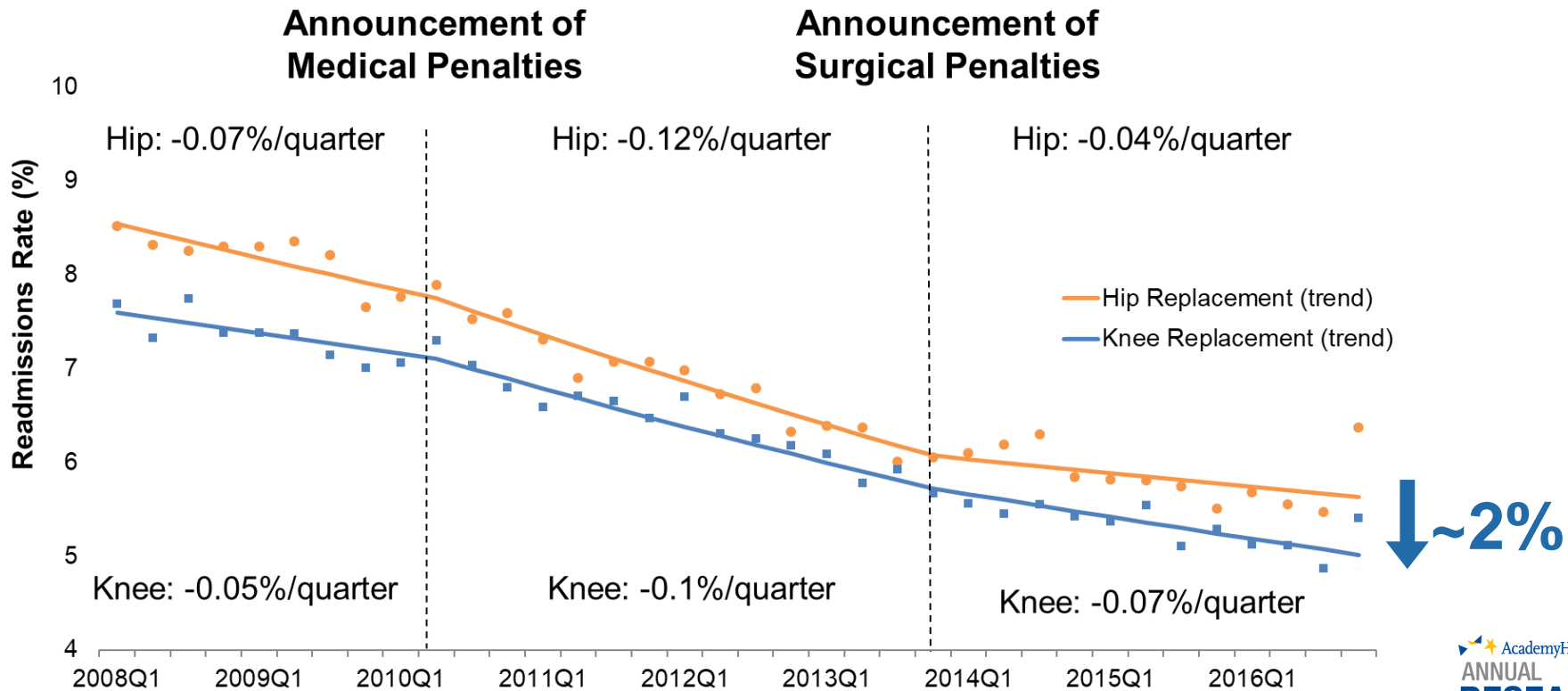


# Patient Characteristics

	<b>Baseline (2008)</b>	<b>Post-HRRP (2016)</b>
<b>Age</b>	74.8	74.0
<b>Comorbidity count (Elixhauser):</b>		
0	11%	11%
1	29%	26%
2	61%	63%
<b>Discharge destination:</b>		
Home	18%	30%
Home health agency	34%	41%
SNF/Rehab	47%	29%

