Interactions Between Disability Cash Benefits and Public Health Insurance: Novel Insights from a Path-Breaking Database of Linked Administrative Records

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September 10, 2014
Key program eligibility rules affecting interactions

• Cash benefit programs (*DI and SSI*)
  – DI is social insurance based on earnings history
  – SSI is means-tested welfare program
  – Identical rules determining *categorical eligibility* as disabled
  – Five-month waiting period for DI benefits to begin
  – DI benefits are countable income in SSI

• DI beneficiaries automatically entitled to *Medicare* after 24 months
  – End-stage renal disease and ALS get Medicare sooner

• SSI recipients usually qualify for *Medicaid* without a waiting period
  – Must apply in some states
  – More restrictive Medicaid eligibility in some states

• Some may qualify for Medicaid or Medicare for reasons *other* than disability
Four main topics

1. Longitudinal patterns of transitions between DI and SSI benefit eligibility
2. Longitudinal patterns of Medicaid and Medicare coverage as a function of SSI/DI eligibility
3. Implementation factors affecting Medicaid coverage
   • Length of disability determination process
   • State variation in Medicaid enrollment practices
4. Combined DI, SSI, Medicare, and Medicaid expenditure flows of adult disability awardees
   • Observed expenditures over seven-year time horizon
   • Estimated cumulative expenditures over working-age portion of adult life cycle
Need for matched longitudinal administrative records covering all four programs

Four-way matched data set fills a gap

– Prior work shows feasibility and gap
  • Pioneering two-program data match projects
  • No previous work on four-way longitudinal interactions

– Month-to-month longitudinal interactions are very important

– No suitable survey data set
SSA data sets

- Disability Analysis File (DAF) compiles data from multiple SSA record systems
- Monthly data on DI and SSI applications, awards, benefit eligibility and actual payment status, monthly benefits, demographic and diagnostic characteristics, and more
- Complete benefit history to death or date of record extraction
- Limited use of restricted-use Detailed Earnings Records (DER)
Benefit eligibility

- **Two types of benefit variables**
  - *Benefit eligibility*: eligible to receive benefits during given month by law
  - *Actual payment*: receives check or electronic payment from SSA during given month

- **Not just an esoteric distinction**
  - Disability determination process takes time ➔ retroactive receipt of benefits
  - Discrepancy at the beginning of benefit eligibility spell
  - May be well over a year
  - First month of benefit eligibility always precedes first month of benefit payment

- **Study methodology**
  - Define cohort of awardees based on benefit eligibility
  - Actual payment is considered as an important process variable
Creation and content of cohort of CY2000 new awardee sample

Sequential Creation of Study Sample

Disability Analysis File (1996-2008)
N=20 million
- Months of DI eligibility
- DI monthly payment amt.
- Primary diagnosis
- Demographics

10% sample
N=2 million
- Months of SSI eligibility
- SSI monthly payment amt.
- Primary diagnosis
- Demographics

First disability benefit award in 2000 at age 18 - 64
N=68,798

Matched to: Medicare Beneficiary Annual Summary Files 2000 - 2006
- Mos. of Medicare entitlement
- Aggregate claims payments (annual)
- Months of managed care enrollment
- Mos. of Part D drug coverage
- Mos. of Medicaid “buyin”

Matched to: Medicaid Analytic Extract (MAX) Person Summary Files 2000 - 2006
- Mos. of Medicaid eligibility
- Aggregate claims payments (annual)
- Aggregate prepaid plan payments (annual)
Longitudinal Patterns of Participation in the Social Security Disability Insurance and Supplemental Security Income Programs for People with Disabilities

by

Kalman Rupp and Gerald F. Riley

http://www.ssa.gov/policy/docs/ssb/v71n2/v71n2p25.html
Analysis design

• The analytic focus here is on interactions as envisioned by legislative design
  – Therefore we use data on program eligibility—not actual payments
• Cohort of first-ever disability benefit awardees—ages 18–64 in 2000
• Track periods of eligibility for DI and SSI benefits over time
• Categorize periods of eligibility over time into common longitudinal patterns
• Follows up with awardees for 60 months
  – Subsequent study extends follow-up to 72 months ➔ patterns are fairly robust
Characteristics of disability program entrants in 2000 (N = 68,798)

