CMS - Medicare & Medicaid

• CMS is the insurance provider for over 100 million people in the U.S.
  • ≈ over 50 million Medicare beneficiaries
    • 9 million < 65 years (disabled)
    • Over 40 million 65+ years
  • ≈ 60 million Medicaid beneficiaries
    • 29 million children
    • 15 million adults
    • 10 million disabled
    • 5 million elderly
CMS Data for Research

- Medicare administrative data
  - Eligibility
    - Age or disability
    - Dual eligible for Medicaid
  - Enrollment
    - Fee-for-Service (FFS) also known as “Original Medicare” or Medicare Advantage Plan (HMO or PPO)
- Claims data
  - Derived from reimbursement information (the payment of bills)
  - Available for FFS beneficiaries only
  - Includes information on Medicare covered services - diagnoses/procedure codes, admission and discharge dates, charges and payments, place of service
Chronic Condition Public Use Files

- Prevalence, utilization indicators, and Medicare spending (parts A/B) for FFS beneficiaries with chronic conditions and multiple chronic conditions

- Aggregated to several geographic areas
  - National
  - State
  - County
  - Hospital referral region (HRR)
Chronic Conditions

- Conditions identified through Medicare claims
- 100% administrative data for Medicare beneficiaries enrolled in the FFS program

Exclusions
- Beneficiaries with any Medicare Advantage enrollment
- Beneficiaries enrolled in Part A only or Part B only

Alzheimer’s Disease/Dementia
- Diabetes
- Arthritis (OA/RA)
- Heart Failure
- Asthma
- Hyperlipidemia
- Atrial Fibrillation
- Hypertension
- Autism Spectrum Disorders
- Ischemic Heart Disease
- Cancer (breast, colorectal, lung, and prostate)
- Osteoporosis
- Chronic Kidney Disease
- Schizophrenia/ Psychotic Disorders
- COPD
- Stroke
- Depression
Chronic Conditions Overview

The Office of Information Products and Data Analytics (OIPDA), within the Centers for Medicare & Medicaid Services (CMS), has developed a set of information products and analytics examining chronic conditions among Medicare fee-for-service beneficiaries. OIPDA produces this information to provide researchers and policymakers a better understanding of the burden of chronic conditions among beneficiaries and the implications for our health care system. Information on prevalence, utilization, and Medicare spending for specific chronic conditions and multiple chronic conditions demonstrates the overall burden and complexity of chronic conditions among Medicare beneficiaries and can be used to identify high risk Medicare beneficiaries, as well as inform policy makers and providers about resource utilization of patients with chronic diseases.

Several resources are available to researchers, policymakers, and other users who are interested in learning more about chronic conditions among Medicare beneficiaries, including tabular geographic data reports (data years 2008-2012), interactive dashboards (data year 2012) as well as maps and charts.

Inquiries regarding this data can be sent to MedicareChronicConditions@cms.hhs.gov.

Related Links

- Medicare Geographic Variation
- HHS Initiative on Multiple Chronic Conditions
- MMRR Data Brief: “Multiple Chronic Conditions Among Medicare Beneficiaries: State-level Variations in Prevalence, Utilization, and Cost, 2011”
Chronic Conditions

Prevalence and Medicare utilization and spending are presented for the 17 chronic conditions listed below. Information is presented for (1) U.S. counties, (2) U.S. states, including Washington, DC, Puerto Rico, and the U.S. Virgin Islands, and (3) hospital referral regions (HRR) and is available for the years 2008-2012.

The data are available in two Excel files formats. The “Reports” allow users to compare geographic areas to national Medicare estimates. The corresponding “Tables” are traditional excel files that can be exported into other programs.

Below are the 17 chronic conditions included in our reports:

- Alzheimer’s Disease and Related Dementia
- Arthritis (Osteoarthritis and Rheumatoid)
- Asthma
- Atrial Fibrillation
- Autism Spectrum Disorders
- Cancer (Breast, Colorectal, Lung, and Prostate)
- Chronic Kidney Disease
- Chronic Obstructive Pulmonary Disease
- Depression
- Diabetes
- Heart Failure
- Hyperlipidemia
- Hypertension
- Ischemic Heart Disease
- Osteoporosis
- Schizophrenia and Other Psychotic Disorders
- Stroke

Inquiries regarding this data can be sent to MedicareChronicConditions@cms.hhs.gov.

