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School of
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Sinai

Linking NACC and Medicare

2018 Fall ADC Meeting
Atlanta, GA

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Pubmed Search Results

- NACC / UDS
 - 64 pages
- (medicare[Title/Abstract]) AND (dementia[Title/Abstract] OR alzheimer[Title/Abstract])
 - 522
- + (expenditure[Title/Abstract] OR cost[Title/Abstract] OR spending[Title/Abstract])
 - 99
- Medicare + (NACC / UDS)
 - 1



Medicare

- Beneficiaries of federal health insurance program
 - Elderly, age 65 and older (85%)
 - >98% of all US citizens aged 65 and older
 - Individuals under 65 with disabilities (15%)
 - End Stage Renal Disease
 - Amyotrophic lateral sclerosis (ALS)/ Lou Gehrig's disease



Medicare

- Part A
 - Hospital Insurance (HI)
 - Hospital, skilled nursing, home health, hospice
- Part B
 - Supplemental Medical Insurance (SMI)
 - Professional services, DME
- Part C
 - Medicare Advantage (MA), HMO, Managed Care, Medicare+Choice
 - CMS has MA data since 2000
 - Marked increase since 2006
 - ~30% of beneficiaries on MA, huge variations by state, county
- Part D
 - Prescription Drugs



Medicare Data: PUF, LDS, RIF

	Public Use File	Limited Data Set	Research Identifiable File
Files include beneficiary-level data?	No	Yes	Yes
May request customized cohorts	No	No	Yes
Data can be linked at beneficiary level to non-CMS data using a beneficiary identifier?	No	No	Yes



Medicare RIF

- **Medicare Enrollment File**

- Master Beneficiary Summary File (previously Denominator File, Beneficiary Summary File)
- 20xx enrollment file available in June of 20xx+1

- **Claims Files**

- Institutional Claims
 - Inpatient, Outpatient, Skilled Nursing Facility, Home Health Agency, Hospice
- Non-Institutional Claims
 - Carrier/Part B (Professional Services), DME

- **Part D Files**

- Events, not claims
- ~1 billion annually
- ~60% enrollment



Medicare Claims

- **Content**

- Dates of service, Payment, Diagnoses, Procedures, Source of Care
- Information needed to pay bills will be of higher quality than other information

- **Limitations**

- Care not covered not included
- Lack of service \neq lack of condition
- Record of care received \neq care needed
- Limited clinical information
- test result, time, physiology not included
- Measurement error/bias depends on condition or treatment
- Services that providers know in advance will be denied are inconsistently submitted



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Organizations Involved



DATA PRIVACY SAFEGUARD PROGRAM
(DPSP)

CHRONIC CONDITIONS DATA WAREHOUSE (CCW)