<table>
<thead>
<tr>
<th>Disability benefit eligibility through 2006</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DI only</td>
<td>60.3%</td>
</tr>
<tr>
<td>SSI only</td>
<td>15.6%</td>
</tr>
<tr>
<td>DI and SSI</td>
<td>24.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age at award</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18–30</td>
<td>9.6%</td>
</tr>
<tr>
<td>31–45</td>
<td>27.4%</td>
</tr>
<tr>
<td>46–64</td>
<td>63.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Most frequent primary diagnoses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal</td>
<td>25.5 %</td>
</tr>
<tr>
<td>Mental</td>
<td>22.6 %</td>
</tr>
<tr>
<td>Circulatory</td>
<td>12.2 %</td>
</tr>
<tr>
<td>Neoplasms</td>
<td>9.2%</td>
</tr>
</tbody>
</table>
Age distribution among subgroups representing first disability program of entry, 2000
Year 2000 First Disability Cohort Status over Time

- Reached age 65
- Died before age 65
- Alive, under 65 and not in benefit status
- Eligible for disability benefits

Month (month 1 = month of entry)
Basic patterns of SSI-DI longitudinal interactions: cross-sectional vs. longitudinal perspectives

• DI-only and SSI-only
  – Cross-section
    • *Does not receive benefit* from other program during *given month*
  – Longitudinally
    • “*Never receives benefit*” from other program
    • “Never” means time from first award to death or reaching age 65

• Both DI and SSI
  – Cross-section
    • Receives benefit from both programs during *given month*
  – Longitudinally
    • Receives benefit from both programs *at least once* from first award to death or reaching age 65
Distinct longitudinal patterns of “receiving both DI and SSI benefits”

• Three basic patterns
  1. **SSI only** during five-month DI waiting period ➔
     *DI-only afterwards*
  2. **SSI only** initially ➔
     *Both DI and SSI afterwards*
  3. **DI-only** initially ➔
     *Both DI and SSI afterwards*

• Small residual group, all include SSI and DI involvement

• Definition of patterns is influenced by right-censoring at month 60 (or 71)
  – But dynamics affects classification primarily at front end
Distribution of awardees by longitudinal pattern of benefit eligibility

DI-only entrants, 61

SSI-only entrants, 16

Both SSI and DI, 24

SSI-only entrants

SSI/ DI serial entrants

SSI-only to joint SSI/DI

DI-only to joint DI/SSI

Any other SSI/DI pattern
Distribution of all awardees compared to
(1) awardees with a musculoskeletal primary impairment and
(2) awardees with a mental primary impairment other than intellectual disability

- Any other SSI/DI pattern
- DI-only to joint DI/SSI
- SSI-only to joint SSI/DI
- SSI/DI serial entrants
- SSI-only entrants
- DI-only entrants
Distribution by benefit eligibility status five years after award: Awardees with first entry to DI versus SSI

Status 60 months after award:
- DI: 68.7%
- SSI: 29.3%
- Both DI and SSI: 0.0%
- Off and alive: 2.8%
- Died: 9.8%
- Reached age 65: 0.0%
Longitudinal Patterns of Medicaid and Medicare Coverage
Among Disability Cash Benefit Awardees

by

Kalman Rupp and Gerald F. Riley

Research questions

• To what extent do disability beneficiaries enroll in Medicaid, and how does that vary with the pattern of SSI and DI status?

• How is the timing of Medicaid/Medicare entry related to SSI/DI entry?

• What is the relationship between loss of SSI and/or DI benefits and loss of Medicaid/Medicare?

• Note: Medicaid eligibility refers to full Medicaid benefits
Medicare files

• Matched SSA records to Enrollment Database (EDB) using SSN, sex, and date of birth

• Beneficiary Annual Summary Files 2000–2006
  – One record per beneficiary entitled in that year
  – Medicare entitlement data
  – Managed care enrollment
  – Aggregate cost and utilization data in fee-for-service, by type of service

• Part D denominator file 2006
  – Part D enrollment and low income subsidy (LIS) eligibility
Medicaid files

• Matched SSA records to MAX Medicaid Personal Summary Files using SSN, sex, and date of birth

• Annual Personal Summary files 2000–2006
  – One record per eligible person per state in year
  – Medicaid eligibility information
  – Aggregate cost and utilization data in fee-for-service, by type of service
  – Prepaid costs (managed care, behavioral health, etc.)
Medicaid coverage by longitudinal pattern of disability program entry: survivors ages 18–64 during given month
Medicaid and/or Medicare coverage by longitudinal pattern of disability program entry pattern: survivors ages 18–64 during given month

Percent with Medicaid and/or Medicare coverage

Month (first month of disability award = month 1)
Percentage of survivors younger than age 65 with full Medicaid coverage among those alive at selected time points, by SSI payment eligibility status during given month: SSI-only awardees
Caveats

