



Database & Methods Cyberseminar Series

Session #7: *VA Pharmacy Data*

April 2, 2018

Bonnie Paris, PhD

Data Knowledge Analyst
VA Information Resource Center

Walid Gellad, MD, MPH

CHERP Core Investigator
Staff Physician, VA Pittsburgh Healthcare System
Associate Professor, University of Pittsburgh

Session Outline

- Introduction
- Commonly used pharmacy data sources
- Examples of research focused on pharmacy care
- Resources

Poll #1: Your role as a data user

What is your role in the VA?

- Research investigator/PI
- Data manager, analyst, or programmer
- Project coordinator
- Clinical or operations staff
- Other – please describe via the Q&A function

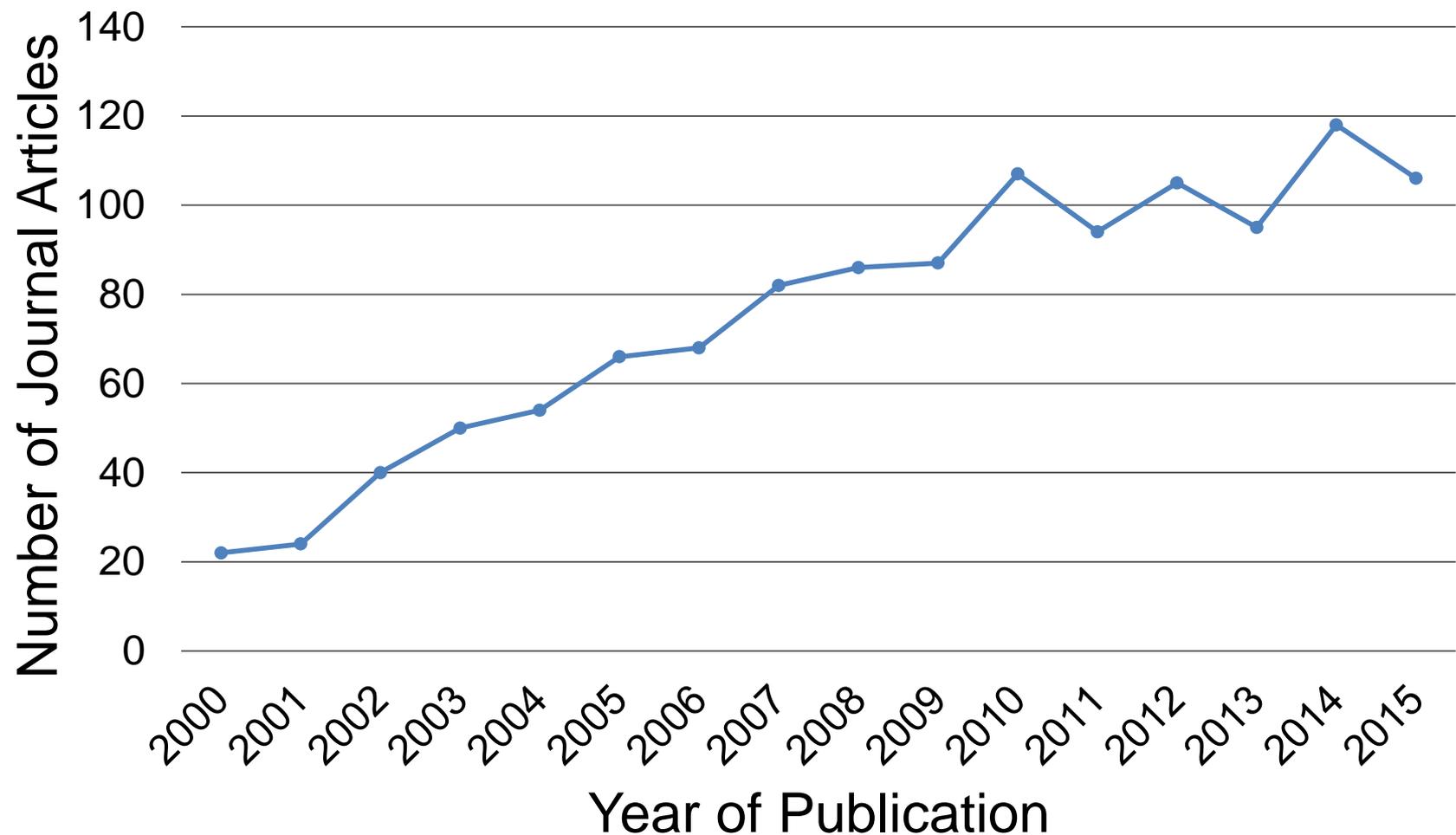


Learning Objectives

By the end of this cyberseminar, attendees will:

- Understand basic content and organization of key VA pharmacy data
- Appreciate the value of non-VA data sources to measure pharmacy use
- Know where to find resources about VA pharmacy data

VA Research Publications Using Pharmacy Data



Uses of VA Pharmacy Data in Research

Who?

What? When?

Where? Why?



Trends in Medication Use

Cohort Identification

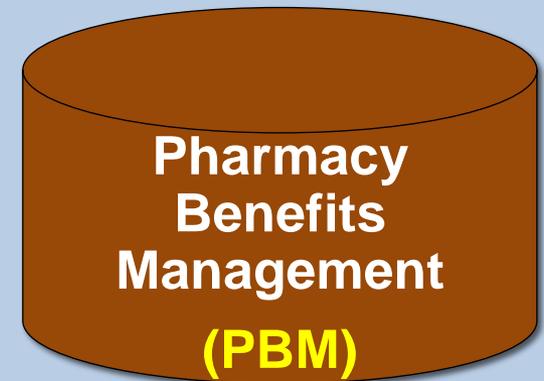
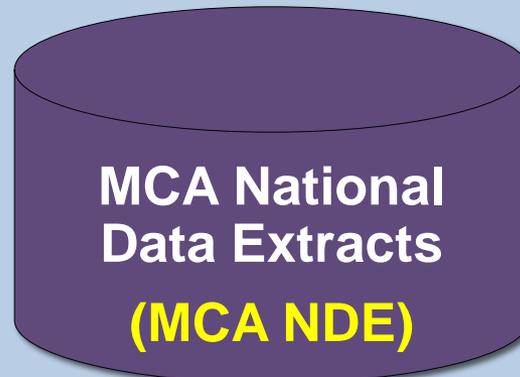
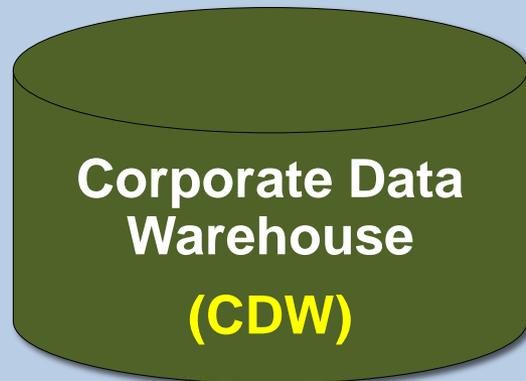
Utilization & Quality

Session Outline

- Introduction
- **Commonly used pharmacy data sources**
- Examples of research focused on pharmacy care
- Resources

Commonly Used VA Pharmacy Data Sources

Medications Provided by or Paid for by the VHA



Non-VA Data:



Medications Provided by or Paid for by the VHA

**Corporate Data
Warehouse
(CDW)**



**MCA National
Data Extracts
(MCA NDE)**

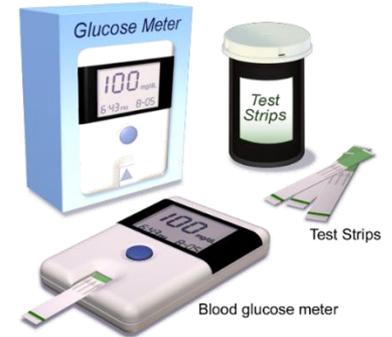


**Pharmacy
Benefits
Management
(PBM)**



VA Pharmacy Items

- Medications
 - Prescription
 - Over the counter (OTC)
- Supplies & equipment
 - ADVANTAGE (ACCU-CHEK GLUCOSE) METER
 - BANDAGE,ADHESIVE FLEXIBLE FABRIC 1IN X 3IN
 - BRACELET,MEDICAL ALERT WARFARIN
 - INCONTINENCE BRIEF KENDALL LARGE
 - MEDICATION ORGANIZER 7DAY/4 SLOT
 - NEBULIZER,LARGE VOLUME
 - SANITARY NAPKIN,REGULAR
 - SHARPS DISPOSAL CONTAINER 1 GALLON SIZE



VHA Pharmacy Data Source Comparison

Who?	 CDW	 MCA NDE	 PBM
Ordering Provider Type			
Patient Identifier 			

VHA Pharmacy Data Source Comparison

What?	 CDW	 MCA NDE	 PBM
Generic Drug Name	✓	✓	✓
Days Supply	✓	✓	✓
National Drug Code (NDC)	✓	✓	✓
Directions for Use (SIG)	✓	✗	✓
Total Cost to Provide Drug to Patient	✗	✓	✗

VHA Pharmacy Data Source Comparison

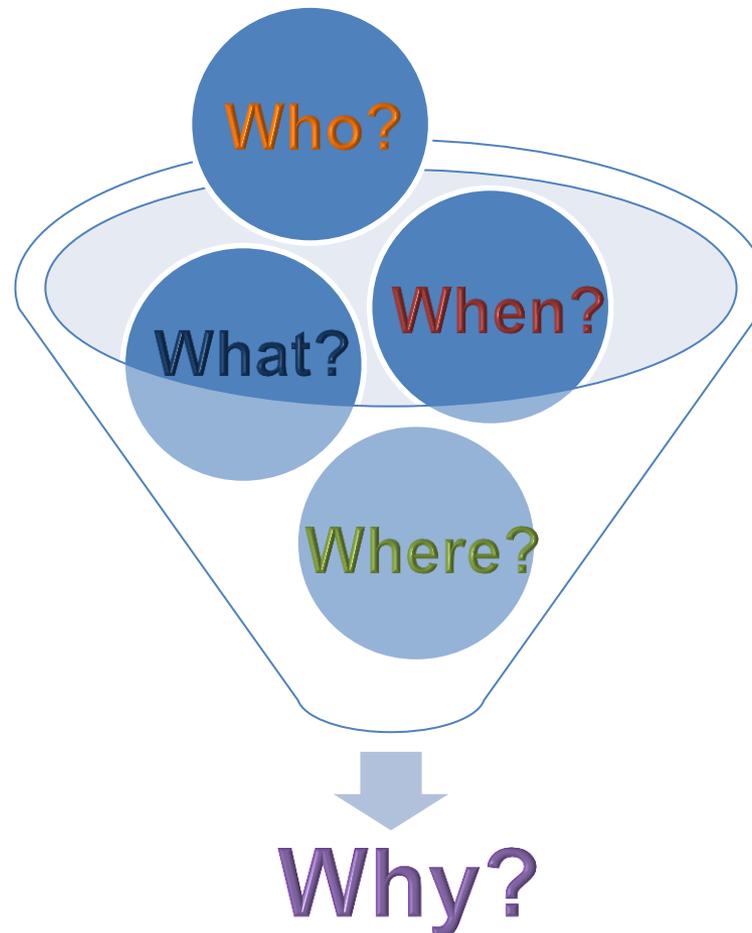
When?	 CDW	 MCA NDE	 PBM
Medication Dispensed	✓	✓	✓
Medication Returned	✓	✓	✓
Administration Schedule	✓	✗	✓
Medication Administered	✓	✗	✗

