Impact of Electronic Prescribing of Controlled Substances on Quantity and Cost of Opioid Use among Medicare Beneficiaries: Evidence from New York's I-STOP

Yuriy Pylypchuk, Sonal Parasrampuria, Talisha Searcy

January 16, 2020

The Office of the National Coordinator for Health Information Technology

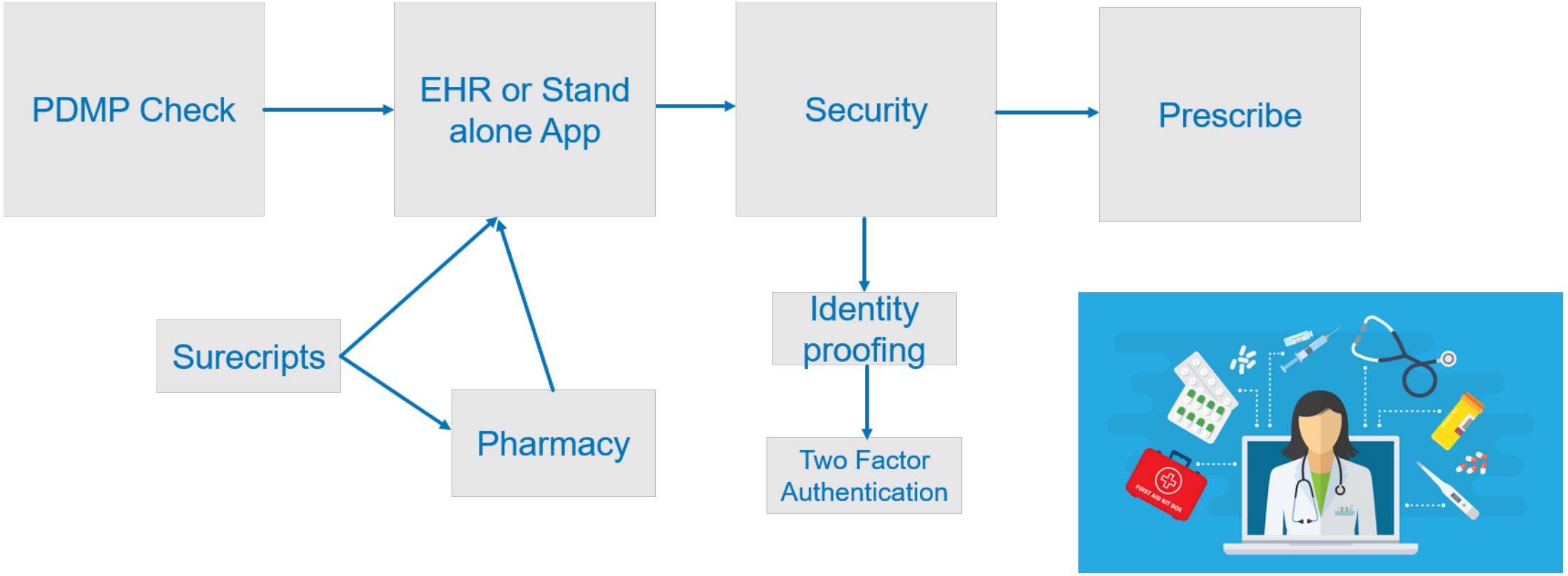
Introduction

- Opioid overuse is public health problem that is responsible for:
  - ❑ 50,000 deaths
  - ❑ $5.5 billion spent on use
  - ❑ $78 billion burden (health care cost, productivity lose, treatment)
- Steps are taken to curtail opioid overuse
  - ❑ Congress allocated $1 billion
  - ❑ All states but one implemented PDMPs
  - ❑ Multiple addiction prevention programs

Electronically Prescribe Controlled Substances (EPCS)

- In March 2016 NY required all prescribers to Electronically Prescribe Controlled Substances (EPCS)
- What are the benefits of EPCS?
  - ❑ Insures security of prescription
  - ❑ Insures patient safety and improves care quality
  - ❑ Provides complete history about opioid use
  - ❑ Could save time and cost to patients and providers

How does EPCS work?



Research Objectives

- Identify effects of I-STOP on opioid prescriptions two years post implementation
  - Outcomes:
  - ❑ Opioid expense per prescriber
  - ❑ Number of opioid claims per prescriber
  - ❑ Number of opioid beneficiaries per prescriber
  - ❑ Opioid days' supply per beneficiary
- Identify separate effects for first and second year
- Sensitivity analysis
- Simulate effects of a policy on states with highest opioid prescription rates – Tennessee, Oklahoma, Kentucky, West Virginia, South Carolina

Data and Variables

- Centers for Medicare and Medicaid Services (CMS) Medicare Part D Prescriber Utilization and Payment files
  - Years 2014-2017
  - Prescriber level panel data
- Control for
  - Prescriber race, sex, age
  - Percent beneficiaries female, black, Hispanic, white, and dually eligible
  - Average beneficiary risk score and age
  - Link with Area Resource File to control for counties' poverty and rurality.