• Primarily descriptive
• No information on other sources of health insurance
• Modeling of incentive effects on individual behavior is outside of scope
  – Study was designed to provide accurate longitudinal information ➔ precondition of credible behavioral modeling people may do in the future
• Medicaid expansion under ACA may change some patterns
How Medicaid coverage is affected by the processing of disability applications and state variations in Medicaid eligibility policy

Effects of implementation factors

There are two distinct questions:

1. How does the duration of the DI/SSI determination process affect Medicaid entry?

2. How does variation in state Medicaid enrollment rules for SSI recipients affect Medicaid entry?
Time elapsed between first month of cash benefit eligibility and first payment, all CY 2000 awardees

- Because the disability determination process is time-consuming, *first payment is invariably retroactive*
- Average delay is 10 months
  - Substantial variation
- Before final disability determination, cash benefit eligibility status is uncertain
  - Many are initially denied
  - May have multiple rejections before final positive award decision

<table>
<thead>
<tr>
<th></th>
<th>Average number of months elapsed between the first month of benefit eligibility and the first month of payments received</th>
<th>Standard deviation in months</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.2 months</td>
<td>10.6 months</td>
<td>6 months</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distribution by time elapsed</th>
<th>First payment received within 1 year of the first month of benefit eligibility</th>
<th>67.1 percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First payment received 1–2 years after the first month of benefit eligibility</td>
<td>22.3 percent</td>
</tr>
<tr>
<td></td>
<td>First payment received more than 2 years after the first month of benefit eligibility</td>
<td>10.7 percent</td>
</tr>
</tbody>
</table>
Cumulative distribution of duration of time between first month of benefit eligibility and first month of actual payment, all CY2000 disability awardees

- Neoplasms
- Circulatory
- Musculoskeletal

Months elapsed since first time of benefit eligibility:
- 5 or less
- 11 or less
- 17 or less
- 23 or less
- 29 or less
- 35 or less
- 41 or less
- 47 or less
- 53 or less
- 59 or less

Cumulative percent paid:
How does the timing of first SSI payment affect the odds of Medicaid coverage?

<table>
<thead>
<tr>
<th>Medicaid coverage &quot;Y&quot; months after first month of SSI eligibility</th>
<th>First SSI payment during month &quot;X&quot; (month 1 = first month of SSI eligibility)</th>
<th>Odds ratio (regression-adjusted)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1–6</td>
<td>7–12</td>
</tr>
<tr>
<td>Month 8</td>
<td>&lt;reference&gt;</td>
<td>1</td>
</tr>
<tr>
<td>Month 24</td>
<td>&lt;reference&gt;</td>
<td>1</td>
</tr>
<tr>
<td>Month 36</td>
<td>&lt;reference&gt;</td>
<td>0.9</td>
</tr>
</tbody>
</table>

**Key:**
- First SSI payment on or before month "Y"
- No SSI payment as of month “Y”
State implementation and access to Medicaid (SSI)

Three state implementation policy regimes of increasing restrictiveness

- **Auto-enrollment states** (counterfactual policy regime)
  - SSI award *automatically* results in Medicaid coverage
  - Most states
- **Criteria states** (alternative policy regime #1)
  - *Separate Medicaid application* is required
- **209b states** (alternative policy regime #2)
  - *Separate application combined with more restrictive income eligibility criteria*

Hypotheses

- Requiring a separate application reduces Medicaid coverage
- Adding more restrictive income eligibility criteria results in further reduction in Medicaid coverage
Trends in Medicaid coverage among SSI-only beneficiaries by state policy regime, ages 18-64 and alive during given month

Month 1

Month 72

Percent Medicaid

Auto-enrollment
Separate application ("Criteria" states)
More restrictive Medicaid ("209b" states)

Month (month 1 = first month of SSI payment eligibility)
Longitudinal Expenditures Under the DI, SSI, Medicare, and Medicaid Programs for a Cohort of Disabled Working-Age Adults
Study purpose

• Estimate cumulative expenditures for a cohort of disabled beneficiaries
  – From first disability award to death or age 65
  – Combine cash benefit and health insurance programs
  – Estimate expenditures for remaining years

• Breakdowns by age at program entry and primary diagnosis

• Better understand longitudinal expenditure patterns

• Framework for estimating potential savings from preventing or delaying entry to disability rolls, or from programs to encourage re-entry to the workforce

• Annual expenditures measured at the individual beneficiary level
  – SSI expenditures include federal expenditures only because state SSI expenditures are incomplete in our data