VHA Pharmacy Data Source Comparison

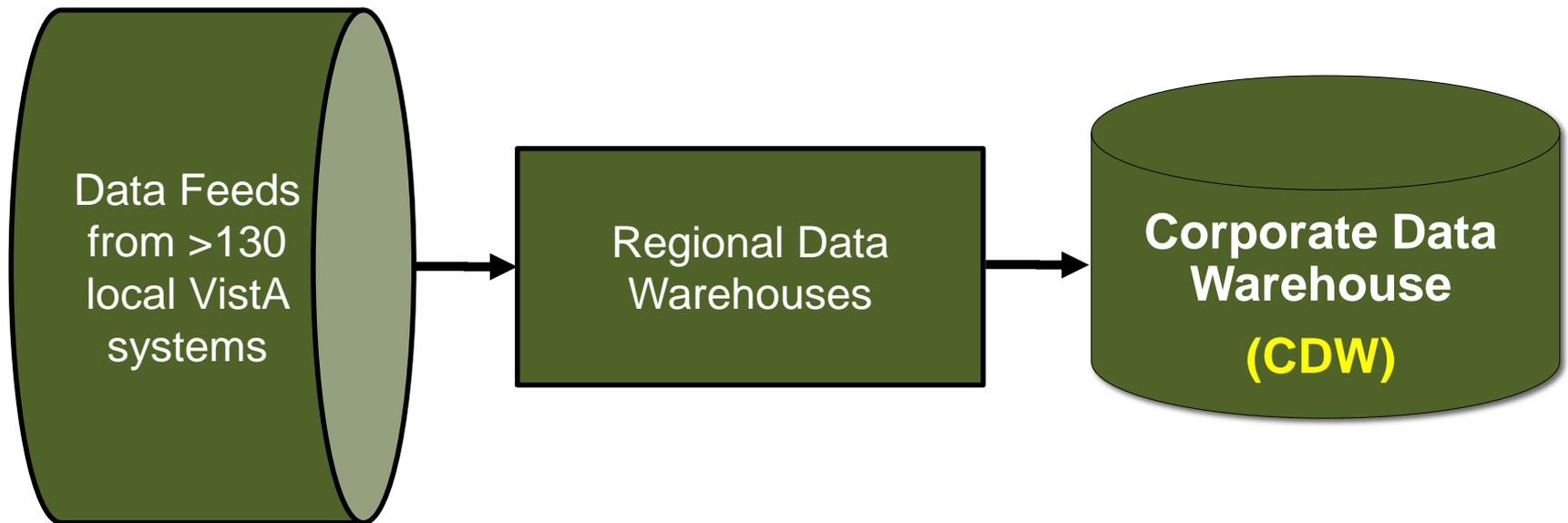
Where?	 CDW	 MCA NDE	 PBM
Consolidated Mail Out Pharmacy (CMOP) flag	✓	✓	✓
Inpatient or Outpatient Care Setting	✓	✓	✓
Location where patient was served (station)	✓	✓	✓

VHA Pharmacy Data Source Comparison

Why?	 CDW	 MCA NDE	 PBM
Not directly!	×	×	×



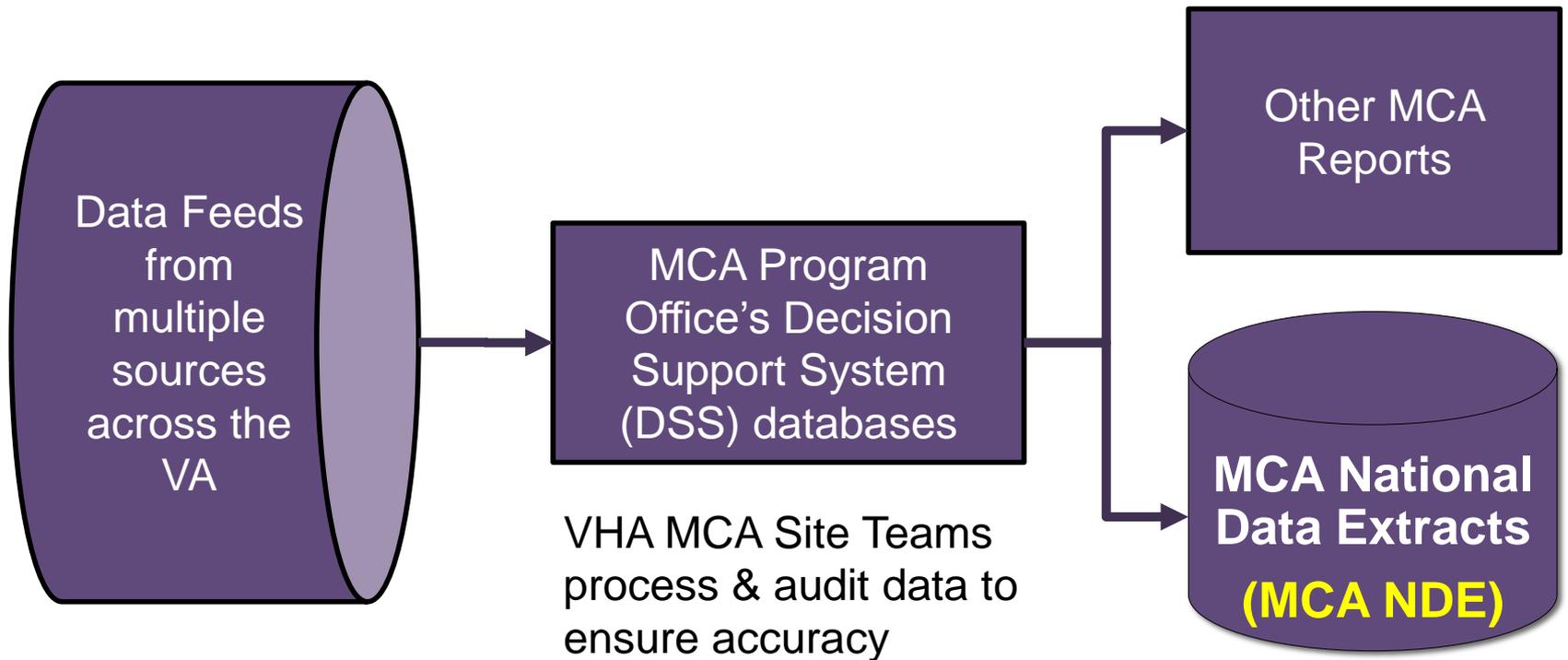
Corporate Data Warehouse (CDW)



Example Variables – CDW

Variable	Meaning	Example data
LocalDrugNameWithDose	VA Product	HYDROCHLOROTHIAZIDE 25MG TAB
NationalFormularyName	Generic name	HYDROCHLOROTHIAZIDE TAB
DaysSupply	Days of supply	90
Qty	Total quantity	90
Sig	Patient Instructions	TAKE ONE TABLET BY MOUTH EVERY DAY FOR BLOOD PRESSURE
DispenseUnits	Units to take each time	1
DoseOrdered	Dosage amount	25
Unit	Dosage units	MG
MedRoute	Medication route	ORAL
Schedule	Schedule of when to take	QDAY
CMOPTransmitFlag	CMOP indicator	Y

MCA National Data Extracts (MCA NDE)

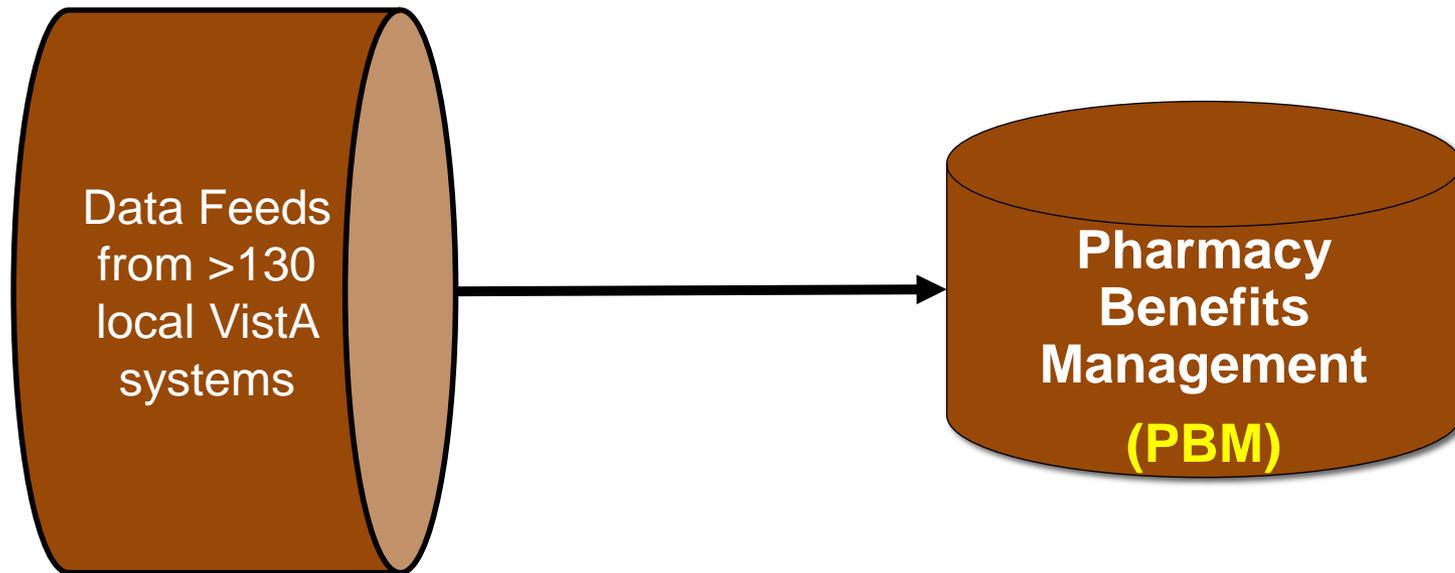


Example Variables – MCA NDE

Variable	Meaning	Example data
drugdesc	VA Product	HYDROCHLOROTHIAZIDE 25MG
va_class	VA Class	CV701
day_supply	Day of Supply	30
quantity	Total quantity	30
act_cost	Variable & Fixed Product Cost <i>drug price, supplies, & overhead</i>	0.521124
dispcost	Dispensing fee <i>labor cost to process the fill</i>	24.158500
svc_dte	Release date	2015-09-30
fdrkey	VA Product Code & <u>National Drug Code</u>	02068 <u>000172208380</u>
cmop	CMOP indicator	NULL

