7th Annual Epidemiology, Biostatistics and Clinical Research Methods Summer Session
June 20-24, 2005

Using VA Databases for Research: Focus on Cancer

Day 2 Sessions

- **Session 3: VA DSS National Clinical Extracts**

- **Session 4: VA Pharmacy Data**

Day 2 Sessions

- **Session 3: VA DSS National Clinical Extracts**

- **Session 4: VA Pharmacy Data**

Session Objectives

- Know about Decision Support System (DSS)
- Know about DSS Structure
  - Production Data
  - National Data Extracts
- Know about Clinical National Data Extracts
  - LAB
  - LAR
  - PHA
  - RAD
- Understand how to Access DSS Data
- Become aware of Data Quality Issues

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RESEARCHERS' GUIDE TO VA DATA

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A Few Examples to Consider…

- Lab results for screening & monitoring across many sites
  - FOBT for colon cancer screening
  - Anemia management & tracking

- Use of screening & diagnostic radiology
  - Mammography use for follow-up in patients with a history of breast cancer
  - Use of colonoscopy in VA patient population

- Use of specific diagnostic procedures across VA facilities and regions

Decision Support System (DSS)

- VHA national automated management information system

- Uses extract mechanism to capture data from existing clinical and financial systems

- Includes inpatient, outpatient & extended care

- Longitudinal, secondary database

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dSs Integrates Clinical and Cost Data
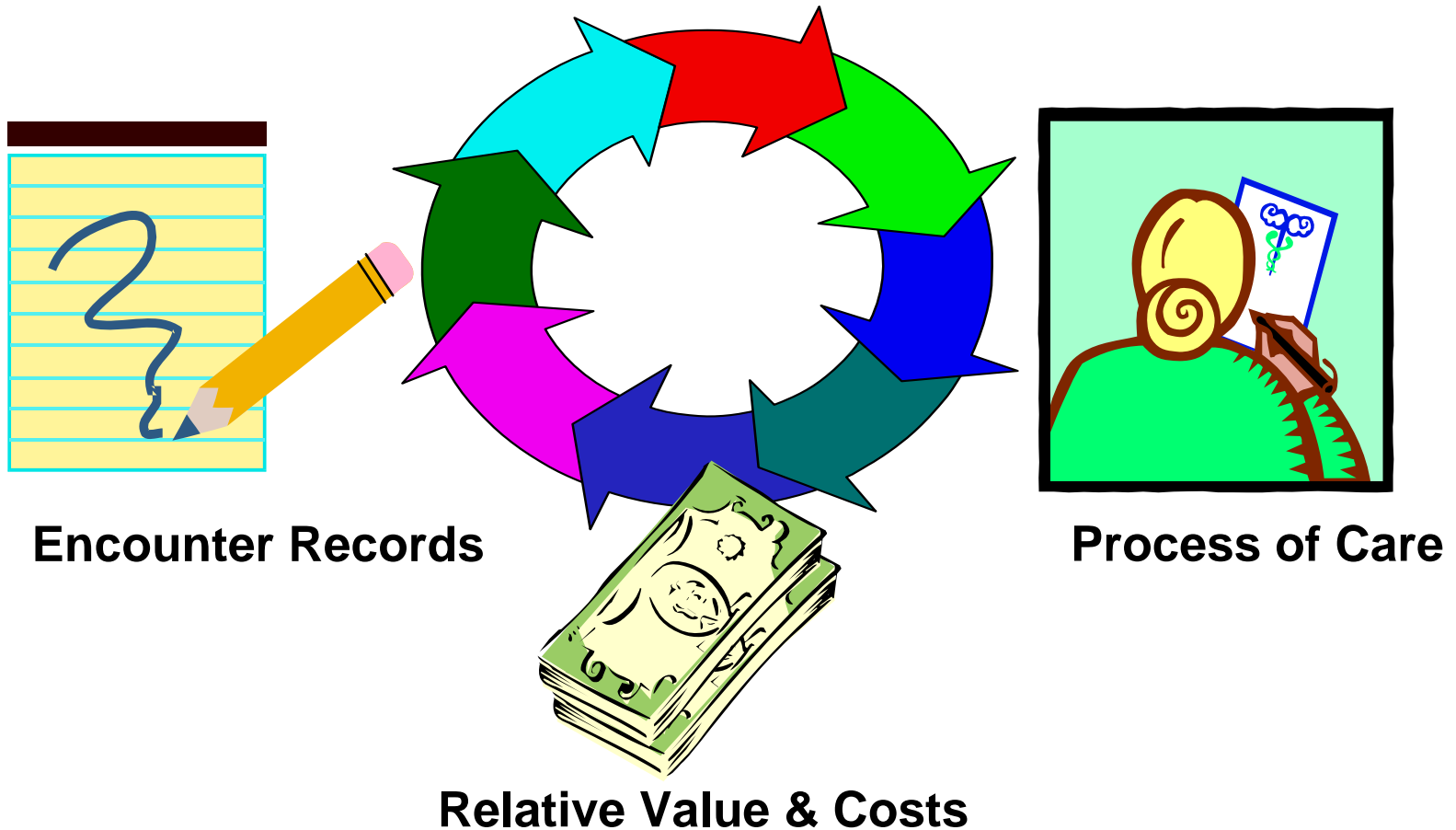
Encounter Records

Process of Care

Relative Value & Costs

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DSS Structure

- Departments

    Reflecting organizational structure of each facility

- Intermediate Products
    - From National Product list
    - Examples: Chest x-ray, lab test, bedday of care, clinic encounter, drugs dispensed

- End Products

The End Product

- A patient encounter; either inpatient or outpatient, which includes a bundle of intermediate products

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DSS

- Production Data

  Patient specific data processed for each
  facility and stored by VISNs in AAC

- National Data Extracts

  Data rolled up as National Data Extracts
  (NDE) and stored in SAS files in
  Austin

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Production Level Data

- Patient data at the local facility level
- Can be requested through local or VISN DSS Manager or through BTSO

  (Bedford Technical Support Office)

- Can be identified for Specific Patients, Specific Stop Codes, Diagnosis, CPT Codes, Surgical CPT Codes, Medication Utilization, Laboratory or Radiology Procedures
- Available in Case, Date, Utilization, Result Levels
- Limited Research Experience Using These Data

National Data Extracts (NDE)

- Discharge
- Laboratory
- Laboratory Results
- Outpatient
- Pharmacy
- Radiology
- Treating Specialty

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DSS Clinical National Data Extracts

- Laboratory (LAB)
  - Since FY 2002
- Laboratory Results (LAR)
  - Began in FY 2003. FY 2000 - 2002 now available.
- Pharmacy (PHA)
  - Since FY 2002
- Radiology (RAD)
  - Since FY 2002

LAB, LAR, PHA and RAD DSS SAS Datasets all include:

- Clinic Stop Codes for Outpatients
- In/Out Indicator
- Provider: Primary and Ordering
- Treating Specialty
- Diagnoses Codes
- Means Test Indicator Code
- Date of Test or Procedure
- Scrambled Social Security Numbers
- Patient's Date of Birth

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Laboratory

- Divided into In and Out Patient files by VISN groupings because of the file size
- Specific LAB variables include:
    - Lab Test Name
    - VA_LMIP Code

        (**L**aboratory **M**anagement **I**ndex **P**rogram Code)
    - Time Collected
    - Costs: Fixed Direct and Indirect, Variable Direct and Supply Costs

Laboratory Results

- Divided into In and Outpatient files by VISN groupings because of file sizes
- Includes test number, result code, result date, result time, result, and includes a high/low indicator
- Includes results for a specified list of laboratory tests.
  - FY 2000: 40 tests
  - FY 2001: 49 tests
  - FY 2002: 50 tests
  - FY 2003: 56 tests
  - FY 2004: 59 tests
- Complete list of test results extracted in LAR in VIReC Research User Guide

http://www.virec.research.med.va.gov/References/RUG/RUG-DSS01-03.pd

0042	Hepatitis A IgM Ab	NEG-POS
0043	Hepatitis A IgG Ab	NEG-POS
0044	Bilirubin, Total	MG/DL
0045	ALT (Transferase Alanine Amino)	IU/L
0046	Hepatitis B Core AB	NEG-POS
0047	Hepatitis B e Ag	NEG-POS
0048	Phosphatase Alkaline	IU/L
0049	Albumin	GM/DL

Test Results Added in FY2002

Test Number	Test Name	Units
0050	Hematocrit	%

Test Results Added in FY2003

Test Number	Test Name	Units
0051	Partial Thromboplastin Time (PTT)	SEC
0052	INR (International Normalized Ratio)	RATIO
0053	Vitamin B6	NG/ML
0054	Homocysteine	UMOL/L
0055	Occult Blood (Fecal)	NEG-POS
0056	Microalbumin/Creatinine Ratio	MG/G

Test Results Added in FY2004

Test Number	Test Name	Units
0057	Glucose POC (finger stick)	MG/DL
0058	Troponin T	NG/ML
0059	Troponin I	NG/ML

Page 103 of 122   100%   8.5 x 11 in

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Radiology

- Inpatient and Outpatient procedures are in a combined file

- Specific RAD variables include:
  - Radiology CPT Codes
  - Radiology Procedure Name
  - Date Procedure was Preformed
  - Costs: Fixed Direct and Indirect, Variable, and Supply costs

Pharmacy

- Grouped by VISNs and separated into in and out patient files because of file size

- Prescription, Unit dose, and IV pharmacy detail
  - Drug name
  - Costs
  - VA drug classification

- Discussed in more detail in the next session

VIReC Research User Guide

- Detailed information regarding the DSS Clinical SAS datasets is available in the *VIReC Research User Guide: VHA DSS Clinical NDEs*.