• Did not include expenditures incurred at age 65 or older

• Did not include Medicaid or Medicare expenditures prior to disability program entry
  – Six months before first disability award, 9% of sample had Medicaid and 1% had Medicare

• Inflation-adjusted to 2006
Expenditures per month (in 2006 dollars) among survivors under age 65
Expenditures per month (in 2006 dollars) among survivors under age 65
Estimating expenditures beyond the observation period

- Assign cohort members to annual disability states (DI, SSI, both, neither) in 2008 and later years using Markov process
  - Transition probabilities based on 2004–2007 data

- Separate model to assign members to absorbing state of death

- DI, SSI, Medicare, and Medicaid expenditures for a given year were estimated conditional on assigned disability state
  - Expenditure estimates also based on DI/SSI payment history, demographics, primary diagnosis, death

- Summed actual and estimated expenditures across years to get cumulative totals for each cohort member
Expenditure estimation (cont.)

• Inflation-adjusted to 2012 constant dollars

• Assumed Medicare and Medicaid increase at inflation + 2%

• Discounted estimates to reflect present value at time of disability benefit award
Cumulative expenditures per beneficiary in discounted 2012 dollars: 2000 cohort of new disability benefit awardees

<table>
<thead>
<tr>
<th>Age at first award</th>
<th>Expend.</th>
<th>DI</th>
<th>SSI</th>
<th>Medicare</th>
<th>Medicaid</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>$292,401</td>
<td>47%</td>
<td>5%</td>
<td>29%</td>
<td>20%</td>
</tr>
<tr>
<td>18–30</td>
<td>$582,629</td>
<td>27%</td>
<td>9%</td>
<td>29%</td>
<td>36%</td>
</tr>
<tr>
<td>31–40</td>
<td>$472,764</td>
<td>45%</td>
<td>5%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>41–50</td>
<td>$333,908</td>
<td>51%</td>
<td>4%</td>
<td>31%</td>
<td>15%</td>
</tr>
<tr>
<td>51–60</td>
<td>$175,134</td>
<td>57%</td>
<td>3%</td>
<td>28%</td>
<td>12%</td>
</tr>
<tr>
<td>61+</td>
<td>$52,560</td>
<td>68%</td>
<td>3%</td>
<td>14%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Cumulative expenditures per beneficiary in discounted 2012 dollars: 2000 cohort of new disability benefit awardees (cont.)

<table>
<thead>
<tr>
<th>Primary dx</th>
<th>Expend.</th>
<th>DI</th>
<th>SSI</th>
<th>Medicare</th>
<th>Medicaid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genitourinary</td>
<td>$620,807</td>
<td>17%</td>
<td>1%</td>
<td>71%</td>
<td>11%</td>
</tr>
<tr>
<td>Intellectual dis.</td>
<td>$472,913</td>
<td>21%</td>
<td>15%</td>
<td>17%</td>
<td>47%</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>$388,324</td>
<td>43%</td>
<td>7%</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td>Injuries</td>
<td>$330,342</td>
<td>47%</td>
<td>4%</td>
<td>25%</td>
<td>24%</td>
</tr>
<tr>
<td>Nervous system</td>
<td>$323,270</td>
<td>51%</td>
<td>4%</td>
<td>28%</td>
<td>18%</td>
</tr>
<tr>
<td>Endocrine</td>
<td>$317,041</td>
<td>39%</td>
<td>4%</td>
<td>41%</td>
<td>17%</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>$253,562</td>
<td>64%</td>
<td>3%</td>
<td>25%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Aggregate cumulative expenditures in discounted 2012 dollars: 2000 cohort of new disability benefit awardees

<table>
<thead>
<tr>
<th>Age at first award</th>
<th>Percent of cohort</th>
<th>Aggregate expenditures (billions)</th>
<th>Percent of expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>100%</td>
<td>$201.2</td>
<td>100%</td>
</tr>
<tr>
<td>18–30</td>
<td>10%</td>
<td>$38.6</td>
<td>19%</td>
</tr>
<tr>
<td>31–40</td>
<td>15%</td>
<td>$49.9</td>
<td>25%</td>
</tr>
<tr>
<td>41–50</td>
<td>27%</td>
<td>$61.4</td>
<td>31%</td>
</tr>
<tr>
<td>51–60</td>
<td>40%</td>
<td>$48.2</td>
<td>24%</td>
</tr>
<tr>
<td>61+</td>
<td>8%</td>
<td>$3.0</td>
<td>2%</td>
</tr>
</tbody>
</table>
Aggregate cumulative expenditures in discounted 2012 dollars: 2000 cohort of new disability benefit awardees (cont.)