Total Cost to provide the medication to the patient = act_cost + dispcost

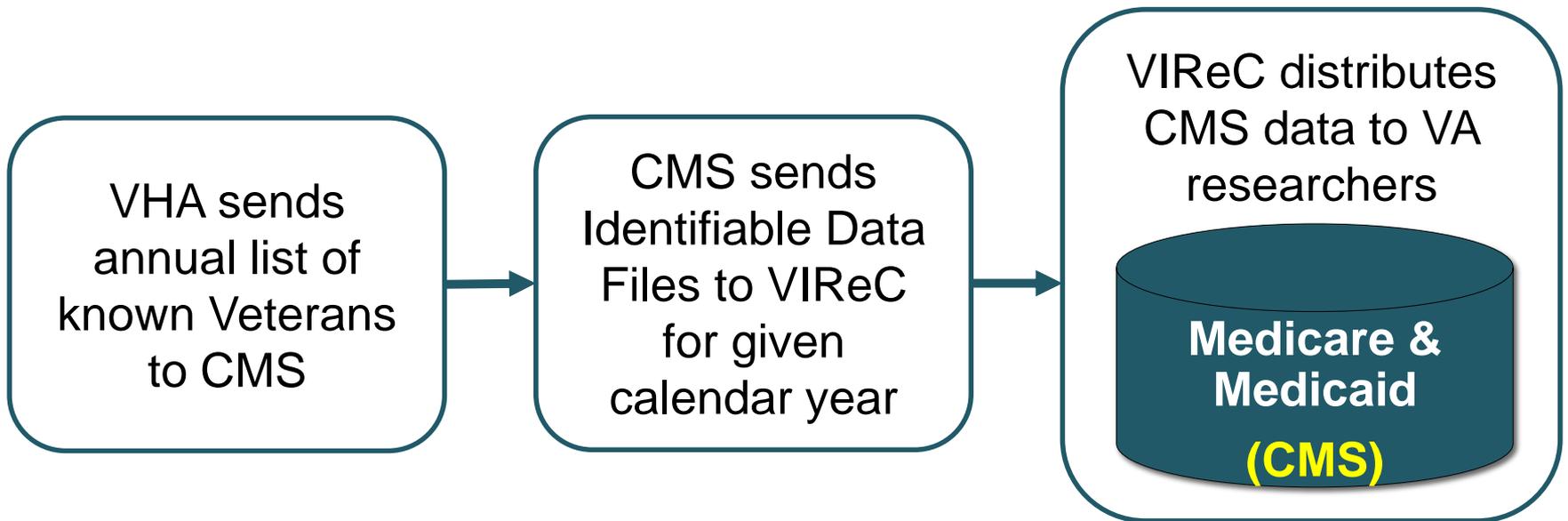
Pharmacy Benefits Management (PBM)



Example Variables: VA Outpatient PBM File

Variable	Meaning	Example data
Va_product	VA Product	DICLOFENAC NA 50MG TAB,EC
Va_class	VA Class	MS102 NONSALICYLATE NSAIs,ANTIRHEUMATIC
generic	Generic name	DICLOFENAC
Sig	Directions of use	TAKE 1 50 MG TABLET ORAL BID TO RELIEVE PAIN
Dsp_unt	Dispensing Unit	TAB
Day_supply	Day of Supply	21
TI_qty	Total quantity	42
Price_dsp	Price per Dispensing Unit	0.151
TI_cost	Drug Price for quantity dispensed	6.342
rel_date	Release date	1/1/2015
NDC	National Drug Code	00228-2550-11
CMOP_IND	CMOP indicator	Y

Medicare & Medicaid (CMS)



Medicare Part D

- Medicare Part D Slim File key variables include:

Variable Name	Meaning	Example data
SRVC_DT	Service date	3-Jul-07
PROD_SRVC_ID	National Drug Code (NDC)	00071015623
QTY_DSPNSD_NUM	Quantity dispensed	30
DAYS_SUPLY_NUM	Days Supply	30
PTNT_PAY_AMT	Patient Payment	29
TOT_RX_CST_AMT	Gross drug Cost	111.11
BN	Brand Name	LIPITOR
GCDF (dosage form)	Dosage form	TA
STR	Drug Strength	20MG
GNN	Generic Name	ATORVASTATIN CALCIUM

Examining Veterans' Pharmacy Use with VA and Medicare Pharmacy Data

U.S. Department of Veterans Affairs

VA » Health Care » HSR&D » For_researchers » Cyber_seminars » Archives » Examining Veterans' Pharmacy Use with VA and Medicare Pharmacy Data

Health Services Research & Development

HSR&D Home

- About Us
- Career Development Program
- Centers
- Cyberseminars**
- Cyberseminars Home
- Upcoming
- Past Sessions
- Series
- Transcripts
- Contact
- For Managers
- For Researchers
- For Veterans
- Funding
- Meetings
- News
- Publications
- Studies & Citations
- Research Topics

VIReC Database and Methods Seminar

Examining Veterans' Pharmacy Use with VA and Medicare Pharmacy Data

by Walid Gellad, MD, MPH
Seminar date: 2/1/2016

Description: Objectives: • Provide an overview of VA and Medicare pharmacy databases. • Discuss how outpatient pharmacy data been used in VA studies. • Discuss where to find information in the VA and Medicare pharmacy databases. • Share examples of VA studies that have used the VA pharmacy databases.

DOWNLOAD: [PDF handout](#) | [Audio](#) | [transcript](#)

VIReC Database & Methods

https://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=1111

(VA Intranet)

Session Outline

- Introduction
- Commonly used pharmacy data sources
- **Examples of research focused on pharmacy care**
- Resources

How has VA Pharmacy Data been used in Research?

Trends in Medication Use

- Which medications are being used to treat a given condition?
- How has use changed over time?
 - Impact of policy change?
 - New treatment options?

Utilization and Quality

- How does VA perform on process-based quality measures related to medication management?
 - Are medications being prescribed appropriately?
 - What is the adherence to therapy for a given medication?

Cohort Identification

- Which patients are taking a given medication?



Examples of Research Using VA Pharmacy Data

Research Example 1: Trends in Medication Use - Tarlov et al 2012



To examine erythropoiesis-stimulating agent (ESA) therapy in lung and colon cancer patients receiving chemotherapy from 2002 to 2008.

Research Example 2: Utilization and Quality, Cohort ID - Sussman et al 2015



To examine rate of BP and blood glucose-lowering medicine deintensification among older patients with type 1 or 2 diabetes mellitus who potentially receive overtreatment.

Research Example 3: Cohort Identification & Utilization - Gellad et al 2015



To examine the patterns of test strip receipt among older Veterans with diabetes and determine whether receiving strips from dual health systems is associated with overuse.

Research Example 4: Cohort ID, Utilization and Quality - Thorpe et al 2017



To investigate the association between dual health care system use and potentially unsafe medication prescribing in patients with dementia.

Research Example 1: Trends in Medication Use -- Tarlov et al. 2012

Support Care Cancer (2012) 20:1649–1657
DOI 10.1007/s00520-011-1255-0

ORIGINAL ARTICLE

Trends in anemia management in lung and colon cancer patients in the US Department of Veterans Affairs, 2002–2008

Elizabeth Tarlov · Kevin T. Stroupe · Todd A. Lee · Thomas W. Weichle ·
Qiuying L. Zhang · Laura C. Michaelis · Howard Ozer · Margaret M. Browning ·
Denise M. Hynes

Received: 11 July 2011 / Accepted: 9 August 2011 / Published online: 20 September 2011
© Springer-Verlag (outside the USA) 2011

Abstract

Purpose In 2007, growing concerns about adverse impacts of erythropoiesis-stimulating agents (ESAs) in cancer patients led to an FDA-mandated black box warning on product labeling, publication of revised clinical guidelines, and a Medicare coverage decision limiting ESA coverage. We examined ESA therapy in lung and colon cancer patients receiving chemotherapy in the VA from 2002 to 2008 to ascertain trends in and predictors of ESA use.
Methods A retrospective study employed national VA databases to “observe” treatment for a 12-month period following diagnosis. Multivariable logistic regression analyses evaluated changes in ESA use following the

FDA-mandated black box warning in March 2007 and examined trends in ESA administration between 2002 and 2008.

Results Among 17,014 lung and 4,225 colon cancer patients, those treated after the March 2007 FDA decision had 65% (lung OR 0.35, CI_{95%} 0.30–0.42) and 53% (colon OR 0.47, CI_{95%} 0.36–0.63) reduced odds of ESA treatment compared to those treated before. Declines in predicted probabilities of ESA use began in 2006. The magnitude of the declines differed across age groups among colon patients ($p=0.01$) and levels of hemoglobin among lung cancer patients ($p=0.04$).

Conclusions Use of ESA treatment for anemia in VA cancer care declined markedly after 2005, well before the 2007 changes in product labeling and clinical guidelines. This suggests that earlier dissemination of research results had marked impacts on practice patterns with these agents.