- Covers LAB, LAR, RAD, and PHA in one volume

- Detailed information on each variable

- Available from VIReC Web site: http://www.virec.research.med.va.gov/References/RUG/RUG-DSS01-03.pdf

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DSS Database Access

- Requires an approved ACRS (Automated Customer Registration System) TIME SHARING REQUEST FORM

- The form (9957) must be submitted specifying the appropriate Functional Task Code(s) for the dataset(s) requested to the Austin Automation Center (AAC)

- Application is typically done through the Information Resources Management (IRM) department at your site

- If needed, the AAC can provide you with the IRM contact person at your site

- A copy of the form can be obtained through the VIReC web site at http://www.virec.research.med.va.gov/Support/Training-NewUsersToolkit/Form9957.pdf

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Data Quality Issues

- Technical Documentation
- Source Data
- Audits Processes
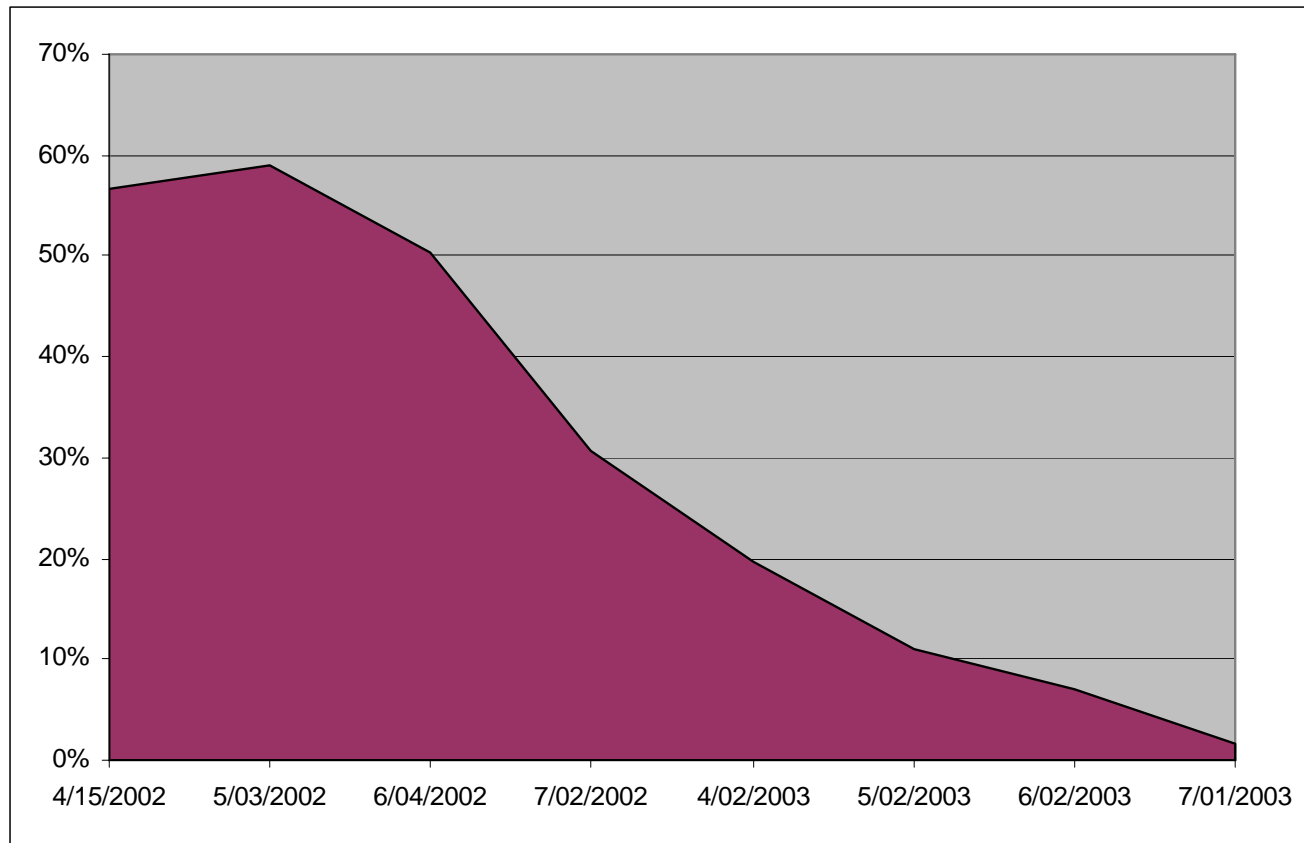- Standardization
- Currency
- Accessibility

