Database & Methods Cyberseminar Series

Chart Review using National EHR Tools

July 10, 2017

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Database & Methods Cyberseminar Series

Informational seminars to help VA researchers understand how to use VA and non-VA data in research and quality improvement

Topics:

• Application of VA and non-VA data to research and quality improvement questions
• Limitations of secondary data use
• Resources to support VA data use
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/3/16</td>
<td>Overview of VA Data &amp; Research Uses</td>
</tr>
<tr>
<td>11/7/2016</td>
<td>Requesting Access to VA Data</td>
</tr>
<tr>
<td>12/5/2016</td>
<td>Healthcare Utilization with MedSAS &amp; CDW</td>
</tr>
<tr>
<td>1/9/2017</td>
<td>VA Medicare Data (VA/CMS)</td>
</tr>
<tr>
<td>2/6/2017</td>
<td>Assessing Pharmacy Utilization with VA Data</td>
</tr>
<tr>
<td>3/6/2017</td>
<td>Mortality Ascertainment &amp; Cause of Death</td>
</tr>
<tr>
<td>4/3/2017</td>
<td>Assessing Race &amp; Ethnicity</td>
</tr>
<tr>
<td>6/5/2017</td>
<td>Pharmacy Data</td>
</tr>
<tr>
<td>7/10/2017*</td>
<td>Chart Review Using National EHR Tools</td>
</tr>
<tr>
<td>8/7/2017</td>
<td>Applying Comorbidity Measures Using VA and CMS (Medicare/Medicaid) Data</td>
</tr>
<tr>
<td>9/11/2017*</td>
<td>Using CDW Microbiology and Pharmacy Data in Outcomes Research</td>
</tr>
</tbody>
</table>

*Schedule shifts by one week in event of VA holiday.
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Chart Review Using National EHR Tools

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Learning Objectives

By the end of this cyberseminar, attendees will be able to:

• Identify when chart review is an effective data collection methodology
• Compare different strategies for conducting chart review
• Anticipate common steps needed to plan and conduct a rigorous chart review project
• Be familiar with tools that can support electronic chart review activities
Poll #1: *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
Poll Question 2: *What is your previous experience using chart review for research?*

- Never did chart review
- Used paper charts
- Used my local electronic health record only (CPRS)
- Used VistAWeb or CAPRI
- Used some other platform for central chart review (please describe using central Q&A)
Topics

• When to use chart review for research

• Planning and conducting chart review studies

• Examples of VA EHR tools for chart review

• Lessons learned

• Additional Resources
Project examples:

- INSPIRE SDP (L. Williams, PI)
- CARE TIMe SDP (D. Bravata, PI)
- Operational projects/Office of Clinical Analytics and Reporting

References:

Topics

• When to use chart review for research
  • Confirm data in VA administrative datasets
  • Capture data not available in VA administrative datasets
  • Local vs. Central Chart Review
    • Cost/accuracy vs. local chart reviews
    • Using notes in the CDW

• Planning and conducting chart review studies

• Examples of VA EHR tools for chart review

• Lessons learned

• Additional Resources
Confirm data in VHA administrative datasets

- **Validate case ascertainment strategies**
  - Assess the accuracy of your administrative data-based case ascertainment or outcome assessment and adjust if needed for a retrospective administrative data analysis
  - Chart review serves as “criterion standard”

- TIA cohort identified by ICD-9 TIA code in ED or hospital discharge
- Minor stroke cohort identified by ICD-9 hospital discharge codes and other administrative data (clinical severity data not available)

<table>
<thead>
<tr>
<th>Electronic Health Record Data</th>
<th>Chart Review Data</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minor Stroke</td>
<td>TIA</td>
</tr>
<tr>
<td>Minor Stroke</td>
<td>234</td>
<td>66</td>
</tr>
<tr>
<td>TIA</td>
<td>19</td>
<td>436</td>
</tr>
<tr>
<td>Total</td>
<td>755 (99.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>
Confirm data in VHA administrative datasets

Assess clinical vs. administrative completion of an action

Example: How many patients received a rehabilitation consult during their stroke admission?