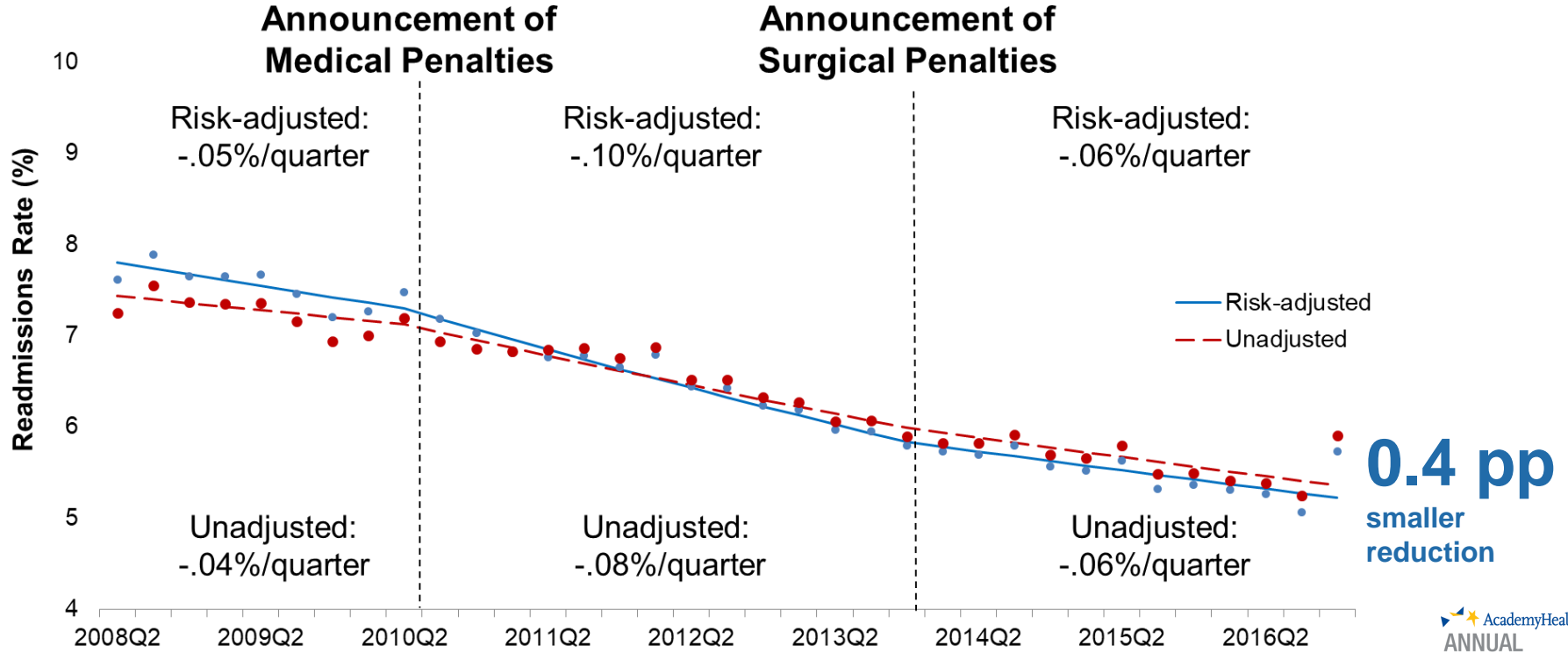


# Changes in Readmissions Rates





# Impact of Upcoding









# No Evidence of Unintended Consequences

	<b>Baseline (2008-2010)</b>	<b>After Medical Penalties (2010-2013)</b>	<b>After Surgical Penalties (2013-2016)</b>
Length of stay (days)	3.5	3.1	2.6
30-day episode spending (\$)	\$20,827	\$19,895	\$17,618
Observation status (%)	0.8	1.0	1.2

# No Evidence of Unintended Consequences

	<b>Baseline (2008-2010)</b>	<b>After Medical Penalties (2010-2013)</b>	<b>After Surgical Penalties (2013-2016)</b>	
Length of stay (days)	3.5	3.1	2.6	
30-day episode spending (\$)	\$20,827	\$19,895	\$17,618	
Observation status (%)	0.8	1.0	1.2	
Observation <b>trend</b> (% / quarter)	.02	.016	.01	 <b>stable/ decreasing</b>

# No Evidence of Unintended Consequences

	<b>Baseline (2008-2010)</b>	<b>After Medical Penalties (2010-2013)</b>	<b>After Surgical Penalties (2013-2016)</b>	
Length of stay (days)	3.5	3.1	2.6	
30-day episode spending (\$)	\$20,827	\$19,895	\$17,618	
Observation status (%)	0.8	1.0	1.2	
Observation <b>trend</b> (% / quarter)	.02	.016	.01	 <b>stable/ decreasing</b>