<table>
<thead>
<tr>
<th>Primary diagnosis</th>
<th>Percent of cohort</th>
<th>Aggregate expenditures (billions)</th>
<th>Percent of expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental disorders</td>
<td>23%</td>
<td>$60.3</td>
<td>30%</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>26%</td>
<td>$44.4</td>
<td>22%</td>
</tr>
<tr>
<td>Circulatory</td>
<td>12%</td>
<td>$19.4</td>
<td>10%</td>
</tr>
<tr>
<td>Nervous system</td>
<td>8%</td>
<td>$17.5</td>
<td>9%</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>2%</td>
<td>$9.6</td>
<td>5%</td>
</tr>
<tr>
<td>Injuries</td>
<td>4%</td>
<td>$8.5</td>
<td>4%</td>
</tr>
<tr>
<td>Intellectual dis.</td>
<td>3%</td>
<td>$8.3</td>
<td>4%</td>
</tr>
</tbody>
</table>
Estimates for simulated 2012 cohort of new disability benefit awardees

- Recent cohorts may differ from 2000 cohort
- Updated results for 2000 cohort using published data for 2012
  - Reflect change in inflation-adjusted value of benefits
  - Change in case mix of new awardees
    - Older awardees in 2012
  - Account for availability of Part D coverage throughout period of Medicare entitlement
- No magic wand!!!
  - No way around the fact that the pattern of health expenditures is expected to change in the future, partly in ways that are totally unpredictable
Comparison of 2000 cohort with 2012 simulated cohort: Cumulative expenditures per beneficiary in discounted 2012 dollars

<table>
<thead>
<tr>
<th>Program</th>
<th>2000 cohort</th>
<th>Simulated 2012 cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dollars</td>
<td>Percent</td>
</tr>
<tr>
<td>Total</td>
<td>$292,401</td>
<td>100%</td>
</tr>
<tr>
<td>DI</td>
<td>$136,388</td>
<td>47%</td>
</tr>
<tr>
<td>SSI</td>
<td>$13,982</td>
<td>5%</td>
</tr>
<tr>
<td>Medicare</td>
<td>$85,058</td>
<td>29%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>$56,974</td>
<td>20%</td>
</tr>
</tbody>
</table>
Discussion

- Cumulative expenditure patterns illustrate long-term financial implications of new disability awards

- Cumulative expenditures useful for policy evaluations affecting younger beneficiaries
  - Youth Transition Demonstration
  - Redetermination of SSI eligibility at age 18
  - Caveat: Heterogeneity needs to be considered. This is especially important for demonstrations with highly selective applicant and enrollment pool

- Mental disorders and diseases of musculoskeletal system are drivers of aggregate costs
  - Different program participation rates, expenditure patterns

- SSI is low-expenditure program, but has big impact on total expenditures as a pathway to Medicaid

- Medicaid expansion under the ACA may impact public expenditures related to disability programs
Limitations

• Analytic approach assumes beneficiary experiences in 2004–2007 are representative of later transitions and expenditure patterns
  – Conducted sensitivity analyses under various assumptions regarding transition probabilities, death rates, health care cost inflation, discount rates

• Medicare managed care and prescription drug expenditures based on average payment data

• Not all Medicaid (and Medicare) expenditures are necessarily attributable to eligibility for SSI or to disability

• Do not include expenditures related to other sources of public and private support for the disabled adult population
Caution: “Data don’t talk for themselves!”

Concerns about possible cognitive distortions and implicit value judgments

• Cognitive distortions
  – $1,800 per month versus $290,000 cumulative amount
  – Stream of $290,000 in benefits is too generous?
    • Compared to other cash benefit programs?
    • Cumulative income stream of nondisabled with comparable age, sex, and education?

• Value judgments
  – Need to cut expenditures?
    • Benefit reduction versus tax increase
  – Tighten disability screen?
    • Effects on truly nondisabled versus truly disabled
Potential research directions

Lot of untapped potential

– Childhood SSI awardees
– Relationship between health care utilization, caseload dynamics, and earnings
– Expand focus to applicants
– Affordable Care Act (ACA) related issues
– Dual eligible experience
– Programmatic issues
– Behavioral effects
– .............
References


• Riley GF, and Rupp K. Cumulative expenditures under the DI, SSI, Medicare and Medicaid programs for a cohort of disabled working age adults. Health Services Research First published online on DOI: 10.1111/1475-6773.12219.
Questions?