Keywords Lung neoplasms · Colon neoplasms · Anemia/ drug therapy · Physician's practice patterns · Age factors

E. Tarlov (✉) · K. T. Stroupe · T. A. Lee · T. W. Weichle ·
Q. L. Zhang · M. M. Browning · D. M. Hynes
Center for Management of Complex Chronic Care,
Edward Hines, Jr. VA Hospital,
5000 South 5th Ave. (151H),
Hines, IL 60141, USA
e-mail: Elizabeth.Tarlov@va.gov

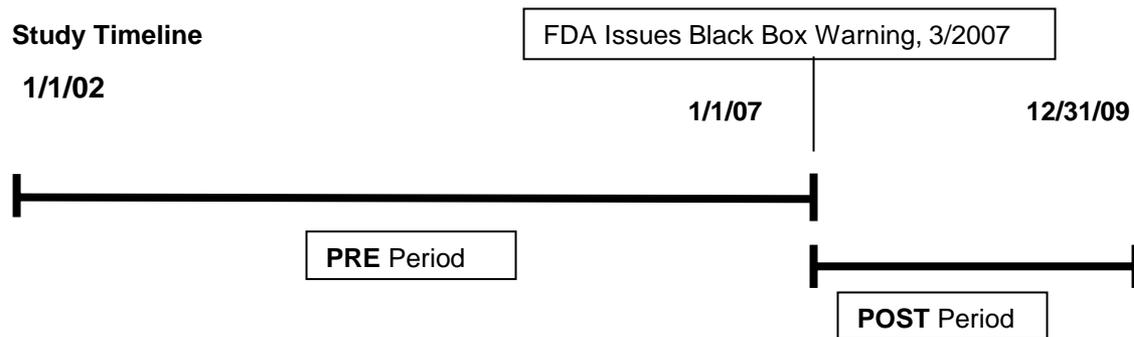
K. T. Stroupe · L. C. Michaelis
Stritch School of Medicine, Loyola University Chicago,
Maywood, IL, USA

Introduction

- Tarlov E, Stroupe KT, et al. Support Care Cancer. 2012; 20:1649–57
- Objective: To examine erythropoiesis-stimulating agent (ESA) therapy in lung and colon cancer patients receiving chemotherapy from 2002 to 2008



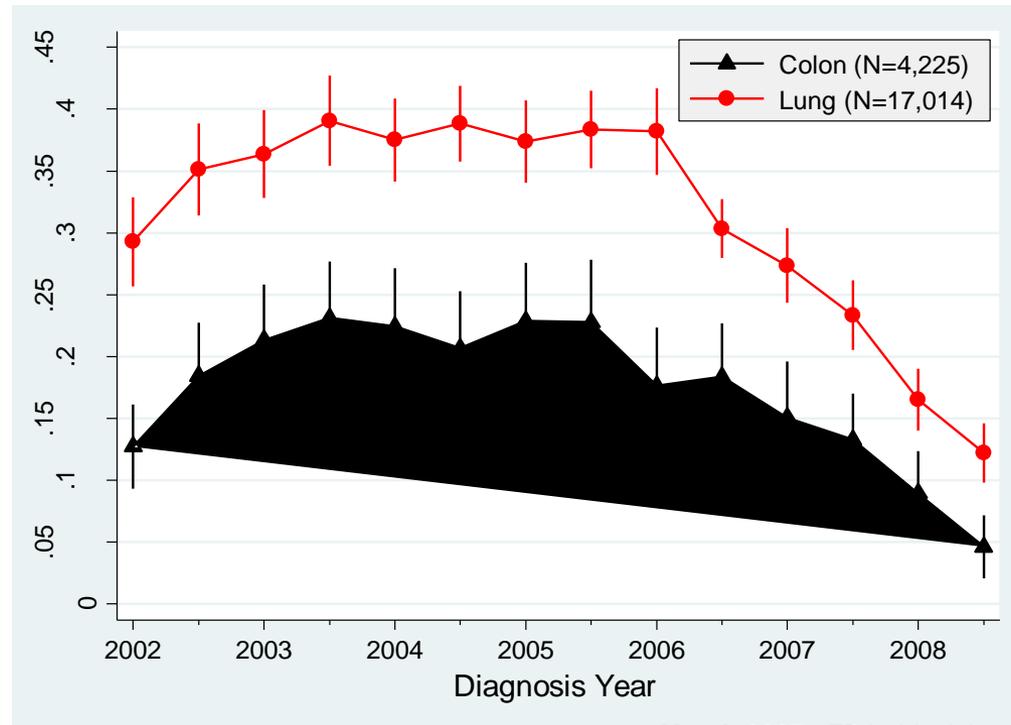
Research Example 1: Trends in Medication Use -- Tarlov et al. 2012



- How was pharmacy data used?
 - Pharmacy data was used to examine
 - Whether ESA use differed before (PRE) or after (POST) the black box warning
 - Trends in ESA use over time

- Source of pharmacy data
 - PBM and MCA data
- How were ESAs identified in the PBM Database?
 - NDCs were used to identify the ESAs in the PBM database
- NOTE: ESAs also identified from CPT and HCPCS codes from VA inpatient and outpatient encounters

Research Example 1: Trends in Medication Use -- Tarlov et al. 2012



March 2007: FDA "black box" warning

- ESA use began to decline for both cancer groups before black box warning was issued

Research Example 2: Utilization and Quality, Cohort ID -- Sussman et al. 2015

Original Investigation | LESS IS MORE

Rates of Deintensification of Blood Pressure and Glycemic Medication Treatment Based on Levels of Control and Life Expectancy in Older Patients With Diabetes Mellitus

Jeremy B. Sussman, MD, MS; Eve A. Kerr, MD, MPH; Sameer D. Saini, MD, MS; Rob G. Holleman, MPH; Mandi L. Klamers, MPH; Lillian C. Min, MD; Sandeep Vijan, MD, MS; Timothy P. Hofer, MD, MS

IMPORTANCE Older patients with diabetes mellitus receiving medical treatment whose blood pressure (BP) or blood glucose level are potentially dangerously low are rarely deintensified. Given the established risks of low blood pressure and blood glucose, this is a major opportunity to decrease medication harm.

OBJECTIVE To examine the rate of BP- and blood glucose-lowering medicine deintensification among older patients with type 1 or 2 diabetes mellitus who potentially receive overtreatment.

DESIGN, SETTING, AND PARTICIPANTS Retrospective cohort study conducted using data from the US Veterans Health Administration. Participants included 211 667 patients older than 70 years with diabetes mellitus who were receiving active treatment (defined as BP-lowering medications other than angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, or glucose-lowering medications other than metformin hydrochloride) from January 1 to December 31, 2012. Data analysis was performed December 10, 2013, to July 20, 2015.

EXPOSURES Participants were eligible for deintensification of treatment if they had low BP or a low hemoglobin A_{1c} (HbA_{1c}) level in their last measurement in 2012. We defined very low BP as less than 120/65 mm Hg, moderately low as systolic BP of 120 to 129 mm Hg or diastolic BP (DBP) less than 65 mm Hg, very low HbA_{1c} as less than 6.0%, and moderately low HbA_{1c} as 6.0% to 6.4%. All other values were not considered low.

MAIN OUTCOMES AND MEASURES Medication deintensification, defined as discontinuation or dosage decrease within 6 months after the index measurement.

RESULTS The actively treated BP cohort included 211 667 participants, more than half of whom had moderately or very low BP levels. Of 104 486 patients with BP levels that were not low, treatment in 15.1% was deintensified. Of 25 955 patients with moderately low BP levels, treatment in 16.0% was deintensified. Among 81 226 patients with very low BP levels, 18.8% underwent BP medication deintensification. Of patients with very low BP levels whose treatment was not deintensified, only 0.2% had a follow-up BP measurement that was elevated (BP \geq 140/90 mm Hg). The actively treated HbA_{1c} cohort included 179 991 participants. Of 143 305 patients with HbA_{1c} levels that were not low, treatment in 17.5% was deintensified. Of 23 769 patients with moderately low HbA_{1c} levels, treatment in 20.9% was deintensified. Among 12 917 patients with very low HbA_{1c} levels, 27.0% underwent medication deintensification. Of patients with very low HbA_{1c} levels whose treatment was not deintensified, fewer than 0.8% had a follow-up HbA_{1c} measurement that was elevated (\geq 7.5%).

CONCLUSIONS AND RELEVANCE Among older patients whose treatment resulted in very low levels of HbA_{1c} or BP, 27% or fewer underwent deintensification, representing a lost opportunity to reduce overtreatment. Low HbA_{1c} or BP values or low life expectancy had little association with deintensification events. Practice guidelines and performance measures should place more focus on reducing overtreatment through deintensification.

[Invited Commentary](#)
page 1949

[Supplemental content at](#)
jamainternalmedicine.com

Author Affiliations: Department of Veterans Affairs Center for Clinical Management Research, Ann Arbor, Michigan (Sussman, Kerr, Saini, Holleman, Klamers, Min, Vijan, Hofer); Department of Internal Medicine, University of Michigan Medical School, Ann Arbor (Sussman, Kerr, Saini, Min, Vijan, Hofer); Institute of Healthcare Policy and Innovation, University of Michigan, Ann Arbor (Sussman, Kerr, Saini, Min, Vijan, Hofer).

Corresponding Author: Jeremy B. Sussman, MD, MS, Department of Veterans Affairs Center for Clinical Management Research, North

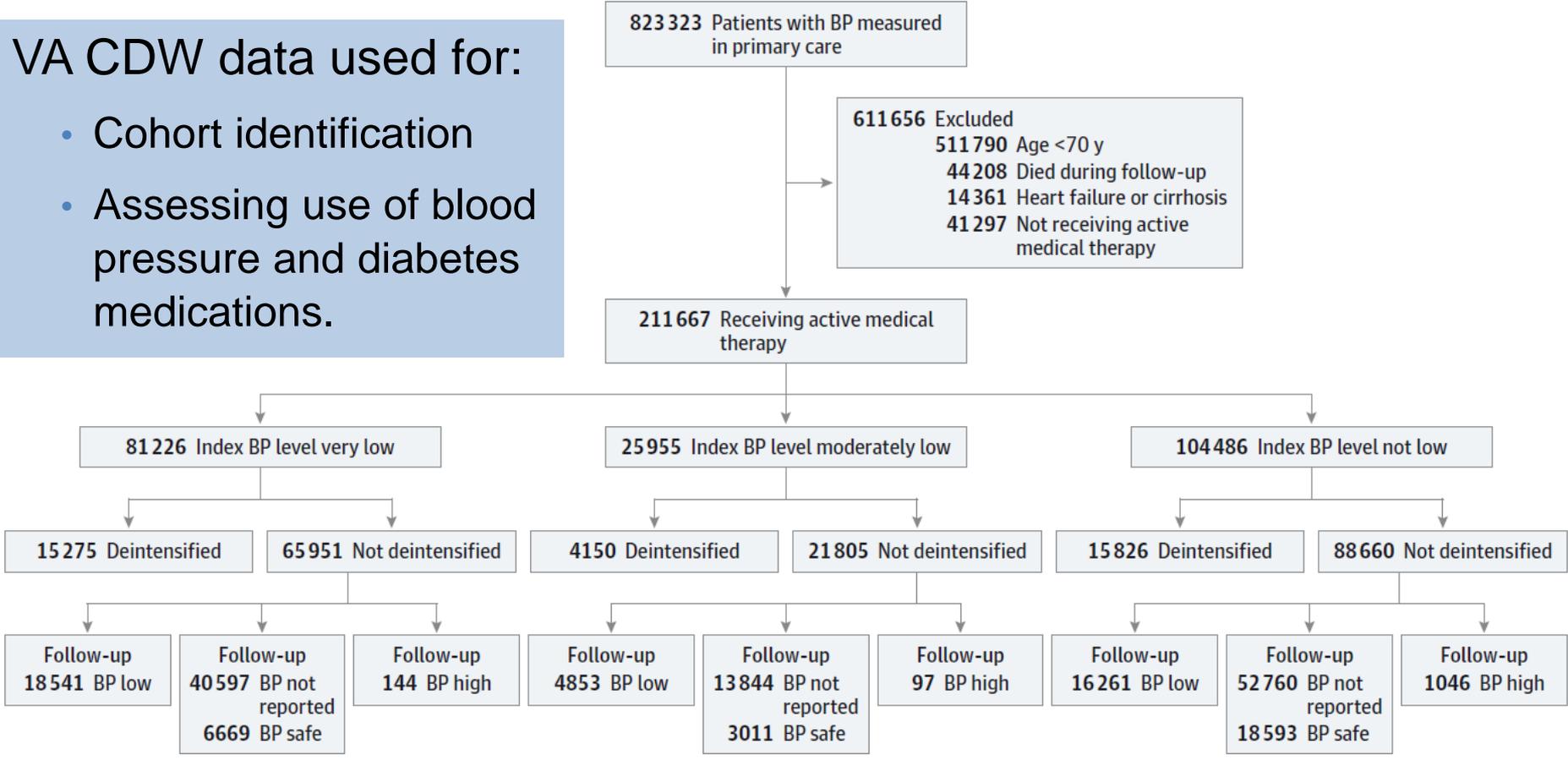
- Sussman et al. *JAMA Intern Med.* 2015: 175(1):26-34
- To examine rate of BP and blood glucose-lowering medicine deintensification among older patients with type 1 or 2 diabetes mellitus who potentially receive overtreatment.