Downloads

- Prevalence State/County Level: All Beneficiaries by Age, 2008-2012 [ZIP, 19MB] ️
- Prevalence State Level: All Beneficiaries by Sex and Age, 2008-2012 [ZIP, 3MB] ️
- Prevalence State Level: All Beneficiaries by Race/Ethnicity and Age, 2008-2012 [ZIP, 10MB] ️
- Prevalence State Level: All Beneficiaries by Medicare-Medicaid Enrollment and Age, 2008-2012 [ZIP, 3MB] ️
- Prevalence HRR Level: All Beneficiaries by Age, 2008-2012 [ZIP, 1MB] ️
- Utilization/Spending State Level: All Beneficiaries, 2008-2012 [ZIP, 553KB] ️
Chronic Conditions Overview

The Office of Information Products and Data Analytics (OIPDA), within the Centers for Medicare & Medicaid Services (CMS), has developed a set of information products and analytics examining chronic conditions among Medicare fee-for-service beneficiaries. OIPDA produces this information to provide researchers and policymakers a better understanding of the burden of chronic conditions among beneficiaries and the implications for our health care system. Information on prevalence, utilization, and Medicare spending for specific chronic conditions and multiple chronic conditions demonstrates the overall burden and complexity of chronic conditions among Medicare beneficiaries and can be used to identify high risk Medicare beneficiaries, as well as inform policy makers and providers about resource utilization of patients with chronic diseases.

Several resources are available to researchers, policymakers, and other users who are interested in learning more about chronic conditions among Medicare beneficiaries, including tabular geographic data reports (data years 2008-2012), interactive dashboards (data year 2012) as well as maps and charts.

Inquiries regarding this data can be sent to MedicareChronicConditions@cms.hhs.gov.

Related Links

- Medicare Geographic Variation
- HHS Initiative on Multiple Chronic Conditions
- MMRR Data Brief: “Multiple Chronic Conditions Among Medicare Beneficiaries: State-level Variations in Prevalence, Utilization, and Cost, 2011”
Figure 2: Prevalence of Chronic Conditions Among Medicare Fee-For-Service Beneficiaries by Age: 2012

- **High blood pressure**: Less than 65 years - 39%, 65 years and older - 59%
- **High cholesterol**: Less than 65 years - 30%, 65 years and older - 48%
- **Arthritis**: Less than 65 years - 22%, 65 years and older - 30%
- **Ischemic heart disease**: Less than 65 years - 17%, 65 years and older - 31%
- **Diabetes**: Less than 65 years - 25%, 65 years and older - 27%
- **Chronic kidney disease**: Less than 65 years - 12%, 65 years and older - 16%
- **Depression**: Less than 65 years - 16%, 65 years and older - 28%
- **Heart failure**: Less than 65 years - 10%, 65 years and older - 16%
- **COPD**: Less than 65 years - 11%, 65 years and older - 11%
- **Alzheimer's Disease/Dementia**: Less than 65 years - 3%, 65 years and older - 11%
- **Cancer**: Less than 65 years - 3%, 65 years and older - 9%
- **Atrial fibrillation**: Less than 65 years - 2%, 65 years and older - 9%
- **Osteoporosis**: Less than 65 years - 2%, 65 years and older - 7%
- **Asthma**: Less than 65 years - 4%, 65 years and older - 7%
- **Schizophrenia/Psychotic Disorders**: Less than 65 years - 3%, 65 years and older - 9%
- **Stroke**: Less than 65 years - 2%, 65 years and older - 4%
- **Autism spectrum disorders**: Less than 65 years - 1%, 65 years and older - 0.01%
Figure 4: Prevalence of Chronic Conditions Among Medicare Fee-For-Service Beneficiaries by Medicare & Medicaid Enrollment: 2012

- **High blood pressure**: Medicare & Medicaid (Dual) 55%, Medicare only (Non dual) 59%.
- **High cholesterol**: Medicare & Medicaid (Dual) 41%, Medicare only (Non dual) 46%.
- **Arthritis**: Medicare & Medicaid (Dual) 33%, Medicare only (Non dual) 28%.
- **Ischemic heart disease**: Medicare & Medicaid (Dual) 30%, Medicare only (Non dual) 28%.
- **Diabetes**: Medicare & Medicaid (Dual) 35%, Medicare only (Non dual) 25%.
- **Chronic kidney disease**: Medicare & Medicaid (Dual) 20%, Medicare only (Non dual) 14%.
- **Depression**: Medicare & Medicaid (Dual) 28%, Medicare only (Non dual) 12%.
- **Heart failure**: Medicare & Medicaid (Dual) 21%, Medicare only (Non dual) 13%.
- **COPD**: Medicare & Medicaid (Dual) 17%, Medicare only (Non dual) 10%.
- **Alzheimer’s Disease/Dementia**: Medicare & Medicaid (Dual) 17%, Medicare only (Non dual) 8%.
- **Cancer**: Medicare & Medicaid (Dual) 9%, Medicare only (Non dual) 5%.
- **Atrial fibrillation**: Medicare & Medicaid (Dual) 8%, Medicare only (Non dual) 6%.
- **Osteoporosis**: Medicare & Medicaid (Dual) 6%, Medicare only (Non dual) 7%.
- **Asthma**: Medicare & Medicaid (Dual) 8%, Medicare only (Non dual) 4%.
- **Schizophrenia/Psychotic Disorders**: Medicare & Medicaid (Dual) 11%, Medicare only (Non dual) 2%.
- **Stroke**: Medicare & Medicaid (Dual) 5%, Medicare only (Non dual) 3%.
- **Autism spectrum disorders**: Medicare & Medicaid (Dual) 0.01%, Medicare only (Non dual) 1%.
Prevalence of Hypertension Among Medicare Fee-For-Service Beneficiaries by State: 2012