Estimation

- Apply variant of the lagged dependent variable estimator

$$y_{it} = \sum_{k}^{K} \delta_k y_{ik} + X_{it}B + \alpha_t \boldsymbol{D}_{it} + e_{it} \qquad \forall t > K$$

where

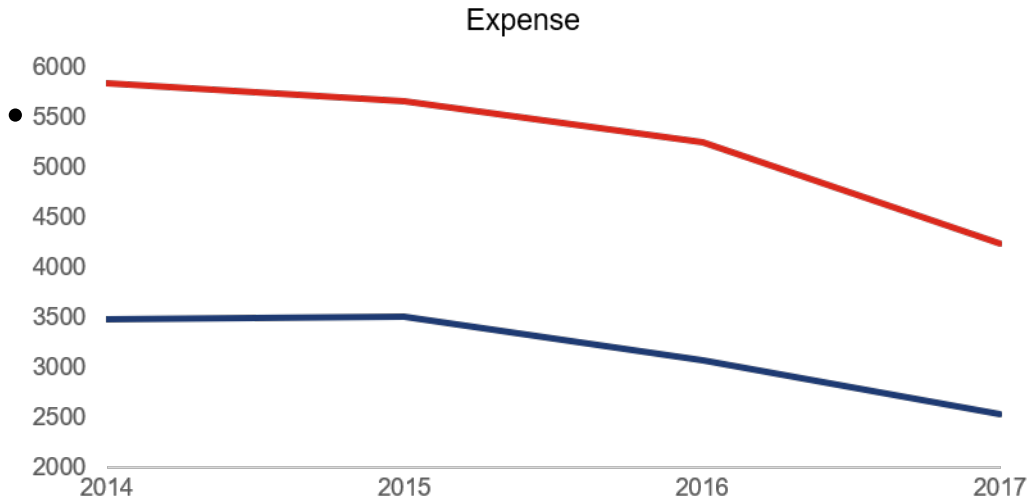
$D1$=1 if physician i in year t is located in New York state; 0 remaining states

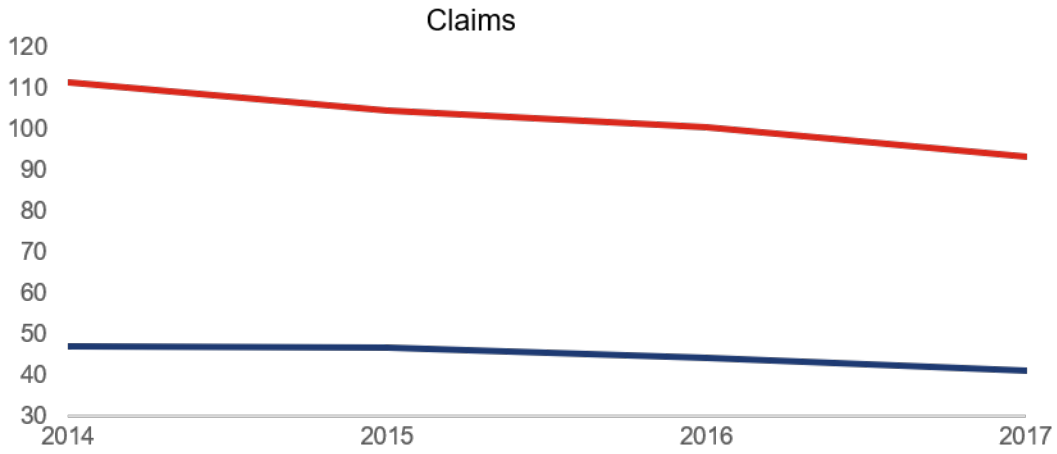
y = vector of lagged dependent variables up to the year policy was implemented