# Possible Mechanisms for Findings

## Spillover Effects



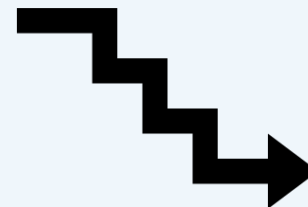
Medical penalties led to broad, non-condition-specific delivery changes

## Anticipatory Effects



Hospitals predicted program would expand after initial implementation

## Floor Effects



Some readmissions inevitable; high-performing hospitals improved least



# Limitations



**Claims-based  
risk adjustment**



**Observational;  
no control**



**Other policies  
(BPCI, CJR, etc)**

# Summary of findings



*Did targeted penalties  
reduce readmissions  
after joint replacement?*



*Did the policy have  
unintended  
consequences?*

- Spending
- Length of stay
- Post-acute care use
- Observation status use
- Upcoding

# Summary of findings



*Did targeted penalties reduce readmissions after joint replacement?*

**No.** Readmissions dropped quickly after **medical penalties** via **spillover** effects. After **targeted penalties**, reductions **slowed**.



*Did the policy have unintended consequences?*

- Spending
- Length of stay
- Post-acute care use
- Observation status use
- Upcoding

# Summary of findings



*Did targeted penalties reduce readmissions after joint replacement?*

**No.** Readmissions dropped quickly after **medical penalties** via **spillover** effects. After **targeted penalties**, reductions **slowed**.



*Did the policy have unintended consequences?*

- Spending
- Length of stay
- Post-acute care use
- Observation status use
- Upcoding

**Not for these outcomes:**

- Spending, LOS, post-acute care
- Observation: trend
- Upcoding: minimal







# Do side effects justify the benefits?

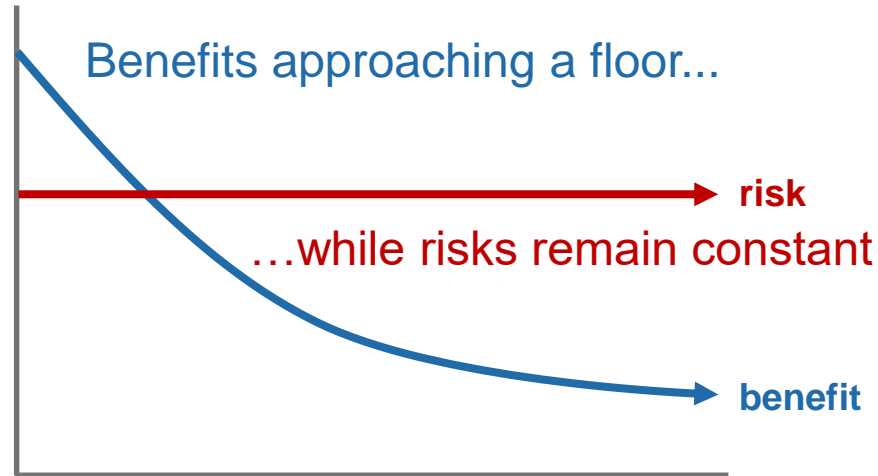
## Possible harms:



Penalizing safety-net hospitals



Increased mortality from CHF, PNA?



Time for new policy?



# Thank you



**Andrew Ibrahim MD MSc**  
**@AndrewMIbrahim**



**Andy Ryan PhD**  
**@Andy\_Ryan\_dydx**



**Justin Dimick MD MPH**  
**@jdimick1**



Center for Healthcare Outcomes & Policy  
National Clinician Scholars Program  
Institute for Healthcare Policy and Innovation  
University of Michigan



Department of Surgery  
Brigham and Women's Hospital





# Effect of Upcoding on Readmissions Reductions

	Before HRRP Announcement	After Medical Penalties Announcement	After Surgical Penalties Announcement	Difference
Readmissions rate <b>without</b> comorbidity adjustment	7.3%	6.6%	5.6%	-1.7%
Readmissions rate <b>with</b> comorbidity adjustment	7.6%	6.6%	5.5%	-2.1%