National hypertension prevalence: 55.5%

Prevalence
- 37.9% - 45.0%
- 45.1% - 50.0%
- 50.1% - 55.0%
- 55.1% - 60.0%
- 60.1% - 63.8%

Prevalence of Hypertension Among Medicare Fee-For-Service Beneficiaries by County: 2012

New York

Number of fee for service beneficiaries in New York: 1,877,185
New York hypertension prevalence: 56.7%
National hypertension prevalence: 55.5%
Chronic Conditions Overview

The Office of Information Products and Data Analytics (OIPDA), within the Centers for Medicare & Medicaid Services (CMS), has developed a set of information products and analytics examining chronic conditions among Medicare fee-for-service beneficiaries. OIPDA produces this information to provide researchers and policymakers a better understanding of the burden of chronic conditions among beneficiaries and the implications for our health care system. Information on prevalence, utilization, and Medicare spending for specific chronic conditions and multiple chronic conditions demonstrates the overall burden and complexity of chronic conditions among Medicare beneficiaries and can be used to identify high risk Medicare beneficiaries, as well as inform policy makers and providers about resource utilization of patients with chronic diseases.

Several resources are available to researchers, policymakers, and other users who are interested in learning more about chronic conditions among Medicare beneficiaries, including tabular geographic data reports (data years 2008-2012), interactive dashboards (data year 2012) as well as maps and charts.

Inquiries regarding this data can be sent to MedicareChronicConditions@cms.hhs.gov.

Related Links

- Medicare Geographic Variation
- HHS Initiative on Multiple Chronic Conditions
- MMRR Data Brief: “Multiple Chronic Conditions Among Medicare Beneficiaries: State-level Variations in Prevalence, Utilization, and Cost, 2011”
Chronic Conditions Overview

The Office of Information Products and Data Analytics (OIPDA), within the Centers for Medicare & Medicaid Services (CMS), has developed a set of information products and analytics examining chronic conditions among Medicare fee-for-service beneficiaries. OIPDA produces this information to provide researchers and policymakers a better understanding of the burden of chronic conditions among beneficiaries and the implications for our healthcare system. Information on prevalence, utilization, and Medicare spending for specific chronic conditions and multiple chronic conditions demonstrates the overall burden and complexity of chronic conditions among Medicare beneficiaries and can be used to identify high risk Medicare beneficiaries, as well as inform policy makers and providers about resource utilization of patients with chronic diseases.

Several resources are available to researchers, policymakers, and other users who are interested in learning more about chronic conditions among Medicare beneficiaries, including tabular geographic data reports (data years 2008-2012), interactive dashboards (data year 2012) as well as maps and charts.

Inquiries regarding this data can be sent to MedicareChronicConditions@cms.hhs.gov.

Related Links

- Medicare Geographic Variation
- HHS Initiative on Multiple Chronic Conditions
- MMRR Data Brief: “Multiple Chronic Conditions Among Medicare Beneficiaries: State-level Variations in Prevalence, Utilization, and Cost, 2011”
## Chronic Condition Triads among Medicare Beneficiaries with at Least Three Chronic Conditions: Prevalence and Medicare Spending, 2008 - 2012

**Selected Condition:** Hypertension  
**Selected Year:** 2012

<table>
<thead>
<tr>
<th>Condition 2</th>
<th>Condition 3</th>
<th>Per capita Medicare spending ($)</th>
<th>Prevalence (%)</th>
<th>Per capita Medicare spending ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>Alzheimer's Disease/Dementia</td>
<td>39,478</td>
<td>2.2</td>
<td>42,257</td>
</tr>
<tr>
<td>Stroke</td>
<td>Arthritis</td>
<td>36,238</td>
<td>3.0</td>
<td>38,631</td>
</tr>
<tr>
<td>Stroke</td>
<td>Asthma</td>
<td>45,717</td>
<td>0.5</td>
<td>49,063</td>
</tr>
<tr>
<td>Stroke</td>
<td>Atrial Fibrillation</td>
<td>40,950</td>
<td>1.6</td>
<td>42,399</td>
</tr>
<tr>
<td>Stroke</td>
<td>Autism Spectrum Disorders</td>
<td>51,734</td>
<td>0.0</td>
<td>49,838</td>
</tr>
<tr>
<td>Stroke</td>
<td>Cancer</td>
<td>39,065</td>
<td>0.8</td>
<td>39,016</td>
</tr>
<tr>
<td>Stroke</td>
<td>Chronic Kidney Disease</td>
<td>46,969</td>
<td>2.5</td>
<td>47,743</td>
</tr>
<tr>
<td>Stroke</td>
<td>COPD</td>
<td>47,913</td>
<td>1.6</td>
<td>49,416</td>
</tr>
<tr>
<td>Stroke</td>
<td>Depression</td>
<td>43,562</td>
<td>2.2</td>
<td>47,571</td>
</tr>
<tr>
<td>Stroke</td>
<td>Diabetes</td>
<td>38,256</td>
<td>3.0</td>
<td>38,911</td>
</tr>
<tr>
<td>Stroke</td>
<td>Heart Failure</td>
<td>45,852</td>
<td>2.6</td>
<td>47,786</td>
</tr>
<tr>
<td>Stroke</td>
<td>Hyperlipidemia</td>
<td>32,303</td>
<td>4.8</td>
<td>33,041</td>
</tr>
<tr>
<td>Stroke</td>
<td>Ischemic Heart Disease</td>
<td>37,318</td>
<td>4.0</td>
<td>37,276</td>
</tr>
<tr>
<td>Stroke</td>
<td>Osteoporosis</td>
<td>38,317</td>
<td>0.8</td>
<td>46,489</td>
</tr>
<tr>
<td>Stroke</td>
<td>Schizophrenia and Other Psychotic Disorders</td>
<td>50,416</td>
<td>0.7</td>
<td>53,621</td>
</tr>
</tbody>
</table>
OTHER PUBLIC CMS DATA
Geographic Variation Public Use Files