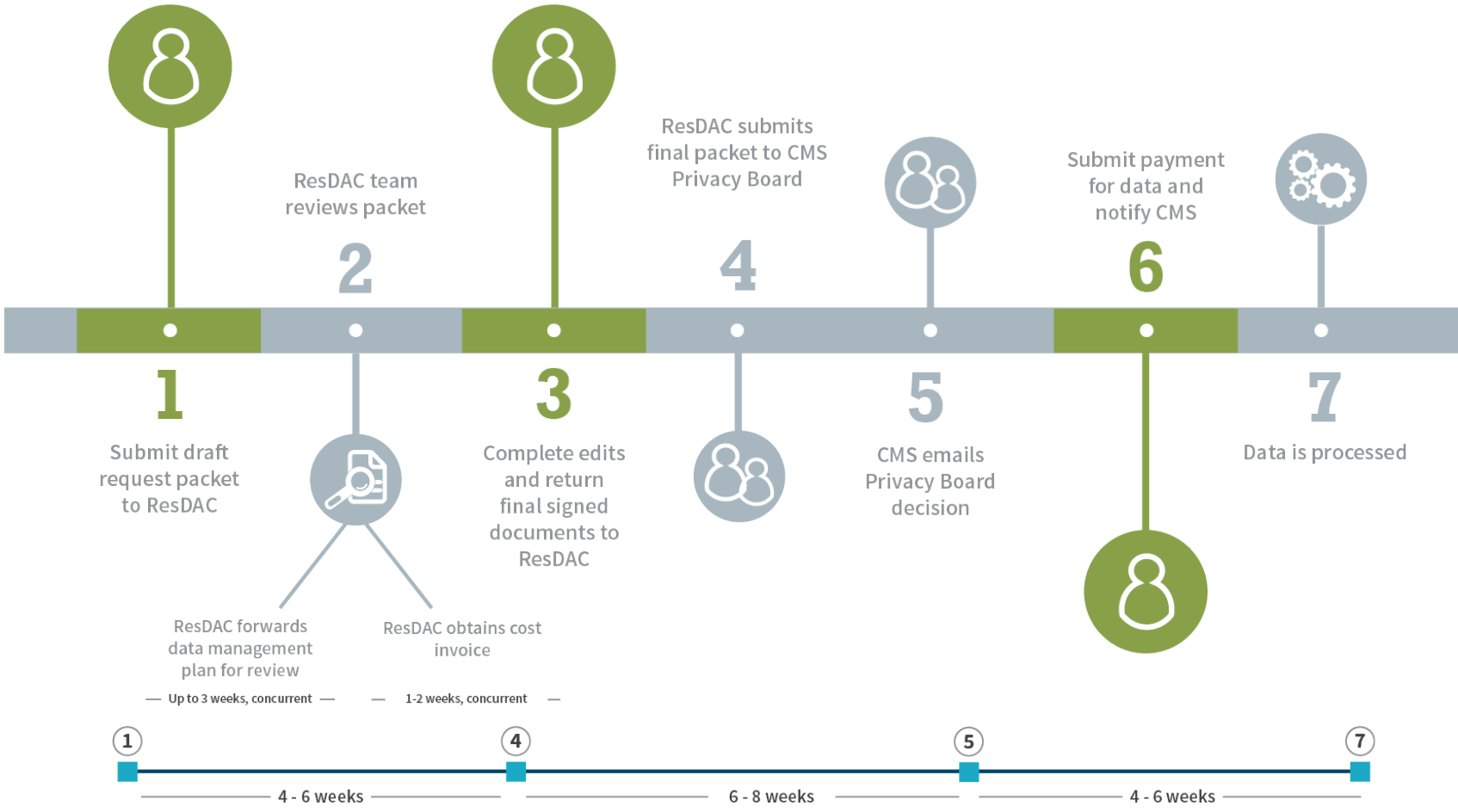


Before Submitting Data Request

- Define study cohort
- Know which files are needed
- Determine access to data
 - Virtual Research Data Center (VRDC)
 - All data files are stored in VRDC
 - Faster access to data
 - Non-CMS data cannot be uploaded to VRDC
 - Physical receipt
- Estimate the cost of the request and secure funding
- Obtain IRB approval



Data Request Process & Timeline



 = Steps to be completed by researcher



Medicare Linkage Example: WHICAP

Washington Heights/Inwood Columbia
Aging Project (WHICAP)

PI: Richard Mayeux

- 2125 in 1992, 2174 in 1999, 3rd wave
- Age 65 and older
- Women (68%)
- Spanish (37%) or English (63%)
- Seen in home at 18-24 month intervals
- Dx based on neuropsychological test battery, medical & functional interview





Medicare Linkage Example: WHICAP

- Study period
 - Begin with individuals' first WHICAP visit or beginning of Medicare data availability (January 1, 1999), whichever is later
 - End with individuals' last WHICAP visit, end of Medicare data availability (December 31, 2010 at the time of data acquisition), or death, whichever is earlier
- Participants covered by Medicare fee-for-service (FFS)
- Clinical diagnosis of dementia
- Medicare claims-identified dementia
 - Presence of any ICD-9-CM diagnosis codes for Alzheimer's Disease and Related Dementias in all available claims throughout the study period



Medicare Linkage Example: WHICAP

Clinical Diagnosis	Medicare Identification		Total
	0	1	
0	1,565	136	1,701
1	245	250	495
Total	1,810	386	2,196

Sensitivity	$\Pr(+ D)$	50.51%
Specificity	$\Pr(- \sim D)$	92.00%
Positive predictive value	$\Pr(D +)$	64.77%
Negative predictive value	$\Pr(\sim D -)$	86.46%
Correctly classified		82.65%

Medicare Linkage Example: WHICAP

- Over estimation of \$3487 if Medicare claims are used to identify dementia patients
 - Annual Medicare expenditures for a patient with dementia
 - Identified using clinical diagnosis: \$14,721
 - Identified using Medicare claims: \$18,208
- Different types of misidentification have different effect on dementia-related cost estimates
 - Compared to true negatives
 - Cost among false negatives similar
 - Average marginal costs of true positives: \$3,183
 - Average marginal costs of false positives: \$7,316



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Linking NACC and Medicare?

- Interest?
- Collection of Identifiers?
- IRB issues?



Out With the Old

MEDICARE HEALTH INSURANCE	
1-800-MEDICARE (1-800-633-4227)	
NAME OF BENEFICIARY JOHN DOE	
MEDICARE CLAIM NUMBER 000-00-0000-A	SEX MALE
IS ENTITLED TO HOSPITAL (PART A)	EFFECTIVE DATE 01-01-2007
MEDICAL (PART B)	01-01-2007
SIGN HERE → _____	

2018 In With the New

MEDICARE HEALTH INSURANCE	
Name/Nombre JOHN L SMITH	
Medicare Number/Número de Medicare 1EG4-TE5-MK72	
Entitled to/Con derecho a HOSPITAL (PART A)	Coverage starts/Cobertura empieza 03-01-2016
MEDICAL (PART B)	03-01-2016



Medicare Linkage Example: WHICAP

Linkage Summary

Match Type	Count	Percent
Match: Single Study ID to Single BID	6,711	97.22%
Match: Multiple Study IDs to Single BID	4	0.06%
No Match: Multiple Study IDs to Single BID	4	0.06%
No Match: Single Study ID to Multiple BIDs	71	1.03%
No Match: Not Enough Score	113	1.64%
Total	6,903	100%