- Joint Commission stroke quality indicator included in VA facility SAIL reports
- Research question: How accurate are administrative measures of this quality indicator?
- Administrative data includes completed consult information
- However, consults may be completed without an actual rehab evaluation taking place, or may be done without administrative documentation:

<table>
<thead>
<tr>
<th>Type of error (of 1948 eligible admissions)</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>False negative (13)</td>
<td>1- discharge date incorrect 12-admin data did not capture consult</td>
</tr>
<tr>
<td>False positive (12)</td>
<td>1- consult after discharge 3- patient not seen 4- consult cancelled 4- consult was for diagnostic test only</td>
</tr>
</tbody>
</table>

If infrequent it may not be a problem, but assessing a random sample of cases may be important to understand the variability in your estimate of the % of patients receiving this care.
Other types of errors found when confirming administrative data via chart review:

• Incorrect ICD-9/ICD-10 code used

• Admission with stroke ICD9 primary discharge code in VA administrative data is actually for an episode of non-VA care paid for by the VA

• A medication noted as given in VA Bar Code Medication Administration (BCMA) data has a note entered that says “held, patient off floor.”

• An outpatient medication is active electronically but provider note records instruction to stop the medication
Capture data not available in VA administrative datasets

• **Unstructured data**
  • Written orders
  • Comment fields
  • Data elements that reflect complex aspects of care
    • Discussion of comfort care or advanced directives
    • Coordination of care between providers
  • Data elements that reflect clinician judgment
    • Documentation of reasons of providing or not providing care (patient declines treatment, ineligibility, etc.)

• **Scanned records** (many VA and non-VA examples)
Example of need for unstructured data in quality measurement: VTE prophylaxis by hospital day 2 flowchart

1. Was the patient hospitalized for 2 days?
2. Was the patient ambulatory by hospital day (HD) 2?
3. Were "comfort measures only" documented by HD2?
4. Were appropriate medications or prophylaxis given by HD2?
5. Were any contraindications to meds and mechanical prophylaxis recorded by the provider?
Using chart review to develop electronic clinical quality measures for use in clinical quality management:

<table>
<thead>
<tr>
<th>STK-1: VTE Prophylaxis</th>
<th>N</th>
<th>% matched</th>
<th>PPV/NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>2130</td>
<td>99.3%</td>
<td>99.5%</td>
</tr>
<tr>
<td>Numerator</td>
<td>2113</td>
<td>86.4%</td>
<td>99.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STK-5: Antithrombotic by hospital day 2</th>
<th>N</th>
<th>% matched</th>
<th>PPV/NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>2130</td>
<td>98.7%</td>
<td>99.1%</td>
</tr>
<tr>
<td>Numerator</td>
<td>2036</td>
<td>98.4%</td>
<td>85.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STK-10: Consider for rehabilitation</th>
<th>N</th>
<th>% matched</th>
<th>PPV/NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>2130</td>
<td>97.5%</td>
<td></td>
</tr>
<tr>
<td>Numerator</td>
<td>1948</td>
<td>99.3%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STK-2: Antithrombotic at discharge</th>
<th>N</th>
<th>% matched</th>
<th>PPV/NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>2130</td>
<td>97.6%</td>
<td></td>
</tr>
<tr>
<td>Numerator</td>
<td>1948</td>
<td>98.3%</td>
<td>98.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NIHSS by 24 hours</th>
<th>N</th>
<th>% matched</th>
<th>PPV/NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>2130</td>
<td>99.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Numerator</td>
<td>2126</td>
<td>98.7%</td>
<td>96.9%</td>
</tr>
</tbody>
</table>

Compared to chart review
Only one < 97.5% matched due to non-standard names/orders for mechanical devices
Using chart review to develop electronic quality measures for use in implementation trials