- Demographic, Medicare spending, utilization and quality indicators
  - Tabular data in Excel
  - Dashboards
Geographic Variation: State-Level Dashboard

Geographic Variation in Standardized Medicare Spending

Texas Standardized Cost Breakdown, 2012

<table>
<thead>
<tr>
<th>Cost</th>
<th>State</th>
<th>Nation</th>
<th>% Diff to Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$10,503</td>
<td>$8,973</td>
<td>17%</td>
</tr>
<tr>
<td>Inpatient</td>
<td>$2,634</td>
<td>$2,595</td>
<td>2%</td>
</tr>
<tr>
<td>Post-Acute Care</td>
<td>$2,729</td>
<td>$1,648</td>
<td>66%</td>
</tr>
<tr>
<td>Hospice</td>
<td>$417</td>
<td>$317</td>
<td>31%</td>
</tr>
<tr>
<td>Physician/OPD/Tests/Imaging</td>
<td>$3,432</td>
<td>$3,329</td>
<td>3%</td>
</tr>
<tr>
<td>Durable Medical Equipment</td>
<td>$255</td>
<td>$236</td>
<td>8%</td>
</tr>
<tr>
<td>Part B Drug</td>
<td>$354</td>
<td>$318</td>
<td>11%</td>
</tr>
<tr>
<td>Outpatient Dialysis Facility</td>
<td>$363</td>
<td>$245</td>
<td>48%</td>
</tr>
</tbody>
</table>

*Select a state to see State level data. Unselect states to see National data.*

CMS Office of Information Products and Data Analytics (OIPDA), February 2014
Geographic Variation: County-Level Dashboard

Geographic Variation in Standardized Medicare Spending for 2012: County Level

- Total Per Capita Costs

<table>
<thead>
<tr>
<th>Cost</th>
<th>County</th>
<th>State</th>
<th>% Diff to State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$8,598</td>
<td>$8,807</td>
<td>-2%</td>
</tr>
<tr>
<td>Inpatient</td>
<td>$2,659</td>
<td>$2,596</td>
<td>2%</td>
</tr>
<tr>
<td>Post-Acute Care</td>
<td>$1,286</td>
<td>$1,263</td>
<td>2%</td>
</tr>
<tr>
<td>Hospice</td>
<td>$117</td>
<td>$214</td>
<td>-46%</td>
</tr>
<tr>
<td>Physician/OPD/Tests/Imaging</td>
<td>$3,628</td>
<td>$3,602</td>
<td>-1%</td>
</tr>
<tr>
<td>Durable Medical Equipment</td>
<td>$212</td>
<td>$211</td>
<td>1%</td>
</tr>
<tr>
<td>Part B Drug</td>
<td>$148</td>
<td>$308</td>
<td>-52%</td>
</tr>
<tr>
<td>Outpatient Dialysis Facility</td>
<td>$126</td>
<td>$271</td>
<td>-54%</td>
</tr>
</tbody>
</table>

* Indicates suppressed data

Click on a county bar to display detailed information

Produced by the CMS/Office of Information Products and Data Analytics (OIPDA), May 2014
Medicare Provider Utilization and Payment Data

- **Hospital Inpatient**
  - Source: CMS Medicare Provider Analysis and Review (MEDPAR) inpatient data

- **Hospital Outpatient**
  - Source: CMS Medicare claims for hospital outpatient services contained in the Medicare National Claims History

- **Physician and Other Supplier Data**
  - Source: final-action physician/supplier Part B non-institutional line items
Average Hospital Inpatient Charges for MS-DRG 286 for Hospitals in Manhattan, NY

MS-DRG 286: Circulatory Disorders except AMI with Cardiac Catheter with Major Complications or Comorbidities