Improvements of DSS Clinical Data Processing Over Time (N=127 Sites)
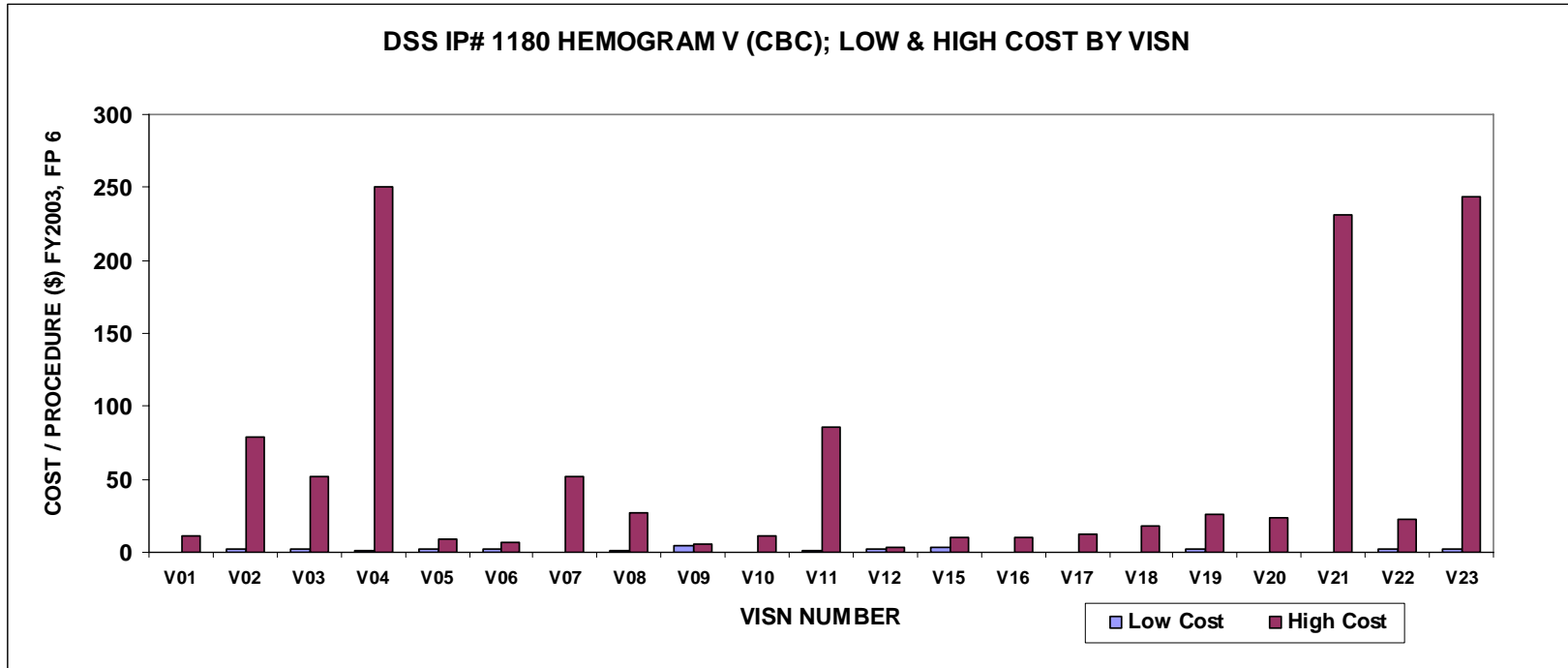## Data provided by E. McSherry, BTSO July, 2003
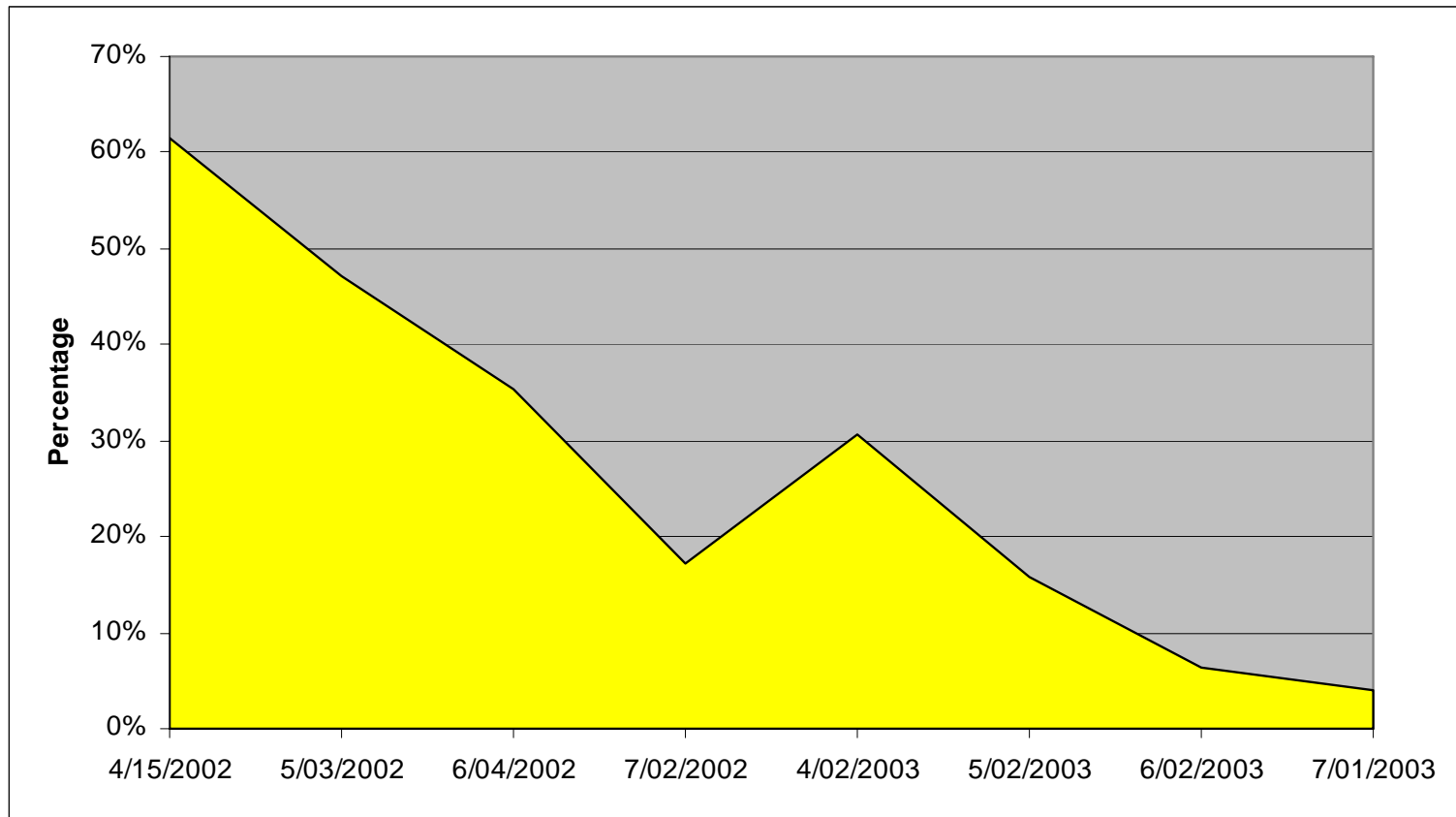
Improvements of DSS Financial Data Processing Over Time (N=127 sites)
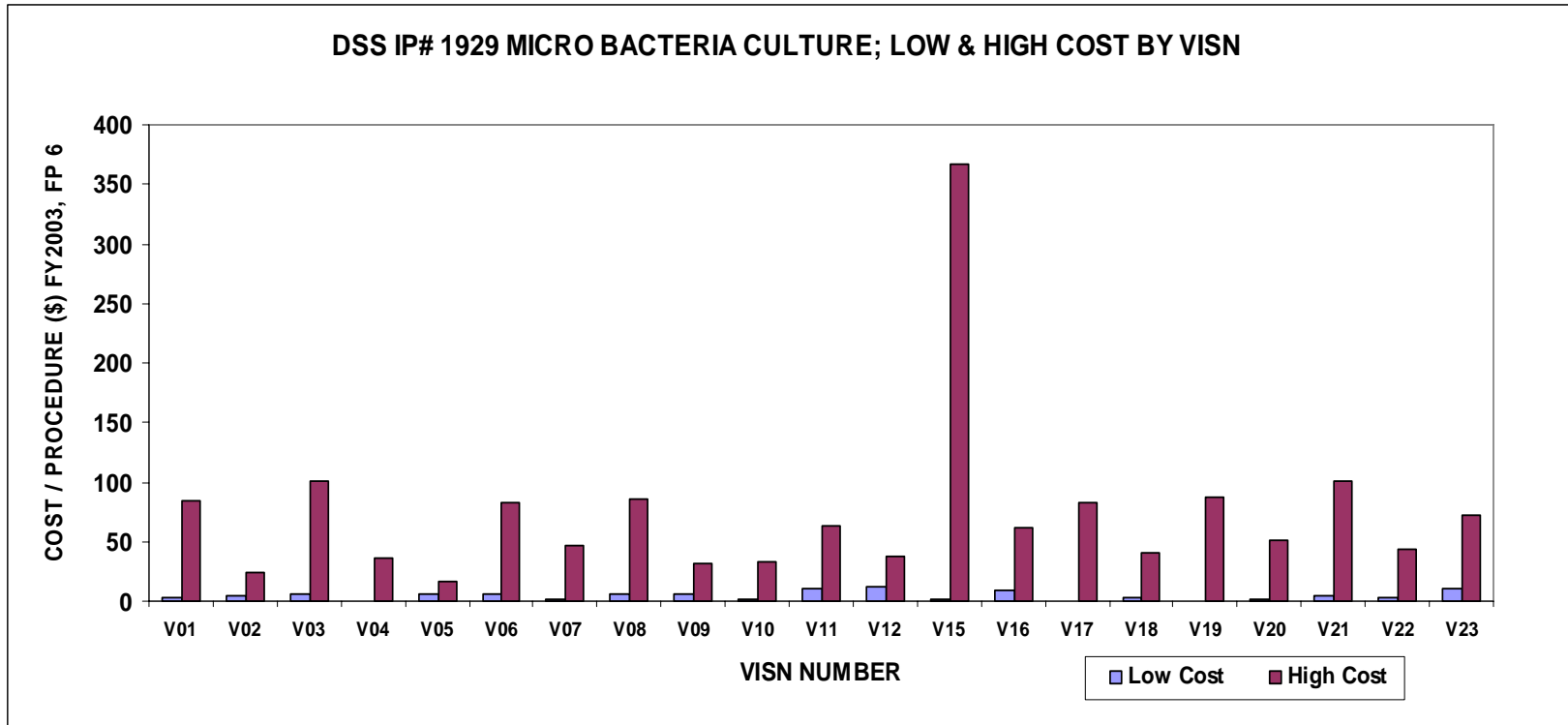## Data provided by E. McSherry, BTSO July, 2003

