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Megan E. Price, MS, Nicolae Done, PhD, Steven D. Pizer, PhD

The Relationship between Routine Follow-Up Appointments and Access to Primary Care

QUERI
VA Quality Enhancement Research Initiative

VA | U.S. Department of Veterans Affairs
Veterans Health Administration
Office of Research & Development

VA HEALTH CARE Defining EXCELLENCE in the 21st Century

Primary Result

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More frequent primary care visits

Greater patient satisfaction with access

In VA facilities where:

average primary care follow-up intervals >= 4.64 months, patients are 20% less likely to report that they can usually or always access routine care when needed.

Mean follow-up interval (facility level) = 3.9 months.

Implications

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- Trade-off between scheduling new patients with urgent issues and follow-up visits for returning patients with chronic conditions.
- Primary care providers in the VA have a relatively wide bandwidth for increasing time between visits.
- Facilities with unusually infrequent follow-up visits fare worse in terms of satisfaction with access.

Poll Question #1

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- What is your primary role in VA?
  - student, trainee, or fellow
  - clinician
  - researcher
  - Administrator, manager or policy-maker
  - Other

PEPReC Overview

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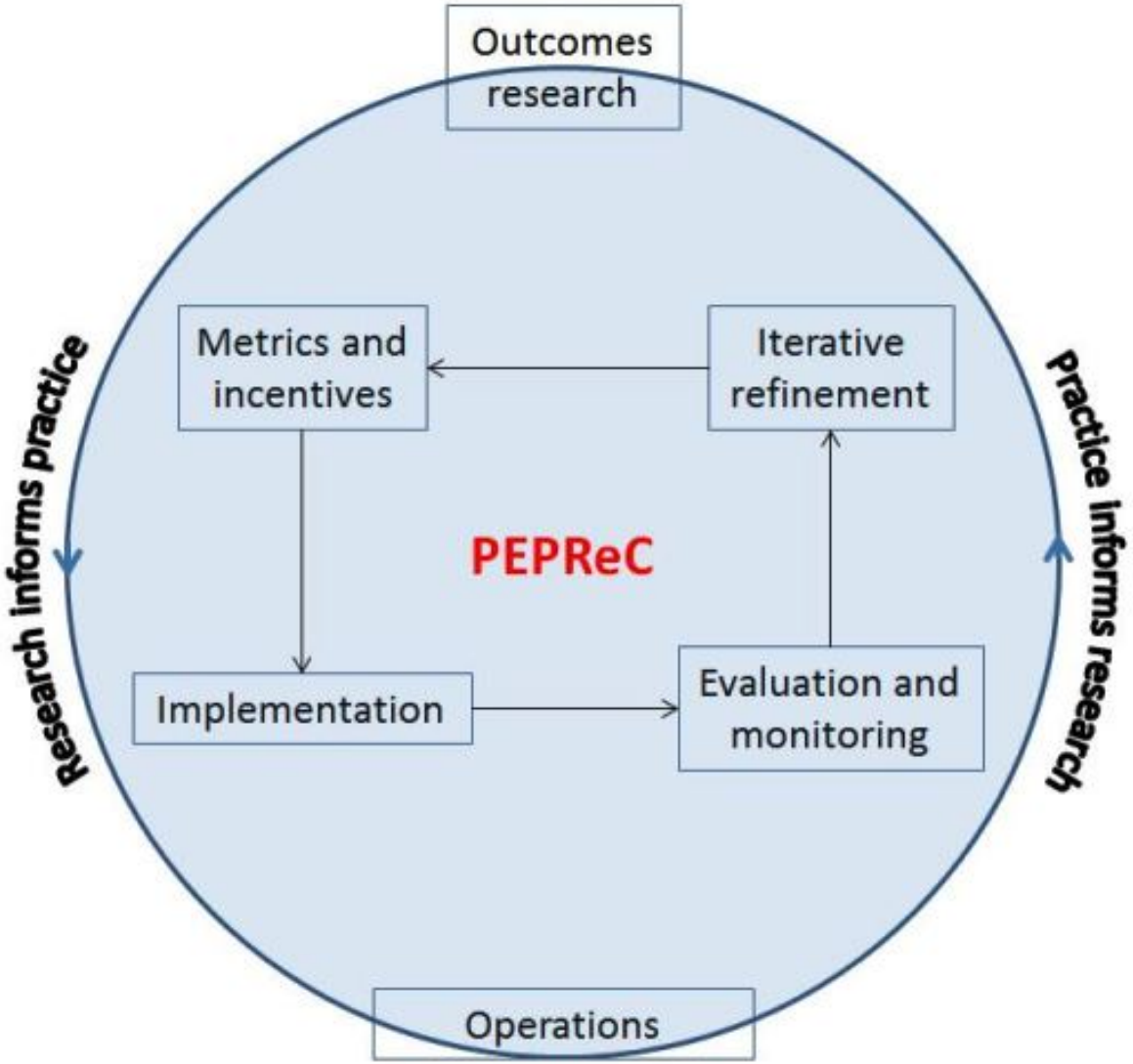