[Bar chart showing hospital charges for MS-DRG 286 in Manhattan, NY]
DISSEMINATING CMS NON PUBLIC-USE DATA
Data Dissemination

- Research Data Assistance Center (ResDAC)
- Virtual Research Data Center (VRDC)
  - Access CMS data virtually from your own workstation
  - Only download aggregate results from the analyses
- Physical data provision
  - Files created, encrypted, and copied to portable media by CMS
  - CMS ships files to researchers who must ensure the security of the data at the researcher’s site
CMS Administrative Data for Research

- Medicare beneficiary demographics and enrollment (1999-current)
- Medicare fee-for-service (FFS) claims (1999-current)
- Medicare Part D event data (2006-current)
- Medicaid eligibility and claims (1999-2009)
- Medicare-Medicaid linked files (2006-2008)
- Assessment data (instrument inception-current)
Estimate Cohort Size and Cost – www.ccwdata.org

This application allows for the estimation of Medicare and Medicare-Medicaid population sizes. It does not allow for estimation of populations for Medicaid-only enrollees. Medicare population estimates are extrapolated from the 20% Medicare sample from 2012.

Study Population Parameters

- Status Code/ESRD Ind
- Beneficiary Demographics
- Total Month Counts
- Monthly Entitlement/Buy-In Indicators
- Monthly HMO Indicators
- Reason Codes
- Chronic Conditions
- Diagnosis/Procedure Codes

NOTE: If custom cohort is not needed, proceed to Data Pricing.

Selection Summary

As study population selections are added, they will appear here.

Save & Continue  Reset

Looking for Help? Email us at cmsdata@cdpit.com or call 1-866-756-1915
Resources

CMS Chronic Conditions PUFs

CMS Geographic Variation PUFs

Medicare Provider Utilization and Payment Data

Technical Assistance
ResDAC – www.resdac.org
CCW – www.ccwdata.org
Using administrative claims data for public health surveillance

Measuring antihypertensive medication (AHM) adherence

State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (1305) Grantee Meeting

September 11, 2014
Atlanta, GA
Purpose: Using the 1305 medication adherence measure profile as a platform

- Discuss the main decision points state public health staff should consider when doing medication adherence analyses
- Provide an overview of potential data sets states can explore using to perform medication adherence analyses
- Provide an overview of current medication adherence analyses the Division for Heart Disease and Stroke Prevention (DHDSP) is conducting, and discuss:
  - How they can help inform work at the state level
  - Need for data triangulation to understand a more complete picture of adherence across the U.S. (and within states)
Measure: Proportion of patients with high blood pressure adherent to medication regimens

- Assess rates of AHM adherence among adult patients with high blood pressure
- Intermediate effect of interventions to increase:
  - Implementation of quality improvement processes
  - Team-based care in health systems
  - Use of health-care extenders to support self-management

- In the US, CDC funded grantees worked to increase the proportion of adult patients with high blood pressure in adherence to AHM regimens from ___% to ___%
Who is this measure among?

- Adults ≥18 years of age with high blood pressure who have been prescribed AHMs
- At least two fills for either the same AHM or AHMs in the same drug class during the one year period

Clarification/decision points

- Defining who is hypertensive?¹
- Prescribed and filled: measure of secondary adherence, not primary adherence
- Why at least two fills?
- How do I define my AHMs?

¹ https://www.ccwdata.org/web/guest/condition-categories
What medications are we following?

- **AHMs include:**
  - Beta blockers; diuretics; calcium channel blockers (CCBs); angiotensin converting enzyme inhibitor (ACEI); angiotensin receptor blocker (ARB); other medications, including combinations

- **Clarification/decision points**
  - How do we defined AHMs? What classification schema do we use to properly categorize medications by their National Drug Code (NDC)?
    - IMS Health’s Uniform System of Classification (USC)
    - Truven Health’s Red Book: MarketScan
    - Cerner’s Multum Lexicon: CDC’s national surveys (e.g., NHANES)
    - First Databank and Medi-Span’s Master Drug Database: Centers for Medicare and Medicare Services (CMS)
    - Homegrown version
  - Do we follow all AHM use or just use of select AHMs as a proxy?

1 [http://www.fda.gov/drugs/informationondrugs/ucm142438.htm](http://www.fda.gov/drugs/informationondrugs/ucm142438.htm)
What adherence methodology do I use?

- **Two “main” adherence measures**:
  - Medication possession ratio
  - Proportion of days covered (PDC)

- **This measure uses the PDC methodology**
  - Endorsed by the Pharmacy Quality Alliance (PQA) and National Quality Forum (NQF); used by CMS for their Star Rating reporting
  - Proportion of days in the eligibility period “covered” by prescription claims for the same medication or another in its therapeutic category
  - Adequate adherence is defined for this performance measure as having a PDC \( \geq 80\% \)

---

3 [http://www.qualityforum.org/QPS/0541](http://www.qualityforum.org/QPS/0541)
4 [http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html](http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html)
How do we determine our numerator?