Selected DSS Lab Audit

Data provided by E. McSherry, BTSO July, 2003

DSS IP# 1180 HEMOGRAM V (CBC); LOW & HIGH COST BY VISN

Selected DSS Lab Audit

Data provided by E. McSherry, BTSO July, 2003

DSS IP# 1929 MICRO BACTERIA CULTURE; LOW & HIGH COST BY VISN

Selected DSS Radiology Audit

Data provided by E. McSherry, BTSO July, 2003

DSS IP# 2740 MAMMOGRAPHY BILATERAL; LOW & HIGH COST BY VISN

Selected DSS Radiology Audit

Data provided by E. McSherry, BTSO July, 2003

DSS IP# 2575 CHEST X-RAY PA & LAT; LOW & HIGH COST BY VISN
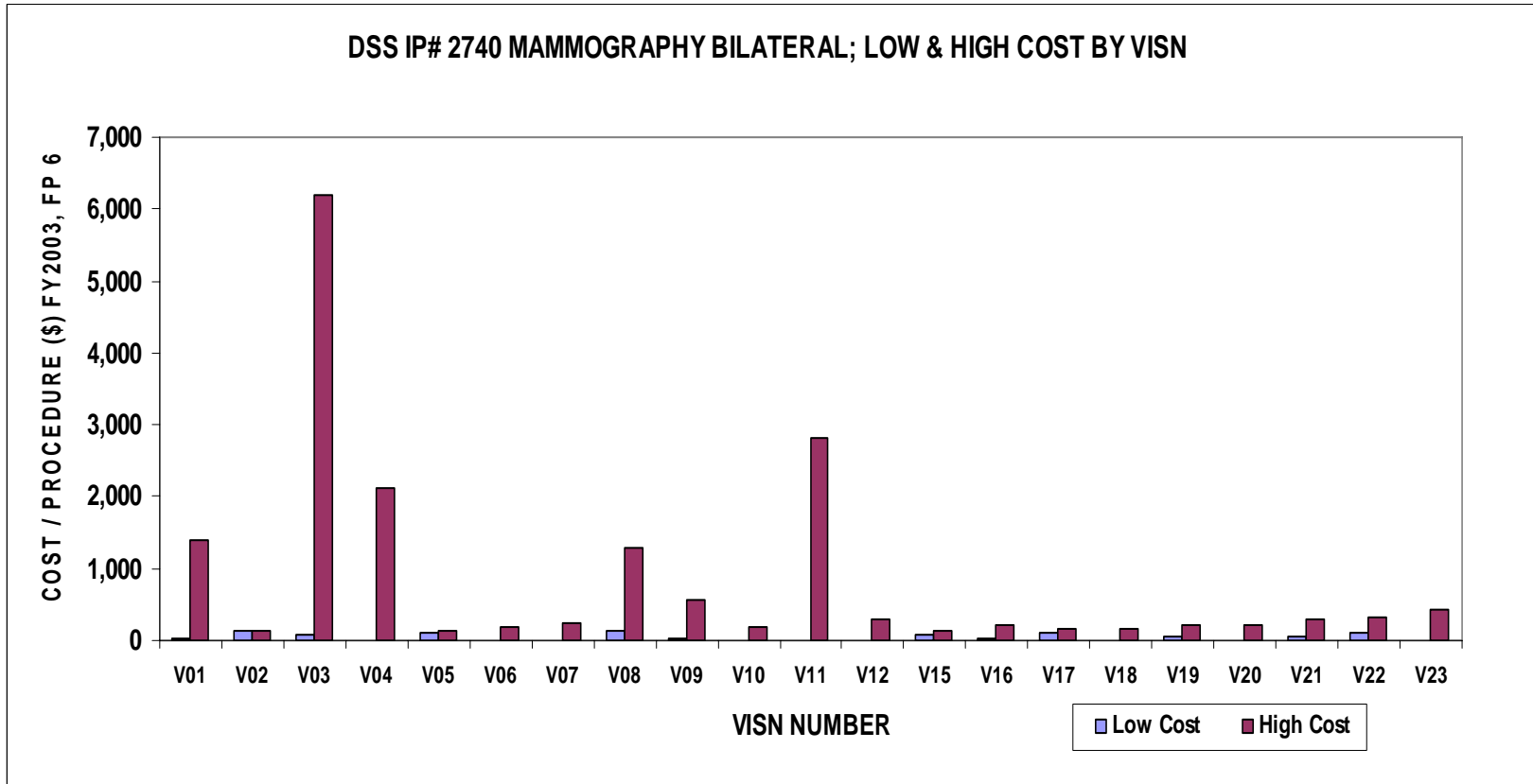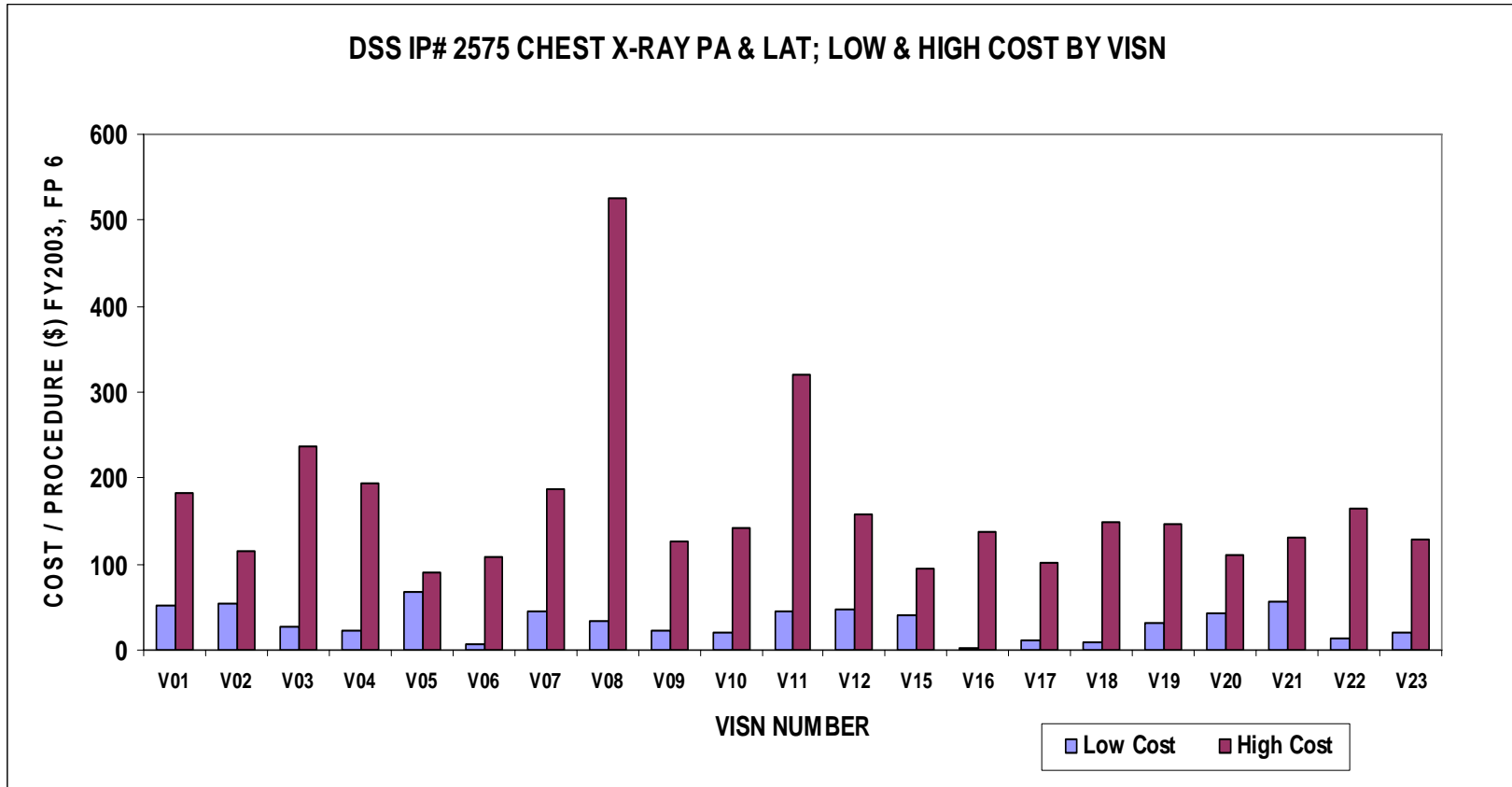
Caveats

- Provider identification variables have high percent missing

- Lab results available differ across years

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FY 2005 NDE Pull Dates

Note: NDE Pulls are Cumulative to date

4th Quarter Pull data is based on site readiness

First Quarter	March 4, 2005
Second Quarter	May 27, 2005
Third Quarter	August 26, 2005
Fourth Quarter	November 8 thru December 16, 2005

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QUESTIONS?