Research Example 2: Utilization and Quality, Cohort ID -- Sussman et al. 2015

Figure 1. Flow Diagram for the Low Blood Pressure (BP) Cohort

VA CDW data used for:

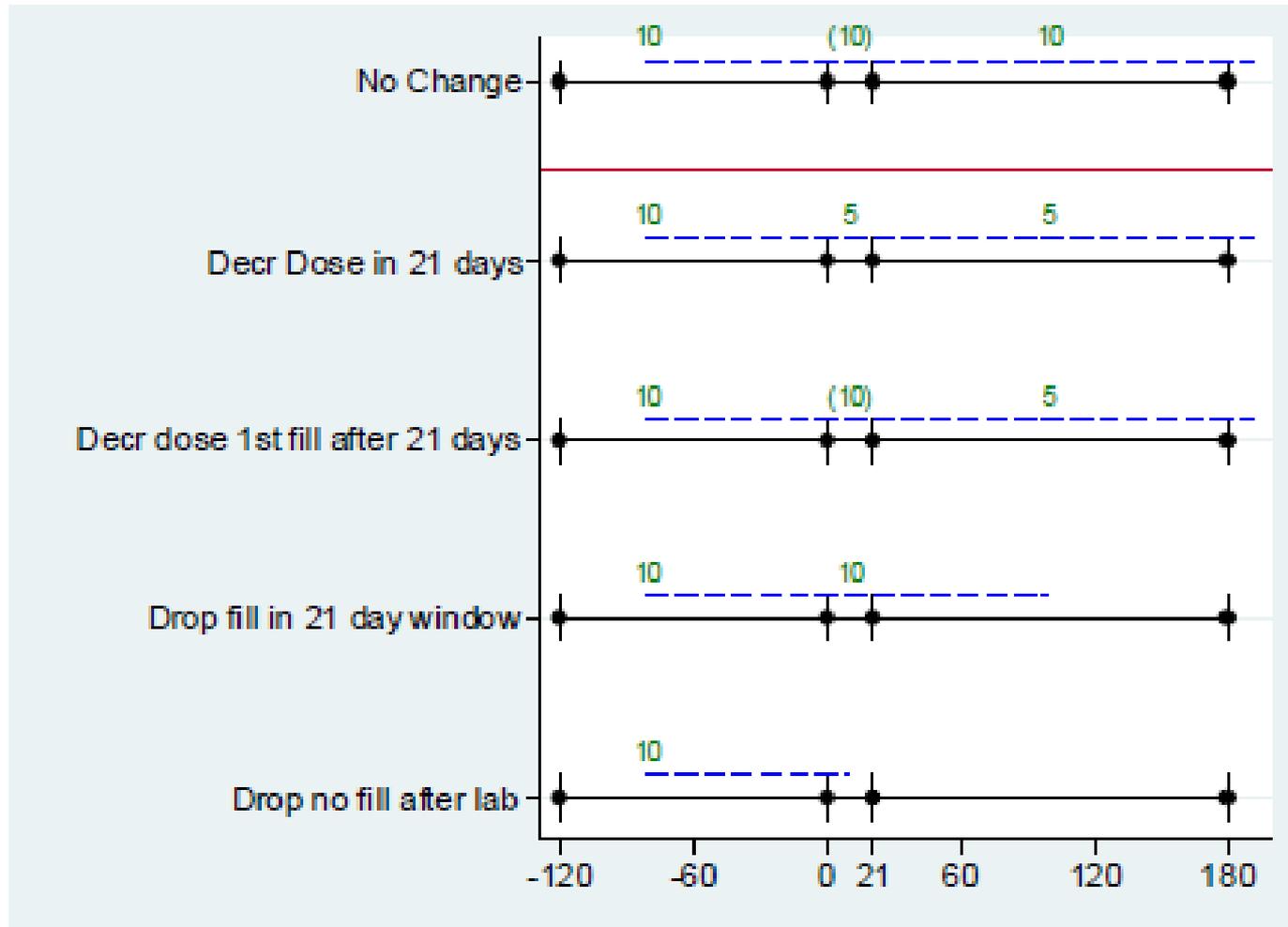
- Cohort identification
- Assessing use of blood pressure and diabetes medications.



The cohort evaluated was patients with diabetes mellitus who were older than 70 years and receiving active BP-lowering treatment. We defined *active BP-lowering treatment* as receiving treatment with medications other than

low-dose angiotensin-converting enzyme inhibitors or angiotensin receptor blockers. The BP level stratification is explained in the Variable Construction and Definition subsection of the Methods section.

eFigure 1. Deintensification Schematic



Research Example 3: Cohort Identification & Utilization -- Gellad et al. 2015

Research

Original Investigation | LESS IS MORE

Dual Use of Department of Veterans Affairs and Medicare Benefits and Use of Test Strips in Veterans With Type 2 Diabetes Mellitus

Walid F. Gellad, MD, MPH; Xinhua Zhao, PhD; Carolyn T. Thorpe, PhD, MPH; Maria K. Mor, PhD; Chester B. Good, MD, MPH; Michael J. Fine, MD, MSc

IMPORTANCE Self-monitoring of blood glucose is a costly component of care for diabetes mellitus, with unclear benefits for patients not taking insulin. Veterans with dual Department of Veterans Affairs (VA) and Medicare benefits have access to test strips through both systems, raising the potential for overuse.

OBJECTIVES To examine the patterns of test strip receipt among older veterans with diabetes and determine whether receipt of strips from dual health care systems is associated with overuse.

DESIGN, SETTING, AND PARTICIPANTS We performed a cross-sectional, retrospective cohort study using national VA administrative data linked to Medicare Parts A, B, and D claims for fiscal years 2008 and 2009. A total of 363 996 community-dwelling veterans 65 years or older with diabetes who used the VA health care system and received test strips in fiscal year 2009 were included in the study.

EXPOSURES Receipt of test strips from the VA only, Medicare only, or both the VA and Medicare; covariates included sociodemographics, comorbidity, diabetes complications, and hemoglobin A_{1c} level.

MAIN OUTCOMES AND MEASURES Quantity of test strips dispensed and overuse of test strips, defined as more than 1 strip per day (>365 strips per year) among those taking no diabetes medications, oral diabetes medications alone, or long-acting insulin without short-acting insulin or more than 4 strips per day (>1460 strips per year) among those taking short-acting insulin.

RESULTS Overall, 260 688 older veterans (71.6%) with diabetes received strips from the VA only, 82 826 (22.8%) from Medicare only, and 20 482 (5.6%) from the VA and Medicare. Veterans receiving strips from both the VA and Medicare received more strips (median, 600; interquartile range [IQR], 350-1000) than the Medicare only (median, 400; IQR, 200-700) and VA only (median, 200; IQR, 100-500) groups ($P < .001$) and had substantially greater odds of overuse than the VA only group (55.4% vs 15.8%) (adjusted odds ratio [OR], 16.3; 95% CI, 14.6-18.1 for no medications; 55.3% vs 6.0%; OR, 19.8; 95% CI, 18.9-20.8 for oral medications; 87.4% vs 65.5%; OR, 3.69; 95% CI, 3.30-4.14 for long-acting insulin; and 32.8% vs 13.5%; OR, 3.24; 95% CI, 3.05-3.45 for short-acting insulin). Patterns were similar when using more conservative thresholds of overuse.

CONCLUSIONS AND RELEVANCE Veterans who receive glucose test strips through both the VA

Author Affiliations: Center for Health Equity Research and Promotion, Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, Pennsylvania (Gellad, Zhao, Thorpe, Mor, Good, Fine); Division of General Medicine, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania (Gellad, Good, Fine); Department of Pharmacy and Therapeutics, University of Pittsburgh School of Pharmacy, Pittsburgh, Pennsylvania (Thorpe, Good); Department of

- Gellad W, Zhao X, Thorpe C, et al. *JAMA Intern Med*. 2015; 175(1):26-34
- Objective: To examine the patterns of test strip receipt among older Veterans with diabetes and determine whether receiving strips from dual health systems is associated with overuse



Dual Use of Test Strips

Gellad W, Zhao X, Thorpe C, et al. *JAMA Intern Med.* 2015

- **Design:** Cross-sectional, retrospective cohort.
- **Setting:** National VA administrative data linked to Medicare Parts A, B & D claims, fiscal years (FY) 2008-2009.
- **Participants:** 363,996 community-dwelling Veterans age ≥ 65 with diabetes who used the VA Healthcare System and received test strips, FY 2009.
- **Source of Pharmacy Data:** VA PBM Data and Part D files

Dual Use of Test Strips

Gellad W, Zhao X, Thorpe C, et al. *JAMA Intern Med.* 2015

How was pharmacy data used?