1) Determine the patient’s measurement period
   - Index prescription date to the end of the calendar year, disenrollment, or death

- Clarification/decision points
  - Do we censor (exclude) the periods when people were hospitalized, in skilled nursing facilities or were on hospice care?¹

¹ Attachment L: Medication Adherence Measure Calculations; CMS Star Ratings Technical Note: http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html
How do we determine our numerator?

2) Within the measurement period, count the number of days the patient was covered by at least one drug in the class based on the prescription fill date and days of supply

- If fills for the same drug overlap (generic level of active ingredient), then adjust the prescription start date to be the day after the previous fill ended

- If fills for a difference drug within the same class/category, then the prescription start date is the date of the new fill
How do we determine our numerator?

3) Divide the number of covered days found in Step 2 by the number of days found in Step 1
   - Multiply this number by 100 to obtain the PDC (as a percentage) for each patient

4) Count the number of patients who had a PDC ≥80%

- **Clarification/decision points**
  - How do we account for switching to/addition or use of other AHM classes?
  - How do we account for gaps in coverage?
Simplified option

- Follow the criteria outlined in the CMS Star Rating methodology for “Measure D13”
  - Adherence to prescribed drug therapy for renin angiotensin system (RAS) antagonists
    - ACEI, ARBs, or direct renin inhibitor medications; typically not prescribed together
    - List of RAS-related NDC codes are provided
  - Patients are only included if the first AHM fill occurs at least 91 days before the end of the enrollment period
  - Value is weighted based on the total number of enrollment years the patient meets the measure criteria (e.g., enrolled 6 months = 0.5 weight)

- Acceptable option for initial reporting on the 1305 AHM adherence measure

1 http://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html; See “2015 Star Ratings Technical Notes [PDF, 1MB], and 2015 Star Ratings Measures List [ZIP, 10KB]
Complex option(s)

- **Involves:**
  - Developing algorithms to deal with switching\(^1\)
  - Performing concurrent adherence measures, including weighted analyses\(^2\)

- **Not required for initial 1305 reporting**
  - Explore as you develop expertise

- **Outside of the scope of this presentation**

   Martin et al. [http://aop.sagepub.com/content/43/1/36.full.pdf+html](http://aop.sagepub.com/content/43/1/36.full.pdf+html)
How do we determine our denominator?

- Total number of adult patients who were dispensed antihypertensive medications on two unique dates of service during the one year measurement period within health care systems in the state (or at the highest level possible)

- **Clarification/decision points**
  - What data source(s) do I use?
Potential administrative claims data resources

- Billing data, submitted with the intention of getting reimbursed for services
- Hospital and emergency department (ED) discharge data
- Prescription medication fill claims data
- Payer-specific claims data
- Multi-payer claims data
  - State-based all payer claims databases (APCD)
- Other data sources
Data source: Prescription medication fill claims data

- Currently tracking use of AHMs using IMS Health’s Rx Factory (a.k.a., National Prescription Audit) data
- Lacks unique patient identifiers
  - No longitudinal analyses, including for adherence
- Using near real-time data to track some potential predictors of high adherence
Draft figures; preliminary data.
Data source: Payer-specific prescription claims data

- **Potential sources:**
  - Medicare Part D
  - State Medicaid program
  - Other proprietary health plan data within your state

- **Usually includes basic demographics, date of fill, supply, and possibly referring physician and cost data**
Data source: Payer-specific prescription claims data

- To perform adherence analyses need access to patient identifiers
- May lack diagnosis information with medication data; if possible, need to link with other files
  - Example: only able to do hypertension-specific AHM adherence measures among Medicare Fee-for-service beneficiaries, not Medicare Advantage beneficiaries
- Issues with how to capture data on medications that are not billed for (e.g., $4 generics)
Access to payer-specific claims data

- Medicaid
  - State agency, often separate from the health department
- Medicare
  - Virtual Research Data Center seat licenses
- Relationships with regional payers, data aggregators, university faculty
Data source: Multi-payer administrative claims data

- **CDC**
  - Truven Health MarketScan data
    - Commercial: employer-based private insurance
    - Medicaid: 11 unidentified states

- **States**
  - Uniquely positioned to take advantage of All Payer Claims Databases (APCD)
    - Compilation of all payers’ administrative claims data for all levels of service (e.g., outpatient, inpatient, pharmacy) within a state
    - Often includes a unique identification number for each patient and provider
    - May not include Medicaid or Medicare data
    - Likely does not include Tricare or Veteran Affairs (VA) data
Current APCD activity by state

http://www.apcdcouncil.org/state/map
How do you access your state’s APCD?