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Day 2 Topics

- Session 3: VA DSS National Clinical Extracts

- Session 4: VA Pharmacy Data

Session Objectives

- Know about Sources of Pharmacy Data

- Know about Pharmacy Benefits Management (PBM) Database

- Know about DSS NDE Pharmacy SAS * Datasets

- Understand the differences & similarities of PBM & DSS Pharmacy

- Become aware of Previous Research

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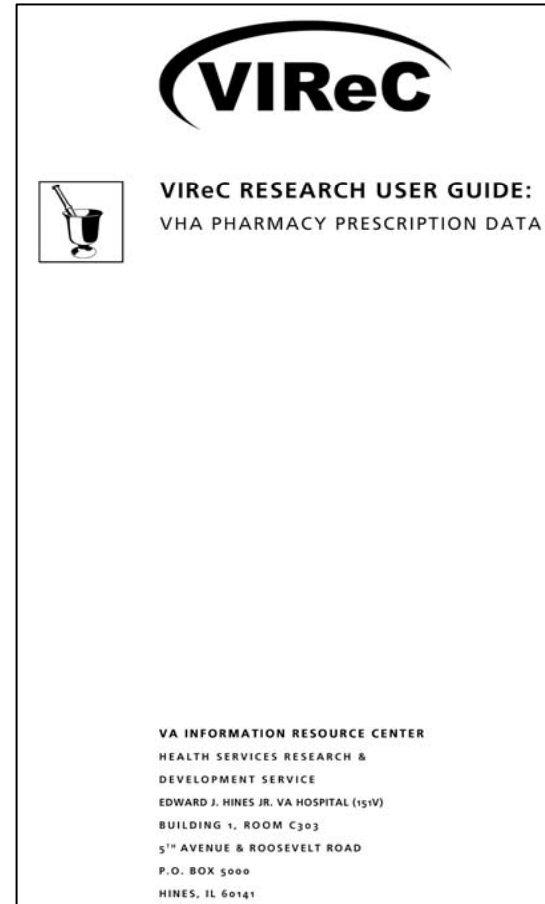
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Research User Guide

VIReC RESEARCH USER GUIDE:

VHA Pharmacy Prescription Data

VIReC

VIReC RESEARCH USER GUIDE:
VHA PHARMACY PRESCRIPTION DATA

VA INFORMATION RESOURCE CENTER
HEALTH SERVICES RESEARCH &
DEVELOPMENT SERVICE
EDWARD J. HINES JR. VA HOSPITAL (151V)
BUILDING 1, ROOM C303
5TH AVENUE & ROOSEVELT ROAD
P.O. BOX 5000
HINES, IL 60141

Sources

- **Local Databases**
  - VistA
  - VISN Warehouses

- **National Data Sources**
  - PBM
  - DSS NDE Pharmacy SAS Datasets
  - FCDM

VistA Pharmacy Data

- **V**eterans Health **I**nformation **S**ystems and **T**echnologies **A**rchitecture

- All Prescription Orders and Fills
  - Inpatient and Outpatient
  - CMOP (Consolidated Mail Outpatient Pharmacy)
    - in VistA system for site where fill was requested

- Local Files
  - At each VistA installation

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VistA Pharmacy Data

■ Prescription Orders **Dispensed**

– Prescription File (FILE 52) - Outpatient

– Pharmacy Patient File (FILE 55) - Inpatient

• IV Orders (FILE 55.01)

• Unit Dose Orders (FILE 55.06)

– Local Drug File (FILE 50)

■ Years covered

– 1997 forward

– Varies by site

VistA Pharmacy Data

- Accessing
  - FileMan – hierarchical database management system
  - MUMPS
  - SQL
- VISN Warehouses
  - Some contain prescription data
  - Relational databases

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PBM Database

- Pharmacy Benefits Management Database

- FY1999 forward (October 1, 1998)

- Maintained by PBM/SHG at Hines VA Hospital

- Researchers must request extract

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National Extracts - PBM
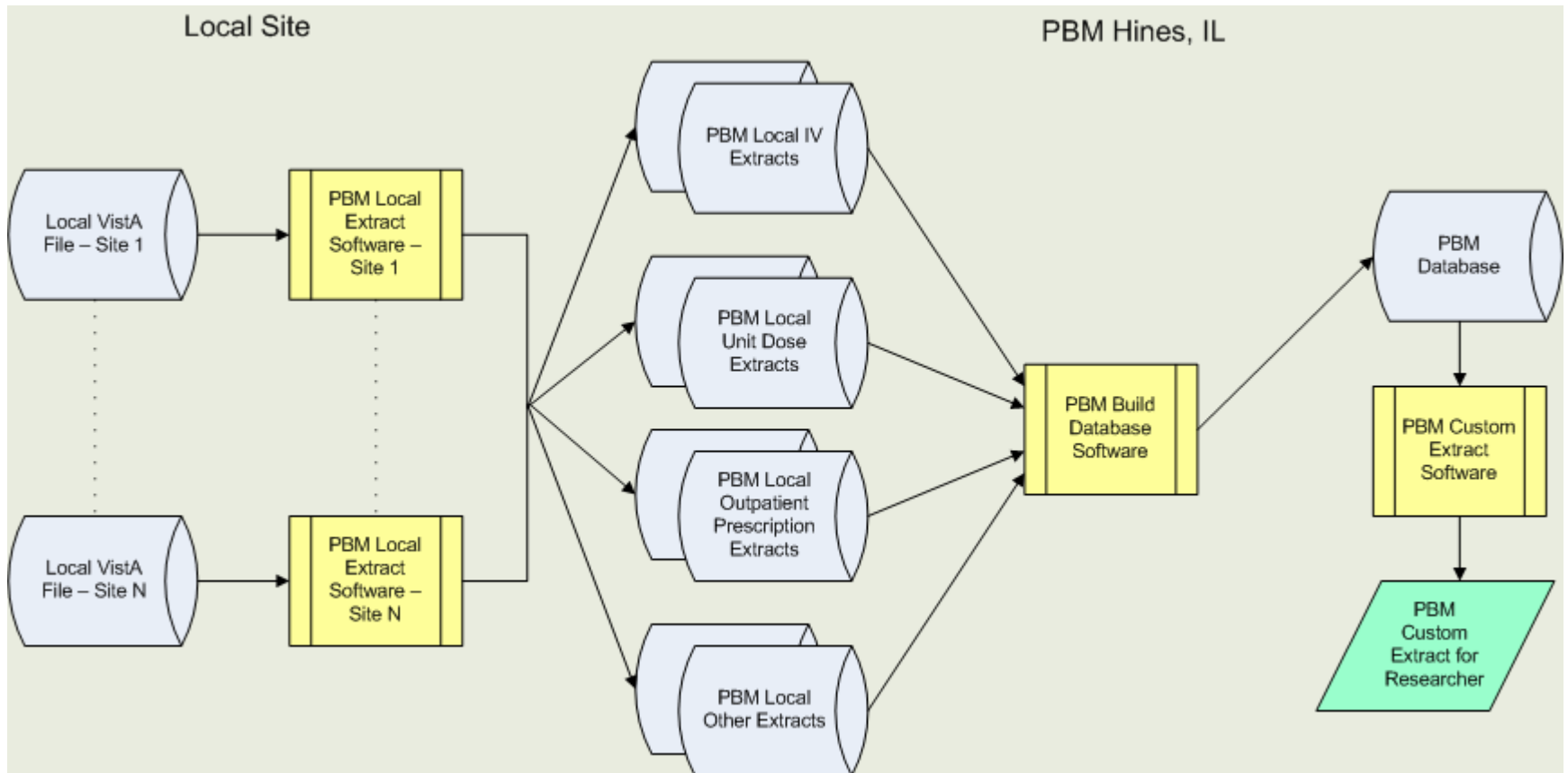
PBM Database

- Information in the Database
  - **Outpatient Prescriptions Dispensed**
  - Inpatient Prescriptions Dispensed (IV & Unit Dose)
  - Selected Labs
  - Controlled Substance Use
  - Automatic Replenishment/Ward Stock
  - Procurement and Accounting
  - **Provider Information**
  - **Patient Information**

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PBM Database

- Documentation
  - *VIReC Insights*: The Pharmacy Benefits Management (PBM) Database: A Primary Resource for Nation-Wide VA Medication Data on the PBM database.
  - PBM Database Monographs in the VistA Documentation Library.
  - "Pharmacy Data in the VA Health Care System" (Smith and Joseph), available with permission on the Health Economics Resource Center (HERC) website.
  - VIReC PBM webpage (http://www.virec.research.med.va.gov/DataSourcesName/PBM/PBM.htm).

PBM Database

- Data available to researchers via extract
  - Outpatient
  - Provider
  - Inpatient will be available soon
- Linking with other data
  - Real SSN
  - Scrambled SSN
- Future enhancements

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PBM Database Variables

Outpatient Prescription

- Dispensing Details
  - Fill Date
  - Drug Name – Station Name
  - Quantity
  - NDC – National Drug Code
  - Dosing Instructions
  - VA Drug Class
  - Dispense Unit and Price per Dispense Unit

PBM Database Variables

Outpatient Prescription

- Provider Information
  - Provider ID
  - Provider Service
    - Cardiology, Dental, Nursing, Surgery, etc.
  - Provider Specialty & Subspecialty
  - Provider Type
    - Staff, Fee, or Non-VA (TPB)
- Patient Information
  - Patient Prescription Status

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DSS NDE Pharmacy SAS Datasets

- Decision Support System National Data Extract Pharmacy SAS Datasets.