1. Use PBM Data to search diabetes meds by VA drug class and generic names combined with diagnosis codes from MedSAS to define the study cohort of Type II diabetes patients
2. Use PBM data AND Part D files(CY2008 and CY2009) to classify patients based on type of diabetes medications. For Part D medication search, we used NDC codes that we obtained from Medi-Span

Dual Use of Test Strips

Gellad W, Zhao X, Thorpe C, et al. *JAMA Intern Med.* 2015

How was pharmacy data used (continued)?

3. Use PBM data to search for and quantify test strips
4. Use Medicare DME files to search for and quantify test strips in Medicare (Medicare test strips are not in Part D data, instead, DME (Durable Medical Equipment supplies))

Dual Use of Test Strips

Gellad W, Zhao X, Thorpe C, et al. *JAMA Intern Med.* 2015

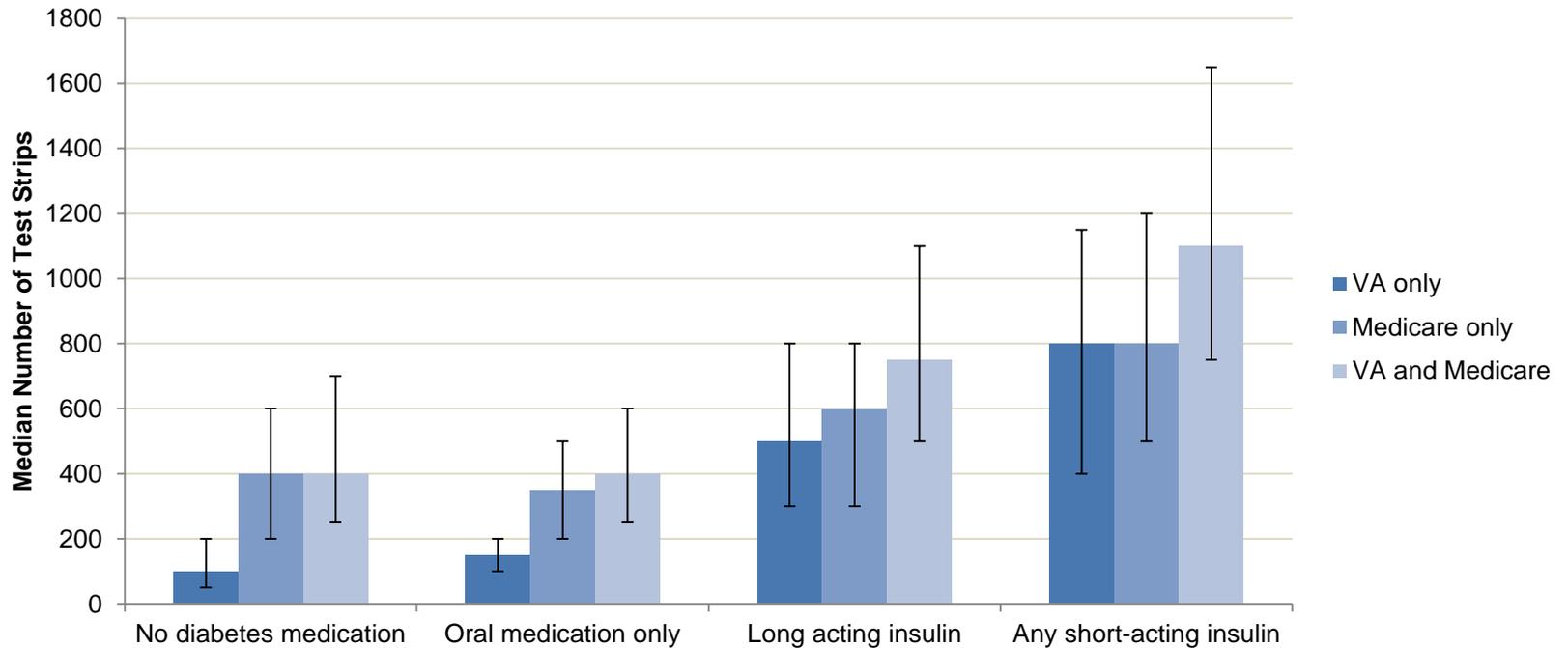
The study found that:

- Overall, 260 688 older veterans (71.6%) with diabetes received strips from the VA only, 82 826 (22.8%) from Medicare only, and 20 482 (5.6%) from *both* the VA and Medicare.

Dual Use of Test Strips

Gellad W, Zhao X, Thorpe C, et al. *JAMA Intern Med.* 2015

Quantity of test strips received by Veterans age 65+ with diabetes by source of strips, categorized by type of diabetes medication use



The bars represent the median number of strips dispensed, and the black lines represent interquartile ranges.

Research Example 4: Dual Use and High Risk Prescribing — Thorpe et al. 2017

Annals of Internal Medicine

ORIGINAL RESEARCH

Dual Health Care System Use and High-Risk Prescribing in Patients With Dementia

A National Cohort Study

Joshua M. Thorpe, PhD, MPH; Carolyn T. Thorpe, PhD, MPH; Walid F. Gellad, MD, MPH; Chester B. Good, MD, MPH; Joseph T. Hanlon, PharmD, MS; Maria K. Mor, PhD; John R. Pleis, MS; Loren J. Schleiden, BS; and Courtney Harold Van Houtven, PhD

Background: Recent federal policy changes attempt to expand veterans' access to providers outside the Department of Veterans Affairs (VA). Receipt of prescription medications across unconnected systems of care may increase the risk for unsafe prescribing, particularly in persons with dementia.

Objective: To investigate the association between dual health care system use and potentially unsafe medication (PUM) prescribing.

Design: Retrospective cohort study.

Setting: National VA outpatient care facilities in 2010.

Participants: 75 829 veterans with dementia who were continuously enrolled in Medicare from 2007 to 2010; 80% were VA-only users, and 20% were VA-Medicare Part D (dual) users.

Measurements: Augmented inverse propensity weighting was used to estimate the effect of dual-system versus VA-only prescribing on 4 indicators of PUM prescribing in 2010: any exposure to Healthcare Effectiveness Data and Information Set (HEDIS) high-risk medication in older adults (PUM-HEDIS), any daily exposure to prescriptions with a cumulative Anticholinergic Cognitive Burden (ACB) score of 3 or higher (PUM-ACB), any

antipsychotic prescription (PUM-antipsychotic), and any PUM exposure (any-PUM). The annual number of days of each PUM exposure was also examined.

Results: Compared with VA-only users, dual users had more than double the odds of exposure to any-PUM (odds ratio [OR], 2.2 [95% CI, 2.2 to 2.3]), PUM-HEDIS (OR, 2.4 [CI, 2.2 to 2.8]), and PUM-ACB (OR, 2.1 [CI, 2.0 to 2.2]). The odds of PUM-antipsychotic exposure were also greater in dual users (OR, 1.5 [CI, 1.4 to 1.6]). Dual users had an adjusted average of 44.1 additional days of any-PUM exposure (CI, 37.2 to 45.0 days).

Limitation: Observational study design of veteran outpatients only.

Conclusion: Among veterans with dementia, rates of PUM prescribing are significantly higher among dual-system users than with VA-only users.

Primary Funding Source: U.S. Department of Veterans Affairs.

Ann Intern Med. 2017;166:157-163. doi:10.7326/M16-0551 [Annals.org](#)
For author affiliations, see end of text.
This article was published at [Annals.org](#) on 6 December 2016.

- Thorpe JM, Ann Intern Med. 2017; 166:157-163
- Objective: To investigate the association between dual health care system use and potentially unsafe medication (PUM) prescribing



Linked national patient-level data from VA and Centers for Medicare & Medicaid Services 2007-2010

- **Independent variable:** Prescription drug benefit user groups, coded as a binary variable:
 1. Dual VA/Part D users – at least 1 Rx from both systems (20% of sample)
 2. VA-only users (80% of sample)
- **Outcome variables:** Potentially Unsafe Medications (PUM):
 1. PUM-ACB: exposure to drugs with high anticholinergic cognitive burden
 2. PUM-Antipsychotic: exposure to antipsychotics
 3. PUM-HEDIS: exposure to high-risk drugs
- **All PUM indicators assessed in two ways:**
 1. Any exposure vs. no exposure
 2. # of days of exposure in 2010