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure Validation</th>
<th>Pass Rates</th>
<th>Pass Rates</th>
<th>Chart Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[Denominator (N=528): % Agree, % Valid Disagree, N, % Agree, % Valid Disagree]</td>
<td>[Admin Pass Rate, Eligible, Pass Rate]</td>
<td>[Chart Pass Rate*]</td>
<td></td>
</tr>
<tr>
<td>Carotid Imaging</td>
<td>44 [91.7%, 100.0%, 472, 39, 91.7%, 23.1%]</td>
<td>8325 51.4%</td>
<td>516 69.0%</td>
<td></td>
</tr>
<tr>
<td>Carotid Stenosis Management</td>
<td>10 [98.1%, 100.0%, 8, 0, 100.0%, -]</td>
<td>314 25.2%</td>
<td>12 33.3%</td>
<td></td>
</tr>
<tr>
<td>Antihypertensive Intensification</td>
<td>77 [85.4%, 100.0%, 133, 16, 88.0%, 0.0%]</td>
<td>2781 27.0%</td>
<td>169 27.8%</td>
<td></td>
</tr>
<tr>
<td>Hypertension Control</td>
<td>60 [88.6%, 25.0%, 384, 41, 89.3%, 0.0%]</td>
<td>18533 91.2%</td>
<td>431 67.7%</td>
<td></td>
</tr>
<tr>
<td>Lipid Measurement</td>
<td>33 [93.8%, 100.0%, 485, 50, 89.7%, 0.0%]</td>
<td>8371 79.2%</td>
<td>529 79.6%</td>
<td></td>
</tr>
<tr>
<td>Cholesterol Lowering Medication</td>
<td>72 [86.4%, 100.0%, 352, 44, 87.5%, 13.6%]</td>
<td>6647 75.3%</td>
<td>401 85.3%</td>
<td></td>
</tr>
<tr>
<td>Cholesterol Med Intensification</td>
<td>85 [83.9%, 82.4%, 283, 27, 90.5%, 14.8%]</td>
<td>5016 27.5%</td>
<td>345 25.8%</td>
<td></td>
</tr>
<tr>
<td>Brain Imaging</td>
<td>59 [88.8%, 100.0%, 453, 22, 95.1%, 77.3%]</td>
<td>8283 86.1%</td>
<td>497 98.4%</td>
<td></td>
</tr>
<tr>
<td>Holter Monitor</td>
<td>27 [94.9%, 100.0%, 442, 13, 97.1%, 0.0%]</td>
<td>7271 4.8%</td>
<td>492 2.8%</td>
<td></td>
</tr>
<tr>
<td>Antithrombotics at Discharge</td>
<td>43 [91.9%, 97.7%, 461, 65, 85.9%, 32.3%]</td>
<td>8019 82.3%</td>
<td>508 91.3%</td>
<td></td>
</tr>
<tr>
<td>Atrial Fibrillation: INR Ordered</td>
<td>25 [95.3%, 0.0%, 36, 1, 97.2%, 0.0%]</td>
<td>723 82.6%</td>
<td>44 95.5%</td>
<td></td>
</tr>
<tr>
<td>Atrial Fibrillation: INR 2-3</td>
<td>21 [96.0%, 95.2%, 29, 2, 93.1%, 0.0%]</td>
<td>593 28.8%</td>
<td>42 23.8%</td>
<td></td>
</tr>
<tr>
<td>HbA1c Measurement</td>
<td>40 [92.4%, 72.5%, 184, 7, 96.2%, 0.0%]</td>
<td>3465 78.0%</td>
<td>207 79.2%</td>
<td></td>
</tr>
<tr>
<td>Speech Language Pathology</td>
<td>14 [97.3%, - , 394, 32, 91.9%, -]</td>
<td>5727 35.1%</td>
<td>443 21.2%</td>
<td></td>
</tr>
</tbody>
</table>
Strategies for Chart Review: Local vs. Central

- **Local (CPRS) chart review**
  - Effective if few sites
  - Best for simple chart review questions
    - **Example:** Retrospective cohort study of Veterans at two VAMCs that received sleep apnea screening post-stroke
      - Small (two VA facilities)
      - Focused (diagnostic case ascertainment, receipt of sleep apnea screening within a given time frame)
      - Chart review needed because completion and results of non-VA consults not easily tracked with administrative data

- **Central (national EHR tools) chart review**
  - Cheaper for large studies
  - Optimal training and quality control
Chart review expense example