- FY2002 forward

- Located on the host at the Austin Automation Center

- Directly accessible by Researchers

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National Extracts - DSS
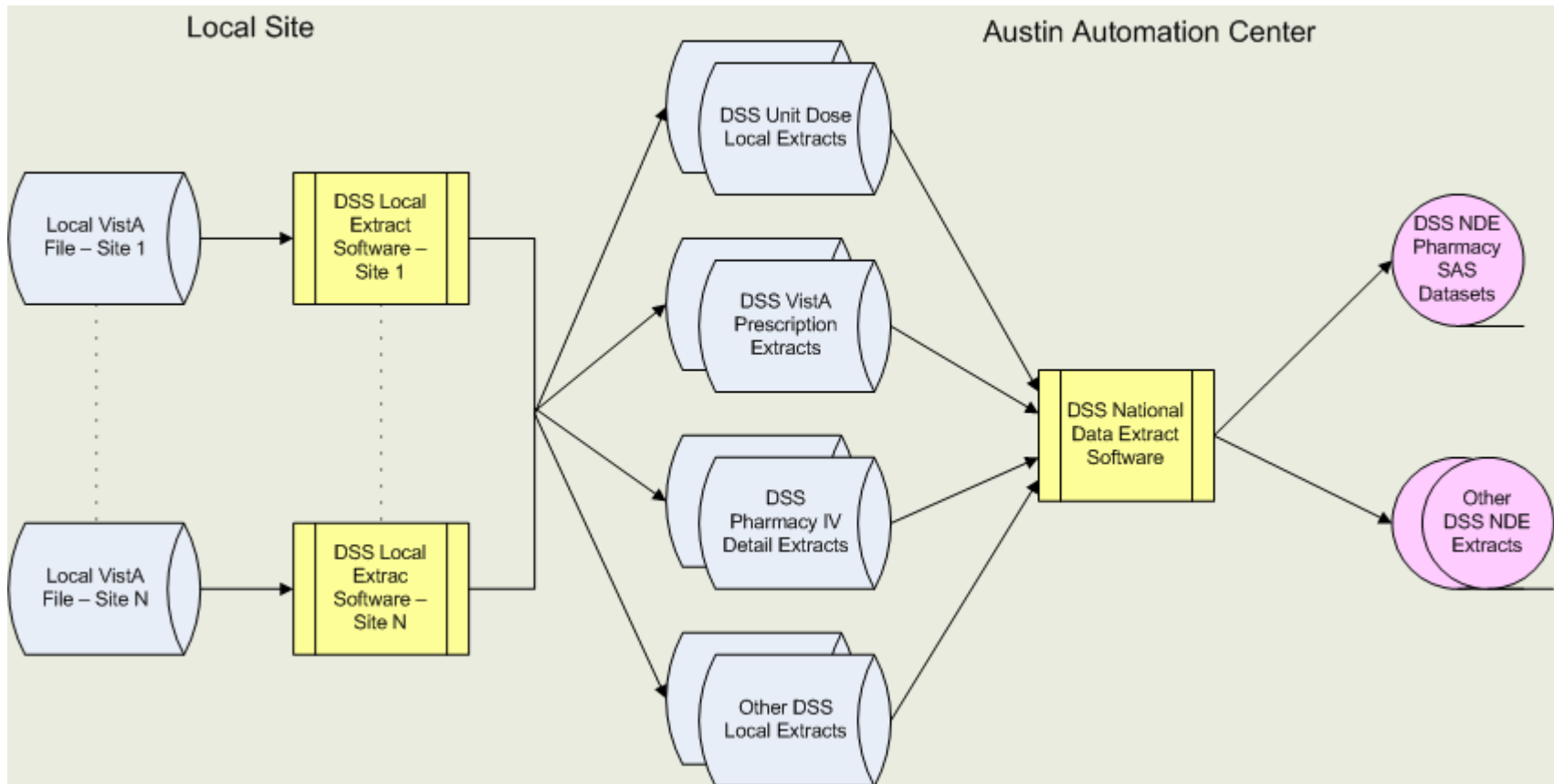
DSS NDE Pharmacy SAS Datasets

- Information in the Datasets
  - Outpatient Prescriptions Dispensed
  - Inpatient Prescriptions Dispensed
    - IV
    - Unit Dose

DSS NDE Pharmacy SAS Datasets

- Files
  - RMTPRD.MED.DSS.SAS.FY**YY**.**VISNX**.PHA
    - **YY** – year
    - **VISN** – V1TO5, V6TO10, V11TO16, V17TO22
    - **X** – I for inpatient, O for outpatient
      - Based on patient status for encounter <u>not</u> type of prescription.
      - Always use both files.
  - Inpatient
    - RMTPRD.MED.DSS.SAS.FY03.V1TO5I.PHA
  - Outpatient
    - RMTPRD.MED.DSS.SAS.FY03.V1TO5O.PHA

DSS NDE Pharmacy SAS Datasets

- Documentation
  - DSS website technical documentation
    - 2004 Extract Formats
    - 2003 Extract Formats
    - 2002 Extract Formats and Definitions

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Decision Support System

New to Our Site?

- Home
- DSS & VA Healthcare
- News and Events
- Calls and Training
- National Reporting
- **Program Documents**
- Site Wisdom
- IRM

DSS Home Page

DSS is an information system that supports VHA's Mission, "to serve the needs of America's veterans" by providing "excellence in health care value." DSS data and tools promote effective resource stewardship while maintaining the highest standard in patient care. By analyzing patient care and costs through DSS, VHA can lead the way to high quality, cost-efficient health care delivery.

Building Foundations for Tomorrow from Information Today

The Decision Support System (DSS) is a derived database built from standard VHA data sources. DSS uses clinical and financial based costing and clinical

act us at anytime.

eedback.

Building the Database	Conversion
Reporting the Database	Encounter Building
Clinical Corner	Medical Record Book
General	Processing & Auditing
Archive	Technical Guides
	Other

Click here to open a DSS Help Desk Ticket

DSS Tips

Reviewed/Revised: March 4, 2004

Decision Support System

New to Our Site?

Program Documents
Building the Database
Technical Guides

Home

DSS & VA Healthcare

News and Events

Calls and Training

National Reporting

Program Documents

Site Wisdom

IRM

Document	Revision Date	Document Size
2004 Extract Formats	October 1, 2003	2.1 MB
2004 DSS Extracts User Manual	October 1, 2003	909 KB
CTABLE Fast Load	June 11, 2003	1.38 MB
2003 Financial SAS Specifications	February 18, 2003	16 KB
2003 DSS Extract User Manual	February 4, 2003	686 KB
2003 Extract Formats	February 4, 2003	1.16 MB
2003 Extract Enhancements	February 4, 2003	644 KB
ECS GUI User Manual	June 1, 2001	1 MB
2002 DSS Extracts User Manual	December 1, 2001	685 KB
2002 Extract Formats and Definitions	December 1, 2001	1.38 MB
FY 1999 Medical Record Book	June 7, 2000	884 KB
2001 SAS Specifications - Financial	July 3, 2001	64 KB
ECS Cookbook	November 23, 1999	909 KB

DSS NDE Pharmacy SAS Datasets

- Future Enhancements

- Linking with other data
  - Real SSN
  - Scrambled SSN

DSS NDE Pharmacy SAS Dataset Variables

Outpatient & Inpatient Prescriptions

- Dispensing Details
  - Fill Date
  - Drug Description – Shortened Name
  - Quantity
  - NDC – National Drug Code – 12-digit format
  - VA Drug Class
  - Costs
    - Labor, Supplies, and Overhead
  - Days Supply

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DSS NDE Pharmacy SAS Dataset Variables

Outpatient & Inpatient Prescriptions

- Provider Information
  - Provider ID (IEN)
  - Primary Care Provider
  - Primary Care Team
- Patient Information
  - Date of Birth
  - Diagnosis Code (Encounter)
  - Enrollment Priority
  - Means Test
  - Sex
  - Zip Code

DSS NDE Pharmacy SAS Dataset Variables

- Cost Variables
  - Total Cost
  - Dispensing Costs (Direct Labor & Mailing)
  - Variable Costs – Drug Product Cost (Drug and supplies used in filling the prescription such as bottles, labels, etc.)
- FY2002 Data
  - Not as "clean" as FY2003
  - New variables in FY2003
    - Enrollment Priority, Encounter Number, Days Supply, CMOP Flag, Investigational Drug Flag

National Drug Files

- National Formulary
  – Drugs on the National Formulary and their restrictions

- VA Class Index
  – List of VA Drug Classes

- National Drug File
  – Used to standardize Local Drug Files (FILE 50)

- Available for download on PBM intranet
  – National Formulary page

Pharmacy Benefits Management

Strategic Healthcare Group

Department of Veterans Affairs

Home Page

VISN Mailboxes and Bulletin Board

Archive Criteria, Guidelines, & Reviews

Abstract

BPA/Incentive Agreements

Continuing Education Program at The University. of
Wisc.