Core PEPReC Missions

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- Core Mission 1: Collaborate with VA operations partners to enhance planning and improve access to and efficiency/quality of care
  - Evidence-based budgeting and forecasting
  - Identifying & mitigating underserved facilities (MISSION Act Section 401 & 402)
- Core Mission 2: Collaborate with operations partners and researchers to design and implement randomized program evaluations
  - Medical scribes
  - Opioid risk stratification and management
- Core Mission 3: Facilitate research consortia to expedite operations-relevant research
  - Community Care Research Consortium/MISSION Act Virtual Research Network
  - Access CORE

Methods Overview

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- Logistic regression analysis

Variables	Individual vs Facility Level	Source
Dependent Variable: patient satisfaction with access to care	Individual	SHEP survey of patient satisfaction
Facility operations / scheduling practices	Facility	PEPReC created indicators from CDW data
Area economic/market indicators	Facility	VA; Zillow; ACS; AHRF
Patient demographics	Individual	SHEP; CDW
Healthcare quality indicators	Facility	VHA HEDIS

Poll Question #2

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- Should this presentation spend extra time on?
  - Implications of results
  - Details of data sources
  - Quantitative methods
  - Other – please write in

Patient Sample

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- Patients seen in primary care between October 2013 and June 2016 who:
  - Received care at 1 of 127 VA facilities
  - Completed a survey on patient satisfaction (SHEP). FY 15 SHEP response rate ≈ 40%.
- 94,496 patients in sample (out if 6.6 million patients who used VA health care in FY 2014)

SHEP Overview

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- SHEP is a nation-wide survey of VA patients
- Random sample of patients with completed appointments; patients can be surveyed a maximum of 1x/year

Patient satisfaction variables used (dependent variables)

- Routine care:

In the last 12 months, when you made an appointment for a check-up or routine care with this provider, how often did you get an appointment as soon as you needed?

- Urgent care:

In the last 12 months, when you phoned this provider's office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed?

Access Satisfaction Baseline

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Binary Outcome (dependent variable)	Patient Mean, %
Could get **urgent care** in 1 day or less	39.9
Could easily get **routine care**, usually/always	67.9

Sample Demographics

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Patient-level characteristics	Mean (SD) or Percent
Age (years)	65.9 (11.9)
20-39	3.1
40-59	21.1
60-79	63.3
80+	12.6
Male	93.4
Race/ethnicity	
White	79.8
Black	14.4
Hispanic	7.0
Other	5.7
Highest education	
High school	8.5
Some college	73.0
College and above	18.5
English first language	96.3
Priority Status 7 and 8 (individual) ; indicates Vets who pay copays due to higher economic status	17.3

Facility Operations

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- Facilities can vary scheduling practices to adjust for appointment demand
- Appointment length is an exception – in the VA appointments can typically be scheduled for 30 minutes (returning patients) or 60 minutes (new patients)
- Our model: facility operations variables are lagged one month to control for endogeneity (reverse causation)

Facility-level characteristics	Mean (SD)
Mean appointment length (minutes)	31.5 (2.6)
PCP Clinician FTEs/1,000 enrollees	0.5 (0.1)
Average follow-up time (months)	4.0 (0.8)
Percent visits overbooked	11.0 (7.1)
Percent visits unscheduled (walk-ins)	31.7 (15.0)