• INSPIRE SDP
  • 11-site cluster randomized study, reviewing 2.5 years of stroke admissions
  • Primary outcome: performance on various stroke quality indicators (were patients eligible to receive a process of care and did they receive it?)
  • Site level volume approximately 75 stroke admissions per year
    • If prospectively reviewing cases, volume small
    • Difficult to find sites willing and able to hire some small % of a research assistant to conduct the chart reviews
    • 11 staff at 0.25 FTE vs. 3 full time central staff
  • Still need central EHR review to assess local chart review accuracy due to complexity of review
  • Training, maintaining, retaining the off-site personnel over a 3-year study is not feasible
Central Chart Review Quality Example

- **INSPIRE SDP**
  - 1,600 admissions with full chart review
  - Random 10% inter-rater reliability (~ 160 admissions)
    - Essential to track inter-rater reliability throughout the project to detect and address variability in reviews
  - 118 variable chart review form, 11 quality indicators
    - 113/118 variables > 0.8 ICC/kappa
    - QI result agreement (ineligible, passed, failed) excellent, $k = 0.84-0.96$
Using notes in the CDW

• TIU (Text Integration Utilities) notes are available in the CDW
• These notes can be useful for extracting unstructured (text) data, but also have some disadvantages:
  • Not inherently chronologically oriented (requires data manipulation if sequence of notes/information was important)
  • Date and time of note entry is stripped from TIU notes so you can’t see this when you view them
  • Need data management skills (SQL) to manipulate, although some tools are being developed to aid in human-assisted review of text strings in TIU notes, as well as for annotation in NLP projects

eHost and ChartReview tools Cyberseminar 8/10/2017
Topics

• Using chart review for research

• Planning and conducting chart review studies

• Examples of VA EHR tools for chart review
  • CAPRI
  • VistAWeb- retirement planned for end of FY17
  • CDW TIU notes
    • eHOST—refer to VINCI seminar
    • Joint Legacy Viewer (JLV)- VistAWeb replacement

• Lessons learned

• Additional Resources
Steps to conducting high quality chart review

• Define the data you will collect
  • “Symptomatic intracerebral hemorrhage” after thrombolysis
    • What time frame?
    • Required diagnostic test(s) to diagnose?
    • “Symptomatic” definition?
  • Construct and define your variables to minimize any reviewer judgement

• Develop a chart review form and test it
  • Consider grouping of information for improved efficiency
  • Identify skip patterns (if one variable is answered x then skip to y)
  • Identify other important data that are missing
  • Measure the time it takes for chart review to set goals for project staff
Steps to conducting high quality chart review

- **Develop a chart review manual** for training and to document changes throughout the project

- **Obtain access** to needed tools
  - Local CPRS or national tools for chart review at other facilities
Developing a chart review manual

A standard chart review manual is key to the quality of your chart review data.

For each variable, include:

- Explicit definitions and response options
- Sources to use for review
  - Diagnoses from problem list? Discharge summary? Clinic visit?
- Standardize search features and terms
  - Find specific text, all reviewers should use same text, same dates for search
- List of common abbreviations
- Local examples as they are noted
  - Which note titles or templates contain the variable of interest
  - Modify this with dates as information changes
Example of manual chart review

64. prestamb

Was the patient ambulatory prior to the stroke?

   Code  1. Yes
         2. No
         99. Unable to determine

Ambulatory includes:
   - Patient ambulating without assistance from another person (with or without use of assistive device)
   - Patient ambulating to and from the bathroom without assistance
   - Ambulation with supervision

Non-ambulatory includes:
   - Patient is on bed rest
   - Patient is only getting out of bed to the bedside commode (or up in chair) or is primarily in the bed (or immobile)
   - Up to bathroom with assistance of another person
   - Documentation of Contact Guard Assist (CGA) or “Touch Assist”
   - OOB with Assistance

If no documentation in the ER/Admission/Rehab notes regarding patient ability to ambulate prior to admission, the abstractor may refer to PCP notes during the year prior.

If patient lives alone, and no other documentation available regarding ambulatory status prior to stroke, code as ambulatory.

For Nashville Patients that transferred from Murfreesboro: Abstractor may pull this information from Murfreesboro notes for the episode of care being reviewed.