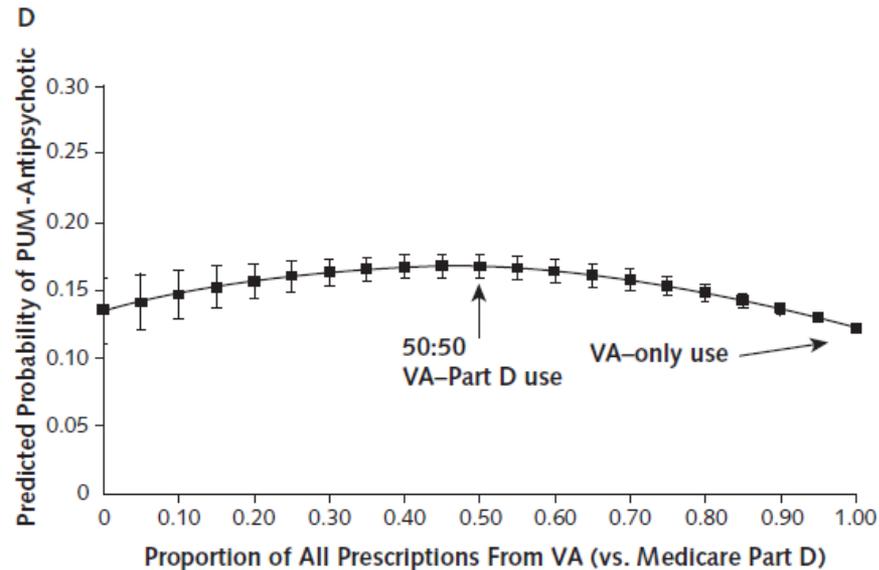
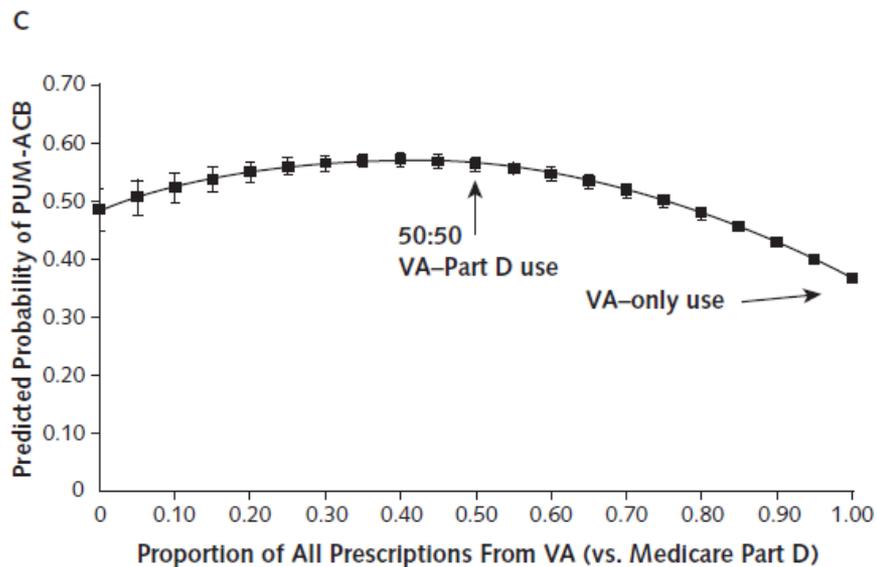
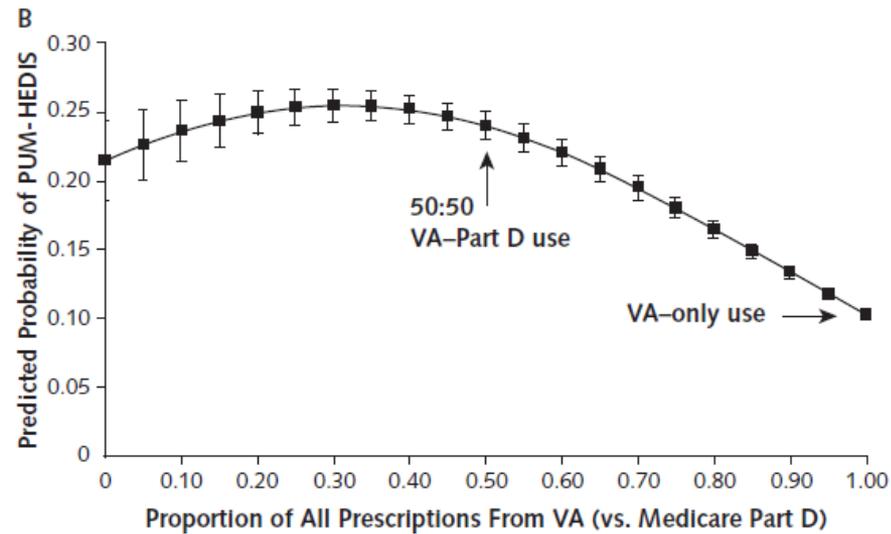
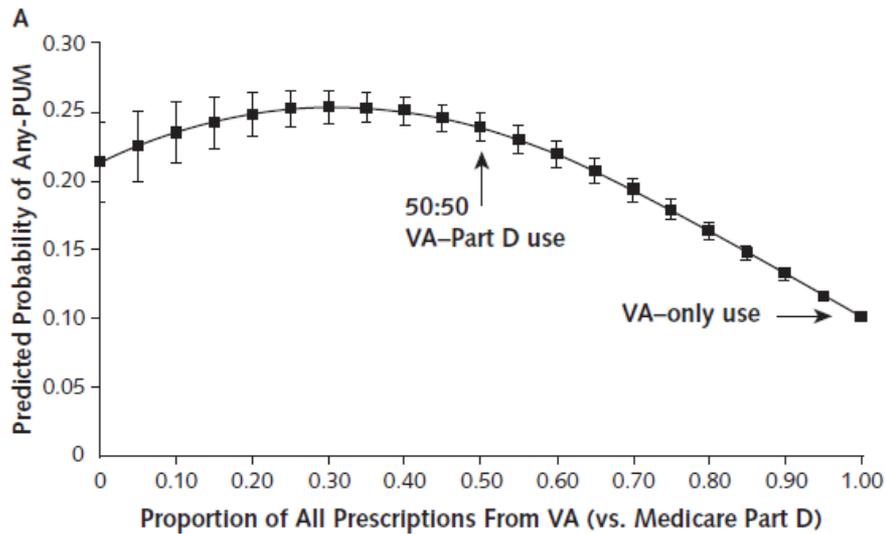
Research Example 4: Cohort ID, Utilization & Quality -- Thorpe et al. 2017

Table 1. Unadjusted Use of PUMs Among Older Veterans With Dementia Who Used VA Outpatient Services in 2010, by Source of Prescription Medications

PUM Exposure	VA-Part D Use (n = 14 941)	VA-Only Use (n = 60 888)	Difference (95% CI)*
Any-PUM†			
Exposure, %	59.0	39.1	19.8 (19.0-20.7)‡
Mean exposure days (SD) [range]§	159.0 (216.0) [0-1095.0]	114.3 (198.0) [0-1095.0]	44.8 (40.2-48.4)
PUM-HEDIS 			
Any HEDIS drug exposure, %	20.5	9.8	10.7 (10.0-11.4)‡
Mean exposure days (SD) [range]	20.5 (66.0) [0-365.0]	14.1 (58.0) [0-365.0]	6.4 (5.2-7.6)
PUM-ACB**			
Exposure, %	53.8	35.4	18.4 (17.5-19.3)‡
Mean exposure days (SD) [range]	104.7 (137.0) [0-365.0]	74.6 (126.0) [0-365.0]	30.1 (27.5-32.6)
PUM-antipsychotic††			
Prescription, %	16.7	11.4	5.2 (4.6-5.8)‡
Mean exposure days (SD) [range]	33.8 (93.0) [0-365.0]	25.6 (83.0) [0-365.0]	8.2 (6.3-9.8)

Research Example 4: Cohort ID, Utilization & Quality -- Thorpe et al. 2017

Appendix Figure 2. Predicted probability of PUM exposure, by the proportion of all VA prescriptions.



More examples of Pharmacy Data in Research

2017

- Thorpe, J.M., et al. *Ann Intern Med*. Dual Health Care System Use and High-Risk Prescribing in Patients With Dementia: A National Cohort Study. 2017 Feb 7;166(3):157-163. doi: 10.7326/M16-0551. Epub 2016 Dec 6.
- Jasuja, G.K., et al. *J Gen Intern Med*. Who Gets Testosterone? Patient Characteristics Associated with Testosterone Prescribing in the Veteran Affairs System: a Cross-Sectional Study. 2017; 32: 304. doi:10.1007/s11606-016-3940-7

2016

- Radomski, T.R., et al. *J Gen Intern Med*. VA and Medicare Utilization Among Dually Enrolled Veterans with Type 2 Diabetes: A Latent Class Analysis. 2016 May; 31(5):524-31. doi: 10.1007/s11606-016-3631-4. Epub 2016 Feb 22.
- Stroupe, K.T., et al. *Med Care Res Rev*. Veterans' Pharmacy and Health Care Utilization Following Implementation of the Medicare Part D Pharmacy Benefit. 2016 Apr 17. pii: 1077558716643887. [Epub ahead of print]

More examples of Pharmacy Data in Research

2015

- Lund et al., JAGS. Incidence- Versus Prevalence-Based Measures of Inappropriate Prescribing in the Veterans Health Administration. 2015: 63(8):1601-7.
- Thorpe et al., Diabetes Care. Tight Glycemic Control and Use of Hypoglycemic Medications in Older Veterans With Type 2 Diabetes and Comorbid Dementia. 2015: 638(4):588-95.
- Watkins et al., Psychiatric Services. The Quality of Medication Treatment for Mental Disorders in the Department of Veterans Affairs and in Private-Sector Plans. 2015: epub ahead of print.

More examples of Pharmacy Data in Research

2013

- Borrero et al., Am J Obstet Gynecol. Adherence to hormonal contraception among women veterans: difference by race/ethnicity and contraceptive supply. 2013; 209:103.e1-e11.
- Vigen R, et al., JAMA. Association of Testosterone Therapy With Mortality, Myocardial Infarction, and Stroke in Men With Low Testosterone Levels. 2013;310(17):1829-1836.
doi:10.1001/jama.2013.280386

2012

- Ng B, et al. Arthritis Care & Research. Identification of Rheumatoid Arthritis Patients Using an Administrative Database: A Veterans Affairs Study. 2012; 64: 1490–96

Session Outline

- Introduction
- Commonly used pharmacy data sources
- Examples of research focused on pharmacy care
- **Resources**



Corporate Data Warehouse (CDW)

The screenshot shows the VIREC Intranet page for CDW Documentation. The header includes the VIREC logo and 'INTRANET'. The main content area is titled 'CDW Documentation' and has an 'Overview' section. It provides information for new and seasoned users, including a sign-up for product news and updates. A sidebar on the right lists navigation options like 'Overview', 'Data Transition to CDW', and 'Documentation'. A 'CDW-10 Transition' section is highlighted with a red border, indicating a recent update. The footer contains navigation links and a date stamp: 'Reviewed/Updated Date: April 25, 2017'.

VIREC CDW Documentation

<http://vaww.virec.research.va.gov/CDW/Documentation.htm>
(VA Intranet)

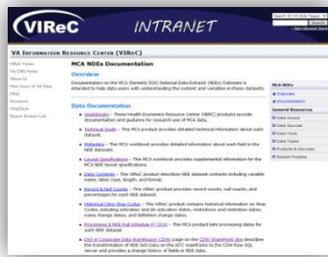
The screenshot shows the BSL CDW Home SharePoint page. The header features the BSL logo and navigation links for 'CDW Home', 'CDW Support', 'Connectivity', and 'NewData'. The main content area is divided into four sections: 'NEW TO CDW?' with links for 'Intro and Policies', 'CDW Support', and 'CDW Metadata'; 'WHAT'S IN THE WORKS?' with links for 'General Announcements', 'Training Announcements', and 'CDW Domain Status and Priority (Excel)'; 'EXTERNAL LINKS' with links for 'HSR&D Listserv', 'VHA Data Portal', 'DAR', 'NDS', and 'System Status & Planned Outages'; and 'DATA ACCESS' with links for 'Local Data Access (LSV)', 'Data Access information', and 'CDW Customers and Workgroups'. A footer note mentions 'If you have questions or need help with the CDW Database or your Access, visit CDW Support'.