Distribution of Follow-up Time

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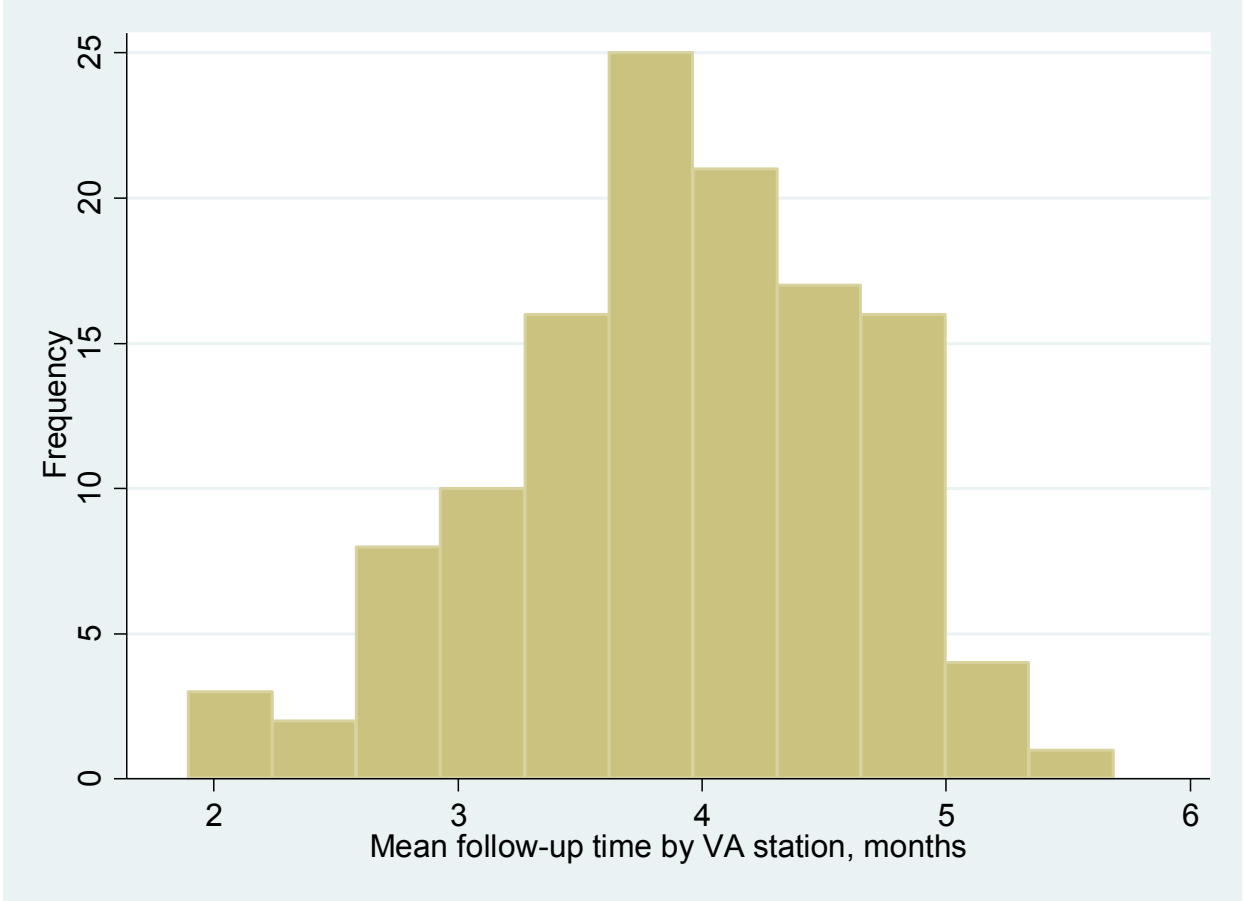

Economic Characteristics

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- These variables are related to Veteran choice to seek VA care as opposed to community care (Veterans are more likely to have private insurance in wealthier areas)
- Our model: lagged one month to control for potential endogeneity

Facility level local area measure	Mean (SD)
Annual Income ($10,000)	5.6 (1.1)
Zillow House Price Index ($1000)	194.7 (118.4)
Veteran Unemployment Rate, %	5.7 (1.2)
Medicare Advantage Penetration, %	29.2 (11.4)
Priority 7 and 8, % (facility). This differs from the previously mentioned individual priority 7&8 figure because it is a facility level aggregate.	24.1 (6.6)

Healthcare Quality (HEDIS)

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HEDIS Indicator	Study Facility-level Mean % (SD)	2016 National Medicare HMO Mean
Percent diabetics with controlled BP	74.6 (11.9)	63.1
Percent diabetics with poorly controlled HbA1c	19.0 (9.7)	26.3
Percent patients aged 50-75 with colonoscopy screening	81.9 (7.2)	67.1
Percent patients immunized against pneumonia	90.8 (6.2)	74.0
Percent patients aged 18-64 immunized against influenza	22.0 (27.6)	Not available
Percent patients aged 65+ immunized against influenza	29.4 (36.6)	71.1

Results: follow-up time matters.