Possible Location in Chart:  Admission H&P, ER Notes, Progress Notes, Rehab Notes, RN Admission Note (Braden Scale), PCP notes during year prior
Example of “live” chart review manual:

Item “Was the patient screened for dysphagia before PO intake?”

Dated so updates are tracked

- Keep most current manual in working folder, all other versions in outdated folder

Date changes for specific sites

- Over time, documentation templates change

If a dysphagia screen completed but the medical record does not provide a specific date/time of completion, the date/time of signature of the first note documenting the dysphagia screen should be used.

Do not consider the delivery of food, fluid, or medication via a nasogastric tube, orogastric tube, or percutaneous gastrostomy tube as intake by mouth (oral intake). Medications administered sublingually also count as intake by mouth.

INSPIRE Chart Abstraction Coding Manual

For Nashville Patients that transferred from Murfreesboro: Abstractor may pull this information from Murfreesboro notes for the episode of care being reviewed.

For Nashville Patients (2011-2012): Abstractors should check both the Notes and the Orders to determine if a dysphagia screen was completed. Please see Appendix G for an example of the Nashville dysphagia template.

For Birmingham Patients:
Nursing Admission Note Templates in Birmingham include a standardized dysphagia screen template. Standard text for Part 1-Dysphagia Risk Factors, Part 2-Swallow Testing Procedure, and Part 3-When the Procedure in Completed appear in all notes that use this template. Do not assume that either part was completed unless the nurse has entered specific text for that question. Please note: Part II (Bedside Swallow) will not be completed unless a risk factor is identified in Part I.

If Part I is left blank, the screen was not completed.
If Part I is marked “None,” the screen was completed and #51 (dysphagia) should be coded “1.”

Inclusions: Documentation by a VA provider of a dysphagia screen completed in an OSH “NPO Place Dobhoff” except when PO meds were given prior to documentation.
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• Planning and conducting chart review studies

• VA EHR tools for chart review
  • Data access
  • CAPRI
  • VistAWeb- retirement planned for end of FY17
  • CDW TIU notes
    • eHOST—refer to VINCI seminar
    • Joint Legacy Viewer (JLV)- VistAWeb replacement

• Lessons learned

• Additional Resources
EHR Access Tools

- CAPRI (Compensation and Pension Record Interchange)
- VistAWeb
- Joint Legacy Viewer (JLV)

Request to use these tools to access VHA electronic medical record systems is obtained via the DART process (Data Access Request Tracker)

Request for access to your local CPRS system is done locally
First step to access VA EHR tools: Complete a DART request

Information about tools for national EHR access on the VHA Data Portal

- Includes **DART** overview and forms
- Access to tools for national EHR review can be for specific sites or for full national access
- Separate request for research or operational activities

Download and submit a Special User Access form:
http://vaww.vhadataportal.med.va.gov/Portals/0/Forms/ResearchUserAccessRequestForm.pdf
Important tip: Research protocols and operational projects must have site-specific information

- **Research projects**: Mention “national electronic health record” in your IRB protocol submission (if you need access to all sites nationwide) or name the specific sites for which you require access.

  - The IRB approved protocol and HIPAA Waiver documents for requests for CAPRI or VistAWeb data are reviewed for explicit mention of use of “national electronic health records.”

  - To reduce data access review delays, include the terms “VistAWeb,” “CAPRI,” or “national electronic health record” in your initial protocol or a later amendment.

- **Operational projects**: Mention the operational partner of your project in the project description, request either national or site specific access as above.
CAPRI (Compensation and Pension Record Interchange)

- Developed to facilitate coordination between the Veterans Benefit Administration (VBA) and the Veterans Health Administration (VHA) in the determination of Veteran benefits
- Read-only access to EHR data for individual patients at one specific site at a time
- Requires special software

[Intranet: http://vaww.virec.research.va.gov/CAPRI-VistAWeb/CAPRI.htm]
In the “Clinical Documents” view, click on the “Notes” tab.

All notes from one facility are shown in chronological order.

Other tabs at the bottom have specific data categories similar to CPRS.