Criteria for Use

Cummulative Resident Roster (pdf)

Directives and Policies

Distance Learning Broadcast

Drug Class Reviews

Drug Monitoring

Drug Monograph

Drug Monograph Template

Drug & Pharmaceutical Prices

Drug Procurement

National Formulary

VA National Formulary Section

VA National Formulary -April 2004 - Excel Spreadsheet

VA National Formulary Alphabetical-April 2004 - Excel Spreadsheet

VA National Formulary by Class -April 2004 - Excel Spreadsheet

VA National Formulary Changes -april 2004- Excel Spreadsheet

PDA National Formulary

VHA Logistics Standardized Products

VA Class Index Section

🔗   🌐 Internet

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Education / CE / CME

FAQ SHEETS

Formulary Principles Coalition (pdf)

Closed Distribution System Drugs

Glossary of Acronyms (pdf)

IOM Report

ISMP

Med/Surg Standardization Products

National Formulary

National Contracts

News Alerts

News Articles on Pharmacy Benefits

New Molecular Entity

PBM-MAP Ez Minutes

PBM Newsletters

PBM Presentations

Pharmacy Conference (pdf)

Pharmacy Managers List

Pharmacy Software

VA National Formulary Section

VA National Formulary - April 2004 - Excel Spreadsheet

VA National Formulary Alphabetical- April 2004 - Excel Spreadsheet

VA National Formulary by Class - April 2004 - Excel Spreadsheet

VA National Formulary Changes - april 2004 - Excel Spreadsheet

PDA National Formulary

VHA Logistics Standardized Products

VA Class Index Section

VA Class Index - View

VA Class Index - Excel Spreadsheet

Previous Changes to VA National Formulary

 Changes to the National Formulary for Oct - 98 to April 04 Excel Spreadsheet

General Documents

Formulary Review Request Form (Word)

National Drug File Support Group Guidelines

National Formulary Frequently Asked Questions

VA Negative Formulary 8-01-03(PDF)

National Drug File (Jan 2004) Access Database

National Drug File Structure

You must have Excel or Access to view some files on this page if you do not you can obtain the viewer at Microsoft.

Session Objectives

- Know about Sources of Pharmacy Data

- Know about Pharmacy Benefits Management (PBM) Database

- Know about DSS NDE Pharmacy SAS * Datasets

- **Understand the differences & similarities of PBM & DSS Pharmacy**

- Become aware of Previous Research

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PBM vs. DSS

- Costs
  - PBM
    - Only drug supply cost
      - value in DRUG File #50 on dispensing date.
  - DSS
    - ACT_COST
      - Total Cost = ACT_COST plus DISPCOST
      - Overhead, Direct & Indirect Labor, Supplies
    - DISPCOST
      - Direct Pharmacy Labor and Mailing Supplies
    - VS_COST
      - Drug and prescription supplies (bottle, cap, label, etc.)
      - Don't use FY2002

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PBM vs. DSS

- Access
  - PBM
    - Researcher requested extract
  - DSS
    - Direct access (AAC host)
- Data Available
  - PBM
    - Outpatient
    - FY1998
  - DSS
    - Inpatient and Outpatient
    - FY2002

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PBM vs. DSS

- Dispensing Details
  - PBM
    - Dosing instructions (sig.)
    - Dispensing Unit
  - DSS
    - Quantity

Special Topics

- Pharmacy ADPAC

- Ward Stock

- Dispensed vs. Administered

- Returned Prescriptions

- NDC

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DSS FY2003

- Number of Fills on the Outpatient File?

VISNs 1 TO 5

- 14,508,484 CMOP
- 4,770,750 VHA Outpatient Pharmacy
- 164,510 IV
- 132,305 UDP
- 19,576,049 TOTAL

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DSS FY2003

- Number of Fills on the Inpatient File?

VISNs 1 TO 5

– 8,950,760 UDP

– 1,468,265 IV

–   610,343 VHA Outpatient Pharmacy

–   32,625 CMOP

– 11,061,993 TOTAL

DSS FY2003

- Number of Fills on Inpatient & Outpatient Files?

  VISNs 1 TO 5
  - 14,541,109 CMOP
  - 9,083,065 UDP
  - 5,381,093 VHA Outpatient Pharmacy
  -   1,632,775 IV
  - 30,638,042 TOTAL

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DSS FY2003

- Most Common VA Classes – Outpatient File

  VISNs 1 TO 5

VA Class	VA Class Description	Number of Fills	% of Total Fills
CV350	ANTILIPEMIC AGENTS	1,321,713	6.89
CN609	ANTIDEPRESSANTS,OTHER	990,955	5.17
CV800	ACE INHIBITORS	985,827	5.14
CV100	BETA BLOCKERS/RELATED	905,949	4.72
HS502	ORAL HYPOGLYCEMIC AGENTS,ORAL	733,051	3.82
CV200	CALCIUM CHANNEL BLOCKERS	664,459	3.46
GA900	GASTRIC MEDICATIONS,OTHER	640,965	3.34
CN400	ANTICONVULSANTS	482,413	2.51
CN101	OPIOID ANALGESICS	463,628	2.42
MS102	NONSALICYLATE NSAIs,ANTIRHEUMATIC	434,079	2.26
	Total	7,623,039	39.73

DSS FY2003

- Most Common VA Classes – Inpatient File
  VISNs 1 TO 5

VA Class	VA Class Description	Number of Fills	% of Total Fills
CN103	NON-OPIOID ANALGESICS	547,588	5.06
CN609	ANTIDEPRESSANTS,OTHER	532,397	4.92
GA900	GASTRIC MEDICATIONS,OTHER	460,415	4.26
CN709	PHENOTHIAZINE/RELATED ANTIPSYCHOTICS	432,984	4.00
CV100	BETA BLOCKERS/RELATED	432,756	4.00
CN400	ANTICONVULSANTS	359,733	3.33
BL100	ANTICOAGULANTS	341,358	3.16
CV800	ACE INHIBITORS	330,559	3.06
TN102	IV SOLUTIONS WITH ELECTROLYTES	312,080	2.88
TN403	POTASSIUM	305,464	2.82
	Total	4,055,334	37.49

Session Objectives

- **Know about Sources of Pharmacy Data**

- **Know about Pharmacy Benefits Management (PBM) Database**

- **Know about DSS NDE Pharmacy SAS * Datasets**

- **Understand the differences & similarities of PBM & DSS Pharmacy**

- **Become aware of Previous Research**

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Research Applications

- VIReC Bibliography
  - Research using VA Pharmacy Data
    - Identifies data source - PBM, VistA, etc.
  - Under "Library" on the VIReC website and also in the **VIReC RESEARCH USER GUIDE: VHA Pharmacy Prescription Data**
    - Microsoft Word, Reference Manager V9.5, or Reference Manager V10.0

Research Applications

- Cost/effectiveness of pharmacotherapy
- Quality of care - adherence to guidelines
- Risk assessment and case-mix adjustment
- Accuracy of self-report of drug exposure
- Safety
- Effect of co-payments on pharmacy use
- Patterns of care
- Continuum of care – inpatient and outpatient

Adherence to Guidelines

"Measuring the quality of depression care in a large integrated health system."

- Charbonneau A, Rosen AK, Ash AS, Owen RR, Kader B, Spiro A, III, et al. Measuring the quality of depression care in a large integrated health system. *Med Care* 2003; 41(5):669-680.

- 1997 VHA depression guidelines – antidepressant dosage and duration adequacy.

- Identified patient and provider characteristics predicting adequate care.

- Data Sources
  - PTF, OPC and PBM Database extract

Adherence to Guidelines

"Measuring the quality of depression care in a large integrated health system."

- Outcomes
  - Dosage adequacy
    - daily average dose = (# of prescribed tablets X strength tablet) / (# of prescription days)
    - daily average dose met the guideline-recommended minimum daily dosage
  - Duration adequacy
    - % of profiling period without antidepressants (# of days without antidepressant medication) / (# of days in the 3-month period)
    - Inadequate duration: >21% of the profiling period without antidepressants (approximately 1 week per month)

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Adherence to Guidelines

"Measuring the quality of depression care in a large integrated health system."

- Predictors
  - Patient: age, sex, race, marital status, service-connected status (level of VHA access), comorbidity
  - Type of Clinical Care: primary care clinic only, psychiatric clinic and primary care clinic, psychiatric clinic only or other clinical settings only.

Adherence to Guidelines

"Measuring the quality of depression care in a large integrated health system."

- Results
  - 90% had adequate dosage
  - 45% had adequate duration
  - Acute stage had a higher adequacy of duration but lower adequacy of dosage
  - Younger age, black race, under age 65 and exclusive primary care treatment were significant predictors of inadequate depression care

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Case-Mix Adjustment

"Case-Mix Adjusting Performance Measures in a Veteran Population: Pharmacy- and Diagnosis-Based Approaches."

- Liu CF, Sales AE, Sharp ND, Fishman P, Sloan KL, Todd-Stenberg J, et al. Case-mix adjusting performance measures in a veteran population: pharmacy- and diagnosis-based approaches. Health Serv Res. 2003; 38(5):1319-37.
- VHA VISN performance measures are not adjusted for case-mix differences.
- VISN 20 – 8 Facilities
- Compare rankings after using pharmacy- and diagnosis-based case-mix adjustment measures.
- Databases used: PTF, OPC and VISN 20 Data Warehouse

Case-Mix Adjustment

"Case-Mix Adjusting Performance Measures in a Veteran Population: Pharmacy- and Diagnosis-Based Approaches."