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	(1)	(2)
VARIABLES	Could get urgent care within 1 day	Could get routine care, usually or always
Mean appointment length, 10min (1M lag)	0.99**	0.99
	(-1.98)	(-1.51)
Clinician FTEs/1000 enrollees	1.02	1.24*
	(0.26)	(1.79)
Average follow-up time, month (1M lag)	**0.90*** **	**0.87*** **
	(-3.24)	**(-3.93)**
Proportion of visits overbooked (1M lag)	1.00	1.00
	(0.40)	(-0.28)
Proportion of visits unscheduled (1M lag)	1.00	1.00*
	(-1.26)	(-1.81)
Local area income (1M lag)	1.19	0.96
	(1.36)	(-0.29)
Zillow house price index (1M lag)	1.00	1.00
	(-0.015)	(-0.34)
Local area unemployment rate (1M lag)	1.80	1.27
	(0.62)	(0.23)
Facility proportion of priority 7&8 (1M lag)	0.43	0.016
	(-0.33)	(-1.44)
Area Medicare Advantage penetration (1M lag)	0.37	2.60
	(-1.06)	(1.05)
Individual priority 7&8	1.08***	1.20***
	(3.88)	(8.41)
Constant	1.14	18.2***
	(0.16)	(3.40)
Number of observations	94,496	94,496
Number of facilities	127	127

Logistic regression model estimates (odds ratios) of the relationship between 1-month lagged facility operations measures, market characteristics and SHEP self-reported access to urgent care, October 2013 to June 2016.

Robust Z-statistics in parentheses.*** p<0.01, ** p<0.05, * p<0.1.

Models also control for HEDIS quality indicators, patient age, patient gender, race, first language, education level, and facility, month and year fixed effects.

Which controls made a difference? Age, race and education also correlated with satisfaction with access. HEDIS not significant.

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	(1)	(2)
VARIABLES	Could get urgent care within 1 day	Could get routine care, usually or always
Patient Sex (0=Male, 1=Female)	1.07**	0.98
	(2.18)	(-0.50)
20-39	0.54***	0.38***
	(-11.9)	(-21.2)
40-59	0.71***	0.70***
	(-12.8)	(-12.4)
60-79	0.88***	0.92***
	(-6.12)	(-3.38)
80+ = o,	-	-
White	1.10***	1.10***
	(2.73)	(2.69)
Black	0.99	1.05
	(-0.24)	(1.39)
Other	0.95	0.99
	(-1.49)	(-0.21)
Hispanic	0.91***	0.98
	(-3.00)	(-0.37)
Very good/excellent health	1.49***	1.54***
	(21.8)	(22.2)
Some College or Above (0 = No, 1 = Yes)	0.96***	0.98
	(-3.49)	(-1.57)

Logistic regression model estimates (odds ratios) of the relationship between 1-month lagged facility operations measures, market characteristics and SHEP self-reported access to urgent care, October 2013 to June 2016.

Robust Z-statistics in parentheses.*** p<0.01, ** p<0.05, * p<0.1.

Sextile Results

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VARIABLES	Sextile Range (months)	Could get urgent care, 1 day	Could get routine care, usually/always
Mean follow-up time (1M lag)			
Sextile 2	3.21-3.61	0.93**	1.00
		(-2.21)	(-0.0077)
Sextile 3	3.61-3.91	0.93*	0.95
		(-1.89)	(-1.33)
Sextile 4	3.91-4.25	0.93*	0.87***
		(-1.77)	(-3.15)
Sextile 5	4.25-4.64	0.85***	0.86***
		(-3.37)	(-2.94)
Sextile 6	4.64-6.00	0.86***	0.80***
		(-2.68)	(-3.33)

Results are strongest at the higher end of the distribution (facilities with longer than average follow-up times.)

We broke the follow-up variable into sextiles. (Dummy variables for each sextile of the follow-up interval distribution) and re-ran the analysis with the other controls (see previous slide).

Study Limitations

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- This is an association study.
- Potential for endogeneity (what if people schedule more follow-up appointments because they are satisfied?)
- We tried to control for endogeneity by:
  - Lagging facility operations and economic variables (so past data predicts satisfaction)
  - Testing a specification with lagged variables as instruments (this did not show an endogeneity problem)
  - Due to high serial correlation in facility practices (facility practices don't change month from month-to-month), we don't have enough confidence in our IV to make a causal determination.

- Future work:
  - Develop an instrumental variable model with the goal of conclusively identifying (or not!) causality

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Contact Information

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I welcome your comments and suggestions. The full submitted paper is available upon request.

Megan Ellis Price; Megan.Price3@va.gov.