Example of notes in CAPRI:

LOCAL TITLE: MH SUICIDE PREVENTION NOTE
STANDARD TITLE: MENTAL HEALTH NOTE
DATE OF NOTE: FEB 26, 2016 12:19
ENTRY DATE: FEB 26, 2016 12:19:28

INSTITUTION: INDIANAPOLIS VAMC
DIVISION: EAST TENNESSEE STREET
URGENCY: STAT: COMPLETED

As part of ongoing suicide prevention case management, this writer reviewed veteran chart and treatment activity. Writer will remain available throughout the duration of the Category 1 PAR and address any needs that may arise and be requested by veteran treatment providers.
Notes are searchable for text

Example: looking for documentation of carotid artery stenosis:

- The search term “carotid” (bottom right corner) returns notes containing this word only.

- The word is highlighted within the note.
VistAWEB

- Developed to facilitate sharing of individual patient data among patient’s providers at other VAMCs
- A VA Intranet web portal
- Read-only access to EHR data for individual patient at all VA sites where they received care, shown chronologically

Intranet: http://vaww.virec.research.va.gov/CAPRI-VistAWEB/VistAWEB.htm
1. Specify dates

VistAWeb vs. CAPRI layout

2. Categories of data

You can access VistAWeb from within CAPRI. Useful when you need to assess transfers or chronology of care across different facilities.
EHR Data Portals – Compensation & Pension Data Interchange (CAPRI) & VistAWeb

**CAPRI**
- Requires special software and access/verify codes
- Data viewed from one healthcare site at a time

**VistAWeb**
- VA Intranet web portal accessed through local VistA
- Data consolidated

**Both**
- Read-only access to EHR one patient at a time
- Require real SSN
- Submit requests to DART

**Recommendation:** Get both for maximum flexibility; no additional DART application required
Just when you thought you knew what to do…

Transition of EHR Tools

VA will retire VistAWeb by the end of FY17 and replace it with Joint Legacy Viewer (JLV)

http://vaww.vhadataportal.med.va.gov/ToolsApplications/JLV.aspx
JLV access will be requested the same way VistAWeb access is requested (request both CAPRI and JLV when you do the DART application)  
- If you have VistAWeb access already, you will not need to separately request JLV access

The Big Difference
Joint Legacy Viewer vs VistaWeb

In a System Usability Survey, participants preferred Joint Legacy Viewer (JLV) over VistaWeb for the following reasons:

- Easy to learn and user friendly
- Faster loading data
- Customizable: sort, filter, and save views
- Better organized and integrated information

http://vaww.ehealth.va.gov/EHEALTH/campaign/JLV/VE_JLVvsVW_TheBigDifference_FINAL.pdf
Topics

- Using chart review for research
- Planning and conducting chart review studies
- VA EHR tools for chart review
- Lessons learned
- Additional Resources
Lessons learned about using EHR tools for research:

1. Designate one person from your study to submit and stay in communication via the DART process

2. Increase estimated time per chart review from local CPRS by a small factor (10-15%) to take into account view switching and page loading issues

3. A detailed chart review manual is the foundation to accurate and reliable data collection
   - Regular team meetings to discuss questions, resolve differences, update chart review manual

4. Keep your chart reviewers happy!
   - Breaks for other types of work
   - Shared positions if possible
   - Prizes for “Best Story of the Week”
Topics

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• Lessons learned

• Additional Resources
Look for training resources on the VHA Data Portal.
Additional Resources


https://www.vapulse.net/groups/jlv-network
VIReC Intranet: http://vaww.virec.research.va.gov/
### VIReC Options for Specific Questions

<table>
<thead>
<tr>
<th><strong>HSRData Listserv</strong></th>
<th><strong>HelpDesk</strong></th>
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<tbody>
<tr>
<td>• Community knowledge sharing</td>
<td>• Individualized support</td>
</tr>
<tr>
<td>• ~1,200 VA data users</td>
<td><strong><a href="mailto:virec@va.gov">virec@va.gov</a></strong></td>
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<tr>
<td>• Researchers, operations, data stewards, managers</td>
<td>(708) 202-2413</td>
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</tbody>
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Contact information

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7/10/2016
Applying Comorbidity Measures Using VA and CMS (Medicare/Medicaid) Data

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