- Case-mix adjustment models:
  - Diagnosis-based
    - Adjusted Clinical Groups (ACG)
    - Diagnostic Cost Groups/Hierarchical Condition Categories (DCG/HCC)
    - Chronic Illness and Disability Payment System (CDPS)
  - Pharmacy-based
    - RxRisk-V (VA-Adapted)

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Case-Mix Adjustment

"Case-Mix Adjusting Performance Measures in a Veteran Population: Pharmacy- and Diagnosis-Based Approaches."

- Outcome utilization measures
  - Bed days of care
  - Number of provider visits
- Analysis
  - Used OLS regression model to predict concurrent utilization measures after adjusting separately for the different case-mix adjustment models
  - Ranked the facilities by actual and predicted utilization and measured change in ranking

Case-Mix Adjustment

"Case-Mix Adjusting Performance Measures in a Veteran Population: Pharmacy- and Diagnosis-Based Approaches."

- Results
  - Bed days of care concurrent prediction: HCC performed best followed by CDPS, ACG and then RxRisk-V
  - Number of provider visits concurrent prediction: HCC and CDPS were the best followed by RxRisk-V and ACG.
  - The addition of RxRisk-V to the other models improved the predictive ability of the HCC and CDPS models for provider visits.
  - Rankings were affected differently by the different case-mix adjustment measures.

Safety

"Fracture Risk Associated with Inhaled Corticosteroid Use in Chronic Obstructive Pulmonary Disease."

- Lee TA, Weiss KB. CF, Fracture risk associated with inhaled corticosteroid use in chronic obstructive pulmonary disease. *Am J Respir Crit Care Med*. 2004; 169(7):855-859.

- Examine the impact of inhaled corticosteroid (ICS) use in COPD on fracture risk.

- COPD patients already at an increased risk of fracture.

- Previous studies on other populations are inconclusive on association between ICS use and fractures.

- Data: PBM and Medical SAS Datasets

Safety

"Fracture Risk Associated with Inhaled Corticosteroid Use in Chronic Obstructive Pulmonary Disease."

- Methods
  - Nested case-control study
  - Cohort
    - New diagnosis of COPD in FY1999
    - No COPD visits in FY1998
    - No Rx for COPD medication in first 90 days of FY1999
    - At least one Rx for COPD during follow-up period
  - Cases
    - Nonvertebral fractures after COPD diagnosis and before 9/30/02
    - 1,708 patients matched to 6,817 controls (1:4)
    - Index date was the date of their first nonvertebral fracture

Safety

"Fracture Risk Associated with Inhaled Corticosteroid Use in Chronic Obstructive Pulmonary Disease."

- Methods
  - ICS exposure
    - Low, medium, or high dose in beclomethasone equivalents
    - Recency of exposure - $\leq$ 30 days, $\leq$ 90 days
  - Other covariates
    - Exposure to medications that affect bone density or risk of falls
    - Medical conditions associated with low bone density, corticosteroid use or falls (ICD-9 code in at least two visits)
    - Healthcare utilization as a measure of:
      - overall health status (number of hospitalizations) and
      - disease severity (number of COPD-related hospitalizations and outpatient visits)

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Safety

"Fracture Risk Associated with Inhaled Corticosteroid Use in Chronic Obstructive Pulmonary Disease."

- Results
  - Conditional logistic regression was used to assess the association between fracture and ICS exposure
  - Exposure to ICS at anytime during follow-up was not associated with increased fracture risk
  - Current ($\leq$ 30 days) users of high dose ICS ($\geq$ 700 μg per day) had increased risk of fractures over patients with no ICS exposure (adjusted odds ratio = 1.68; 95% CI 1.10-2.57)

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Co-payments

"Effect of Increased Co-payments on Pharmacy Use in the VA."

- Kevin Stroupe, PhD, Principal Investigator
- February 2002 VA raised Rx co-pay from $2 to $7 per 30-day Rx
  - Priority 2-8 for non-service connected conditions
- What effect did increase have on pharmacy use?
- Data: PBM and Medical SAS Datasets

Co-payments

"Effect of Increased Co-payments on Pharmacy Use in the VA."

- Hypotheses
  - Among veterans subject to a co-pay, there will be a significant reduction in the quantity of medications obtained from the VA.
  - Veterans subject to a co-pay will be less likely to use the VA pharmacy after the co-pay increase than other veterans.
  - The co-pay increase will have a relatively greater effect on acquisitions of:
    - Generic vs. brand drugs; OTC vs. Rx-only drugs; Less essential vs. more essential drugs; and Drugs that treat symptomatic conditions vs. non-symptomatic conditions.
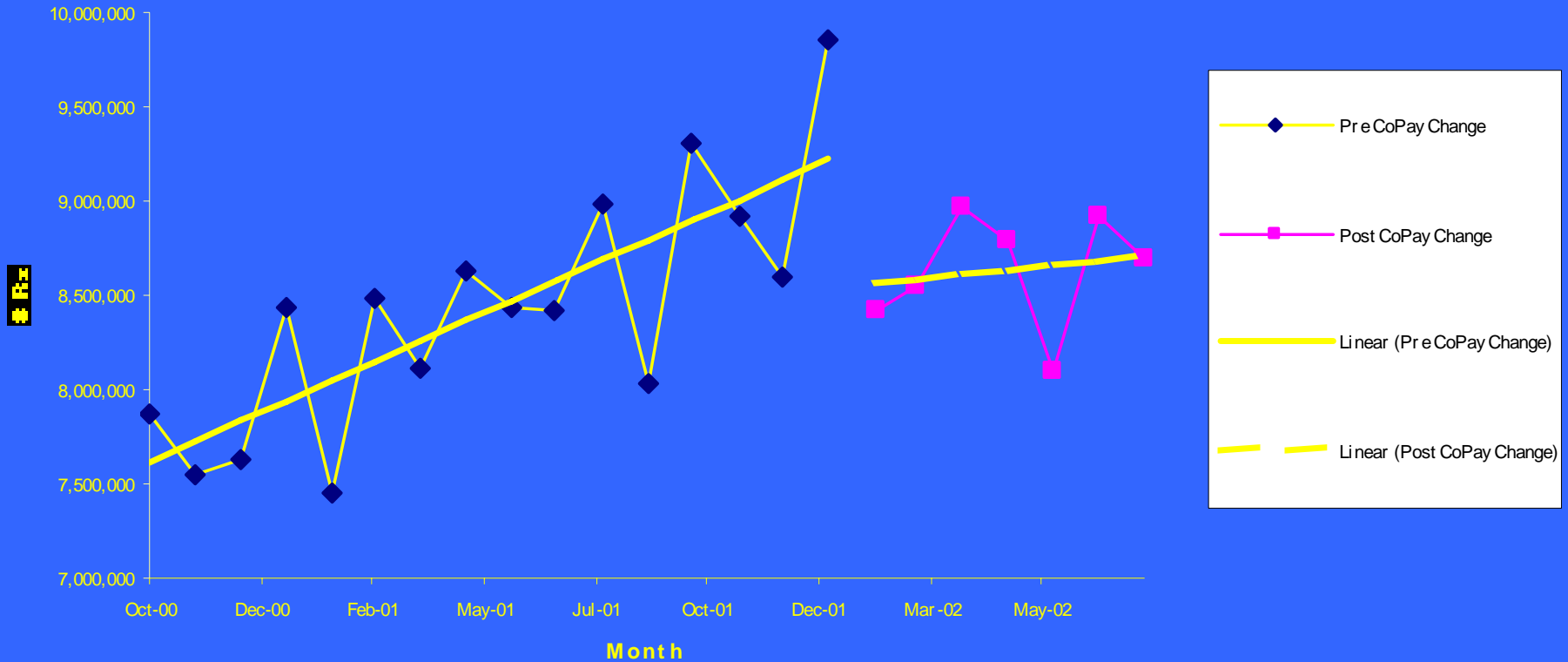
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Co-payments

"Effect of Increased Co-payments on Pharmacy Use in the VA."

- Objectives
  - Describe characteristics, healthcare utilization, and comorbidities of veterans with and without Rx co-pay.
  - Measure change in quantity of VA Rx veterans obtained after co-pay increase.
  - Determine whether veterans are discontinuing use or intensity of use of VA pharmacy after co-pay increase.
  - Determine whether co-pay increase had a different impact on
    - Generic vs. brand drugs; OTC vs. Rx-only drugs; Less essential vs. more essential drugs; and Drugs that treat symptomatic conditions vs. non-symptomatic conditions.

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Co-payments

Pharmacy Prescription Data

QUESTIONS?

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