- Steward depends on the state
- Continuum of access
  - Direct queries of the system to submission of project-specific requests
- Often about 1 year lag time until claims are adjudicated and permitted for use
- May need to improve IT infrastructure to handle large datasets
  - Hardware (e.g., server capacity)
  - Software (e.g., statistical software)
- Develop analytic samples for exploratory analyses
Other potential data sources

- Electronic Health Record (EHR) system data, including data from health information exchanges, that are linked with pharmacy data EHR data
  - May not be reliable unless has bidirectional information sharing capabilities with local pharmacies
- Community health centers (CHC) who report on NQF 0541\(^1\)
  - However, data from multiple CHCs is not mutually exclusive
- Utilization Review Accreditation Commission (URAC)\(^2\)
  - Accredits pharmacy quality management programs
- National Business Coalition on Health (NBCH)\(^3\)
  - Evaluates health plans
- Patient-centric pharmacy claims data

1 http://www.qualityforum.org/QPS/0541
2 https://www.urac.org/accreditation-and-measurement/measurement/performance-measurement/specifications-overview/
3 http://www.nbch.org/eValue8
DHDSP’s “triangulation” of medication adherence data

- MarketScan Medicaid
  - Ages 18-64; public insurance
- Medicare Part D
  - Ages ≥65; Medicare coverage (FFS and MA)
- MarketScan Private Insurers
  - Ages 18-64; employer-based private insurance
- Department of Defense (?)
  - Current/retired uniformed service members and their families

Medicare Fee-for-service (FFS)
Medicare Advantage (MA) (limited)

TIME
(historical) (current)

Adherence predictors
Data: IMS
Your state’s “triangulation” of medication adherence data

- State Medicaid
- APCD?

- Ages 18-64; public insurance
- Ages ≥65; Medicare coverage (FFS and MA)

- All Payer Claim Data

- Medicare Fee-for-service (FFS)
- Medicare Advantage (MA) (limited?)

- Medicare Part D
- APDC?

- Ages 18-64; employer-based private insurance
- Current/retired uniformed service members and their families

Adherence predictors Data: ?

TIME

(historical) (current)
Wrap up

- Public health surveillance can greatly benefit from the use of administrative claims data
- Medication adherence measure is a critical measure for DHDSP
  - Informs decisions regarding targeting of resources and interventions

Despite these potential obstacles

- Complexity
- Data access
- Generalizability

There are:

- Available methodologies
- Opportunities for:
  - Simplification
  - Utilization of data assets that CDC often lacks (e.g. APCD)
  - Data “triangulation”

- Reach out to your CDC Project Officer and Evaluation Liaison if you need additional assistance
Using State Medicaid Data to Measure Medication Adherence to Inform State Actions to Control HBP: An Example from NY

Payer Systems, Payer Data and HTN Control
CDC 1305 Grantee Meeting 9.11.14

Rachael Ruberto, MPH, CPH
Bureau of Chronic Disease Evaluation & Research
New York State Department of Health
Outline

• Overview of Medication Adherence
  – Definition and Public Health Problem

• Project Context

• Project Goal

• Key Components of the Project
  – Partners, Measure Development, Programming
    Measures, Producing Rates/Metrics

• Limitations/Challenges

• Key Themes

• Where We Are

• Next Steps
Medication Adherence

• Patient’s conformance with the provider’s recommendation with respect to timing, dosage and frequency of medication-taking during the prescribed length of time (CDC, 2013)

• Medication adherence has been called “the next frontier” in clinical quality improvement (Ho et al, 2009)
What is the Problem?

Non-adherence is prevalent

Associated with adverse outcomes

Higher costs of care

↑ aging population with chronic disease
Gap between Written Rx and Actual Use

For every 100 prescriptions written, 50–70 go to a pharmacy, 48–66 come out of the pharmacy, 25–30 are taken properly, 15–20 are refilled as prescribed.
Context

Improving Rx and adherence to appropriate medications for the ABCs is a key aim of Million Hearts.

FQHC clinicians identified pharmacy data as a key gap in conducting local QI projects to improve HBP control.

Aligns with CDC Performance Measures for Domains 3 & 4.
**What is our Goal?**

**Goal:** Integrate information on medication adherence from Medicaid and other payers into initiatives to improve high blood pressure control among New Yorkers.

| Conduct public health surveillance on medication adherence for hypertension | Establish a data source for ongoing performance measurement and reporting to CDC | Support local evaluation of clinical quality improvement initiatives |
Key Components of the Project

- **Project Partners**
- **Measure Development**
- **Producing Rates/Metrics**
- **Programming Measures**
Component 1: Critical Partners

- Funder
- Measurement steward
- EHR experts
- Clinical support
- Care providers
- Clinical experts
- Subject matter experts
- Programmers
- Data owners
- Subject matter experts

ASTHO

CDC

NYSDOH Division of Chronic Disease Prevention

Convener

Office of Quality and Patient Safety

FQHCs

IPRO (QIO)
Component 2: Measure Development

Conceptual agreement

Clinical agreement

Identify and adapt technical definitions of metrics
Diagram of Potential Measures of Adherence for Patients Prescribed Medications

- Treated patients
  - Never fill the Rx
    - Primary non-adherent
  - Fill Rx once
    - When 1 or more refill is prescribed
      - Early stop
    - When no refill is prescribed
      - Maybe adherent
  - Fill Rx 2+ times
    - MPR
    - PDC
Measure Development - Specifications

What we started with....