BSL CDW SharePoint

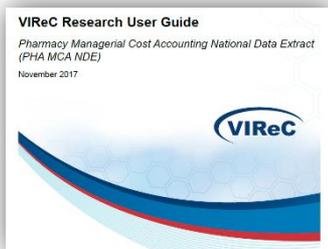
<https://vaww.cdw.va.gov/Pages/CDWHome.aspx>
(VA Intranet)



Managerial Cost Accounting (MCA) NDEs



VIREC MCA NDEs Documentation
<http://vaww.virec.research.va.gov/MedSAS/Documentation.htm>
(VA Intranet)



VIREC Research User Guide: Pharmacy Managerial Cost Accounting National Data Extract (PHA MCA NDE)
<http://vaww.virec.research.va.gov/RUGs/MCA-NDEs/RUG-MCA-PHA-NDE.pdf>
(VA Intranet)



MCAO National Data Extracts & Reporting Information
http://vaww.dss.med.va.gov/nationalrptg/nr_extracts.asp
(VA Intranet)



Health Economics Resource Center (HERC)
<http://vaww.herc.research.va.gov/include/page.asp?id=managerial-cost-accounting>
(VA Intranet)

The screenshot shows the U.S. Department of Veterans Affairs website. At the top left is the VA logo and the text "U.S. Department of Veterans Affairs". To the right are social media icons and a search bar. Below the header is a navigation menu with links for Health, Benefits, Burials & Memorials, About VA, Resources, Media Room, Locations, and Contact Us. The main content area is titled "Pharmacy Benefits Management Services" and "VA National Formulary". On the left side, there is a sidebar with "QUICK LINKS" including Hospital Locator, Health Programs, Protect Your Health, and A-Z Health Topics. The main content area lists various resources such as "VA National Formulary Section" with links to Excel spreadsheets for January 2018, "VA Class Index Section" with an Excel spreadsheet, "Previous Changes to VA National Formulary" with links to October 1998 to January 2018 changes, and "General Documents" including National Drug File Support Group Guidelines, National Formulary Frequently Asked Questions, Non-Promotable List, VA Drug Standardization List, and List of Medications at Lower Copayment Rate Under 38 CFR 17.110(b)(iv). At the bottom of the main content area, there are links for "VHA FORMULARY POLICY DIRECTIVE" and "VA Product Name List - Excel Spreadsheet (updated March 2018)".

<http://www.pbm.va.gov/PBM/NationalFormulary.asp>
(VA Intranet)

The screenshot shows the VIREC INTRANET website. At the top left is the VIREC logo, and at the top right is a search bar with the text "Search All VA Web Pages" and a "Search" button. Below the header is a navigation menu with links: VIREC Home, VA/CMS Home, About Us, Updates, Publications, Education, FAQs, and Help. The main content area is titled "Part D Slim File" and includes an "Overview" section. The overview text states: "Medicare offers coverage for prescription drugs under Part D. Medicare beneficiaries have two options for coverage. They can enroll in a Prescription Drug Plan (PDP) to supplement fee-for-service Medicare or enroll in a Medicare Advantage Plan that provides prescription drug coverage (also called MA-PD). Beneficiaries who have prescription drug coverage from another source, such as employer based insurance or the VA, may choose not to enroll in Medicare Part D. Visit Medicare.gov's 'Medicare Prescription Drug Coverage (Part D)' page for more information about Medicare Part D." Below this is a section titled "Availability in the VA/CMS Data Repository" which says: "The table below provides the description and availability of the Part D Data in the VA/CMS Data Repository." A table follows with three columns: Name, Description, and Calendar Years Available for Medicare beneficiaries in the VHA Cohort. The table contains one row for the "Part D Slim File" with a description of PDE data and a calendar year range of 2006-2015. To the right of the main content is a sidebar with "Medicare" and "General Resources" sections, each containing a list of links.

VA INFORMATION RESOURCE CENTER (VIREC)

Part D Slim File

Overview

Medicare offers coverage for prescription drugs under Part D. Medicare beneficiaries have two options for coverage. They can enroll in a Prescription Drug Plan (PDP) to supplement fee-for-service Medicare or enroll in a Medicare Advantage Plan that provides prescription drug coverage (also called MA-PD). Beneficiaries who have prescription drug coverage from another source, such as employer based insurance or the VA, may choose not to enroll in Medicare Part D. Visit Medicare.gov's "[Medicare Prescription Drug Coverage \(Part D\)](#)" page for more information about Medicare Part D.

When a Medicare beneficiary fills a prescription under Medicare Part D (through a PDP or MA-PD), the prescription drug plan sponsor (insurance company) submits Part D Prescription Drug Event (PDE) data to CMS. CMS also collects information on Medicare Part D plans, prescribers, pharmacies, and drugs.

Availability in the VA/CMS Data Repository

The table below provides the description and availability of the Part D Data in the VA/CMS Data Repository.

Name	Description	Calendar Years Available for Medicare beneficiaries in the VHA Cohort
Part D Slim File	Select variables from the Medicare Prescription Drug Event (PDE) data. It includes the variables from the Drug Characteristics file. It is not linkable to the other Part D characteristics data (Formulary, Prescriber, Plan, or Pharmacy).	2006-2015

Complete Medicare Part D PDE and characteristics data are considered "[VA/CMS Non-Repository Data](#)" and may be requested through the [special request](#) process. VIREC offers a [Comparison between the Prescription Drug Event \(PDE\) and the Slim File](#) to assist researchers in determining which Part D file best meets their needs.

Medicare

- Overview
- Enrollment, Demographic, & Summary Data
- Parts A & B Claims Data
- Part D Slim file
- Accountable Care Organization (ACO) Data
- Documentation

General Resources

- VA/CMS Repository Data
- Non-Repository Data
- Public Use Data
- Cohorts & Identifiers
- Requests
- Current Data Users

<http://vaww.virec.research.va.gov/VACMS/Medicare/PartDSlimFile.htm>
(VA Intranet)

VHA Data Portal

<http://vaww.vhadataportal.med.va.gov/Home.aspx>
(VA Intranet)

Home About Us Contact Us FAQ Report Broken Link

Department of Veterans Affairs
VHA Data Portal

Data Sources Data Access Tools & Applications Resources Training Policy & Admin Support

Welcome to the VHA Data Portal

The VHA Data Portal promotes a knowledge-sharing culture that supports the needs of VHA data users. The Portal integrates information from multiple sources into a single location to promote a comprehensive knowledge base and to facilitate a positive end-user experience.

The one-stop-shop for data users' needs.

Our home page design has recently changed to help get you the information you need. Each one of the badges below links to access information and other relevant resources for a particular data use need, or use the new top navigation menu to locate resources by category. [Tell us what you think.](#)

- New Data User
- Research
- Operations & Quality Improvement
- Access Policy & Administrative Tools
- Quick Links Library

Upcoming Events

ViReC Cyberseminars

- Apr 02:** VA Pharmacy Data (Gellad, W | Paris, B)
- Apr 17:** MyHealtheVet (Smith, B)
- May 07:** Using VA DSS Lab Data for Research (Hung, A)
- Sep 10:** Comorbidity Measures Using VA & CMS Data (Hynes, D)

VINCI Cyberseminars

- Mar 08:** DaVINCI – how DoD data came to VA (Duvall, S)

VINCI Happy Hour

3rd Wednesday Every Month at 3 PM ET

VINCI in its continuing efforts to assist VHA data users will be holding its VINCI Happy Hour open question and answer forum every 3rd Wednesday of the month from 3:00PM to 4:00PM ET to field questions from our customers on a range of topics. Click [here](#) to join the Lync meeting and call 855-767-1051 code 22265684.

News

DART Data Request Memo Changes

Information Security Officers (ISOs) are no longer required to sign DART preparatory to research and research data request memos due to changes based on the Acting Assistant Secretary for OI&T, Chief Information Officer's memo, VAIQ 7808858. The DART request memo templates have been updated to reflect this change and are available from the [DART Preparatory to Research Request Process](#) and [DART Request Process](#) pages.

Tell ViReC your data story!

ViReC is collecting input about resources for using and understanding VA data. We're looking for volunteers to answer a few questions, and talk to us about how they look for information about VA data. Contact Jenifer Stelmack, ViReC Communications Manager & Webmaster, at jenifer.stelmack@va.gov to help improve VA's data information resources.

- Data Sources
- Data Access
- Tools & Applications
- Resources
- Training
- Policy & Admin
- Support

Requesting Data Access

<http://vaww.vhadataportal.med.va.gov/DataAccess/DataAccessOverview.aspx>
(VA Intranet)

The screenshot shows the VHA Data Portal website. The top navigation bar includes links for Home, About Us, Contact Us, FAQ, and Report Broken Link. The main navigation menu has tabs for Data Sources, Data Access (highlighted with a red circle), Tools & Applications, Resources, Training, Policy & Admin, and Support. The page title is 'Requesting Data Access'. A 'Quick View' box on the left states: 'VHA grants access to data and information systems based on how the data are going to be used.' The main content area is titled 'Requesting Data Access' and includes an 'Overview' section. The overview text states: 'VHA grants access to data and information systems based on how the data will be used. Data access request processes and types of data access granted (e.g., direct access, data extracts, read-only views) depend on the data access category.' Below this, there are three sections with icons: 'How do I request data for research and operations purposes?', 'How do I access data for medical advisory reviews?', and 'How do I request data access for Veteran Service Organizations?'. Each section provides a brief description and a link to a decision tool or access page. A 'Resources' section at the bottom lists two links: 'Research vs Operations Decision Tool' and 'VHA Handbook 1058.05: VHA Operations Activities That May Constitute Research (Oct 2011)'. The page footer includes a 'Last update' timestamp of 4/28/2017 1:49:33 PM and a navigation bar with links for Sitemap, Section 508 Accessibility, Privacy Policy, OIG Homepage, HSR&D Homepage, and VINCI Central.

- Operations
- Research
- Preparatory to Research

VIReC Options for Specific Questions

HSRData Listserv

- Community knowledge sharing
- ~1,300 VA data users
- Researchers, operations, data stewards, managers
- Subscribe by visiting <http://vaww.virec.research.va.gov/Support/HSRData-L.htm> (VA Intranet)



HelpDesk

- Individualized support



virec@va.gov

(708) 202-2413

Contact information

Walid Gellad, MD, MPH

CHERP Core Investigator
Staff Physician, VA Pittsburgh Healthcare System
Associate Professor, University of Pittsburgh
Walid.Gellad@va.gov

Bonnie Paris, PhD

Data Knowledge Analyst, VIREC
Bonnie.Paris@va.gov

VA Information Resource Center

Hines VA Hospital
virec@va.gov

708-202-2413



**Next session:
Monday, May 7, 2018 at 1pm Eastern**



Database & Methods Cyberseminar Series

*Session #8: Pharmacoepidemiological Designs: Using CDW
Lab Data for Drug Effectiveness Research*

Adriana M. Hung, MD, MPH
Nashville VA Medical Center