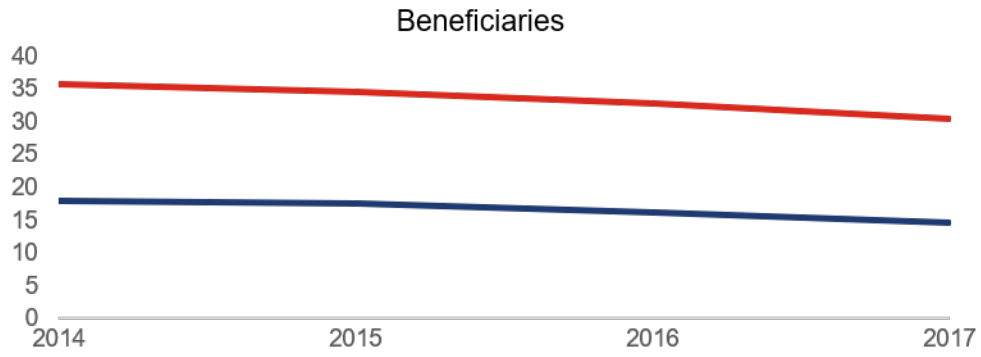
X= vector of covariates

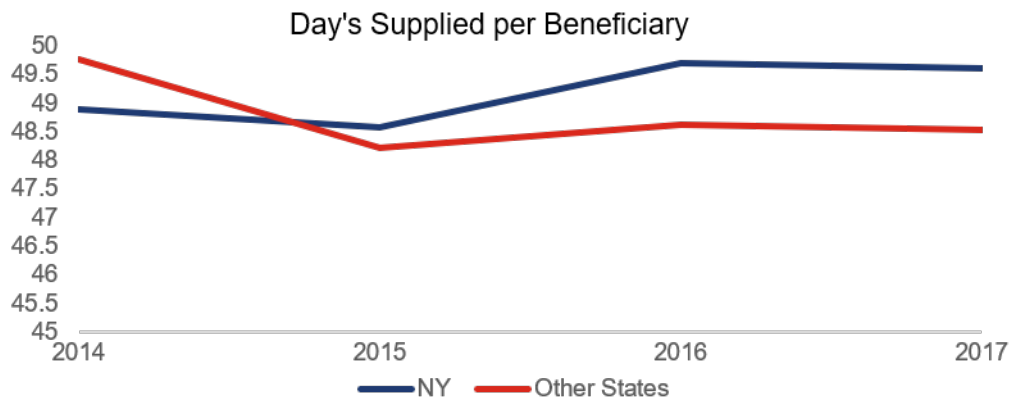
- Lagged dependent variables capture unobserved factors correlated with y and D.
- Assume unobserved time changing factors take more than a year to impact y.

Results


Expense
6000
5500
5000
4500
4000
3500
3000
2500
2000
2014
2015
2016
2017


Claims
120
110
100
90
80
70
60
50
40
30
2014
2015
2016
2017


Beneficiaries
40
35
30
25
20
15
10
5
0
2014
2015
2016
2017


Day's Supplied per Beneficiary
50
49.5
49
48.5
48
47.5
47
46.5
46
45.5
45
2014
2015
2016
2017
NY
Other States

Effects of EPCS

	Probability of Prescribing Opioids	Opioid Expenditures	Opioid Claim Count	# Opioid Beneficiaries	Days' Supply of Opioids Prescription
	Panel 1: LDV with control variables and occupation fixed effects				
$Year_{2016}$	-0.03*	-588*	-5.7*	-1.9*	0.5*
	(0.01)	(202)	(0.8)	(0.2)	(0.2)
$Year_{2017}$	-0.03*	-446*	-1.0	-1.3*	0.4
	(0.01)	(203)	(1.2)	(0.3)	(0.4)
	Panel 2: LDV with control variables				
$Year_{2016}$	-0.03*	-335	4.4*	-1.4*	0.5*
	(0.01)	(261)	(0.8)	(0.2)	(0.2)
$Year_{2017}$	-0.03*	-546*	0.2	-0.8*	0.5
	(0.01)	(265)	(0.9)	(0.3)	(0.2)
	Panel 3: Fixed Effects				
$Year_{2016}$	-0.00	-0.05*	3.2*	-0.5*	1.0*
	(0.01)	(0.01)	(1.0)	(0.2)	(0.2)
$Year_{2017}$	-0.01*	-0.03*	6.3*	-0.1	0.9*
	(0.01)	(0.01)	(1.1)	(0.2)	(0.2)

Implications of EPCS for high Prescriber States

Simulating effects of EPCS on opioid cost and number of claims prescribed for five states with the highest opioid prescription rates per capita.

	Claims	Cost, $
Tennessee	92,686	10,768,776
Oklahoma	39,102	5,650,239
Kentucky	51,666	7,266,865
West Virginia	22,406	2,527,240
South Carolina	50,763	6,604,056

Conclusions

- Implementation of EPCS reduced opioid
  - Cost, # of claims, # of beneficiaries per prescriber
- Implementation of EPCS slightly increased day's supply
- Small attenuation effect in the second year
- Limitations
  - Generalizability: Medicare population and dual eligible
  - Effects could be heterogeneous across patients
  - Concerns about biases remain

The Office of the National Coordinator for Health Information Technology

Contact ONC

Yuriy Pylypchuk
Yuriy.Pylypchuk@hhs.gov
202 774 2428

Phone: 202-690-7151

Health IT Feedback Form: https://www.healthit.gov/form/healthit-feedback-form

Twitter: @onc_healthIT

LinkedIn: Search "Office of the National Coordinator for Health Information Technology"

HealthIT.gov

Subscribe to our weekly eblast at healthit.gov for the latest updates!