Available PQA specifications for measure of primary-non adherence to chronic disease medications (based on e-prescribing data)

...where we ended up

Modified specifications for (any) fill rate measure: percentage of Medicaid patients prescribed an AHM that had a claim for the Rx drug during measurement period
Component 3: Programming Measures

- Programming measures into SAS to run on Medicaid data
- Determining appropriate NDC drug lists to include*
- Modifying specifications as programming issues occur
Programming Measures: HTN Medications

Start with most comprehensive drug list available

Clinical review by pharmacy team

Ensure alignment with CG

Clinical review by Health Center MDs

Table 2. Joint National Committee On Prevention, Detection, Evaluation, And Treatment Of High Blood Pressure (JNC 7).

<table>
<thead>
<tr>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt; 120/80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120-139/80-89</td>
</tr>
<tr>
<td>Hypertension</td>
<td>≥ 140/90</td>
</tr>
<tr>
<td>Stage 1</td>
<td>140-159/90-99</td>
</tr>
<tr>
<td>Stage 2</td>
<td>≥ 160/100</td>
</tr>
</tbody>
</table>

CDC-L-2014
MPM-C-2014
PBH-B-2014
Component 4: Development of Rates/Metrics

Determining types of adherence rates to calculate (statewide, practice site)

Generate lists of Medicaid recipients who are numerator/denominator compliant

Link practice and provider NPIs to Medicaid data to create adherence rates
Development of Rates/Metrics

Practice Site Locations:
- FQHCs supply crosswalk of provider and practice NPIs
- Attribute patients to practice based on NPI associated with most recent face-to-face medical visit in claims data

Statewide:
- Key for surveillance of medication adherence and monitoring 1305 performance measures on regular basis
- Expand to county and regional (DSRIP) level rates

Provider Level:
- Did not generate based on complexity of attributing patients to individual providers within health centers
Limitations/Challenges

- Existing standards are not “one size fits all”
- New terminology
- Secondary claims data analysis
- Population covered
- Data structure
- Timeliness
- Complexity
## Key Themes From NY Experience Working With Payer Data

<table>
<thead>
<tr>
<th></th>
<th>What Changed</th>
<th>What Didn’t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key Partners</strong></td>
<td>New partners with subject matter expertise, new people from existing partnerships</td>
<td>DOH plays convening role to engage the right partners around the table</td>
</tr>
<tr>
<td><strong>Measures</strong></td>
<td>New pharmacy metrics, terminology and technical specifications</td>
<td>Process of identifying measures, achieving consensus and modifying specs as necessary</td>
</tr>
<tr>
<td><strong>Datasets/data structure</strong></td>
<td>New data (Medicaid/clinic) and structural considerations for programming/linkage</td>
<td>Programming measures to fit large, complex health data sets; identifying linkage variables</td>
</tr>
<tr>
<td><strong>Measurement process</strong></td>
<td>New clarification/ decision points around who is included and which meds to consider</td>
<td>Still concerned with finding who is in the numerator and denominator to calculate rates</td>
</tr>
</tbody>
</table>
Project Status: Where We Are

• Finalized NDC drug lists and specifications
• Programmed PDC 2012 Medicaid data for Statewide and practice location rates (IPRO)
  – Fill rate measure programming initiated
• HCNNY/ Health Center clinicians reviewing and grouping Rx data to support generating lists of patient adherence
• Expected by project deadline (9/30/14):
  – Reports and lists of medication adherence statewide and for each of the 3 participating Health Centers
    • # and % of HTN patients meeting PDC adherence threshold (80%)
    • # and % with HTN with a claim for an AHM (and without)
  – Final SAS code for continued programming of adherence measures in future years
  – Standardized medication groupings for HCNNY Health Centers
Working with Payer Data: Next Steps

- Sustainability: Shared BCDER/OQPS Research Scientist starting Sept 2014
- Expand use of medication adherence data for program planning and establishing and tracking performance standards
- Expand medication adherence analyses to additional payer data sources, NYS All Payer Database (NY APD)
- Explore the use of alternative sources (non-payer) to generate medication adherence rates, RHIOs (e-pharmacy + claims)
Acknowledgements

• BCDER:
  – Ian Brissette
• BCCDP:
  – Tiana Wyrick
  – Pat Waniewski
• Office of Quality and Patient Safety:
  – Lindsay Cogan
• IPRO
  – Paul Henfield
  – Mary Dramatinos
  – Jeanne Alicandro
  – Darren Triller
  – Anne Myrcka
  – Susan Wymer
• ASTHO
• HCNNY
  – Meg Meador
  – Sandy Carfachio
• FQHCs
  – Whitney Young
  – HRHC
  – Finger Lakes
Questions??

Rachael Ruberto
Bureau of Chronic Disease Evaluation and Research
Division of Chronic Disease Prevention
New York State Department of Health

Contact:
ra:chael.ruberto@health.ny.gov