CERCIT Workshop:
About the Data:
Texas Cancer Registry; Medicaid; Registry Linked Claims Data

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Workshop Objectives

- Overview of the TCR data
- Cancer registry linkages
  - Strategies
  - Uses
  - Linkage results of the TCR & Medicare databases
- Overview of Texas Medicaid Data
- Methods used (or to be used) in linked data that will be used in CERCIT studies
- Case Studies Using Linked Cancer Registry & Claims Data
- Limitations of the linked data
- Review of how linked data will be used in CERCIT projects 2-4

- Methods used (or to be used) in linked data that will be used in CERCIT studies

- Case Studies using linked Registry Claims Data

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Process of linking the SEER (TCR) and Medicare Two steps.

Step 1. ***If an SSN is available.***

Agreement of both files on
SSN plus first and last name or
last name, month of birth and sex
first name, month of birth and sex

Step 2. ***If an SSN is not available or does not match in Step 1***

If no match in Step 1

Agreement between both files on:
Last name, first name, month of birth and sex
Plus agreement on 7 or 8 digits of the SSN

If an SSN is not available

Agreement on two or more:
Year of birth, day of birth, middle initial,
or date of death

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TCR – Medicare

- NCI and their CMS contractor, IMS performed the linkage of TCR-Medicare data we will use
  - Used same method used with SEER Medicare
  - TCR-MC data organized in a similar manner to SEER-Medicare
  - TCR-MC data has a few variable differences

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TCR – Medicare

- **TCR-MC data organized in a similar manner to SEER- Medicare**
- **TCR-MC data has a few variable differences**

- TC Registry-assigned patient id for cancer cases, and
- Shuffled HICs for the non-cancer cohort.
- Include zip code and census tract variables of patient
- Include chemotherapy and hormone therapy variables
- Include all cancer patients even those that resided outside of TX
- Hospital provider numbers encrypted.
- Includes Hospital files with same encrypted number to link to the hospitals in MEDPAR and Outpatient files.
- The hospital files will include the hospital's zip code, but no hospital name or address information other than the zip code
- Include the zip code for physicians on the claims

Case studies: Example using SEER-Medicare Data

Risk of colorectal cancer in men on long-term androgen deprivation therapy for prostate cancer

Silke Gillessen, Arnoud Templeton, Giancarlo Marra, **Yong-Fang Kuo**, Emanuele Valtorta, Vahakn B. Shahinian

1760-1770 **JNCI Vol. 102, Issue 23 | December 1, 2010**

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Case studies: Example using TCR-Medicare Data (different method)

Ethnic Disparities in Cervical Cancer Survival Among Medicare Eligible Women in a Multiethnic Population

Ann L. Coker, PhD, Katherine S. Eggleston, MSPH,†*
Xianglin L. Du, MD, PhD,† and Lois Ramondetta, MD‡

(*Int J Gynecol Cancer* 2009;19: 13–20)

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Purpose:

To estimate cervical cancer survival by the risk factors suspected to affect it, namely demographics, comorbidities and treatment among older women

Methods

- population based survival analysis
- data sources:
    - Texas Cancer Registry linked by SSN to
    - Medicare claims files
        - Denominator files
        - Medicare provider analysis file (MEDPAR)
        - Outpatient
        - Inpatient
    - Vital Statistics
    - 2000 Census
- age 65+ at cancer diagnosis
- invasive cervical cancer
- diagnosed between 1999 and 2001

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Case Study – Coker et. al.

Limitations

- Restricted Population
  - Older only
  - US resident or documented only (SSN)
- Cannot study access to care because all have similar access
- If private insurance used, treatment may be under-estimated

Conclusions

- Lack of treatment in MC data consistent with TCR: 31% vs 30% for those 65+
- Claim that there were “ethnic differences” observed, does not appear to be statistically supported
  - Authors claim that may indicate access to care issues

Case Study – Coker et. al.

TCR	Medicare
Cancer Site	Comorbidities
Cancer Histology	Treatment
Disease Stage	Timing of Tx
Age at Cancer Dx	
Date of Dx	
Latitude at dx *	
Longitude at dx *	

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Case Study – Coker et. al.

How the data we will be using compares

- **linkage was 88% vs 94-97% in the data we will use**
- **geographic variable block level vs zip code**
- **We will have Carrier claims files for physician office visits**
- **Part D Event data (mark the July workshop on your calendar)**

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TCR linked Medicaid data

Linked registry-Medicaid data can identify indigent patients and the timing of Medicaid coverage with cancer diagnosis.

Still working out details

2 step process – provide better quality linkage than single deterministic process

TCR and TX Medicaid data both under TX DSHS

TCR will do the first step

- **Cancer registry cases to Medicaid by Name, SSN, Gender**

We could stop there and use TX Medicaid claims files but

Chose to use Medicaid Analytic Extract (MAX) files

- **TCR works with CMS contractor (who prepared our unlinked MAX files)**
- **Contractor will then create crosswalk from the TCR provided Medicaid ids to the Encrypted ids on our MAX files,**
- **Provide us the file of TCR cases with a unique id we can then link to our MAX files**

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Case study: Cancer Registry Data Compared to Medicaid Data

Linking Tumor Registry and Medicaid Claims to Evaluate Cancer Care Delivery

Deborah Schrag, M.D., M.P.H., Beth A. Virnig, Ph.D., and Joan L. Warren, Ph.D.

Health Care Financing Review/Summer 2009/Volume 30, Number 4

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Case Study – Schragg (cont.)

Objective: Evaluate how well Medicaid claims capture diagnostic and treatment information recorded by the California Cancer Registry (CCR).

- **To estimate the potential numbers of patients specific to cancer site that *could* be identified from a Medicaid-registry Linkage**
- **timing of enrollment in relationship to date of cancer diagnosis**

Data Sources

- **California Cancer Registry (CCR)**
- **California Medicaid**
- **Pre-existing CCR – Medicaid Linkage**

The actual linkage success of capturing cancer pts in Medicaid varied by tumor site (5% prostate – 34% Hepatoma)
9% Breast and 20% for CRC

When Comparing claims

Medicaid claims agreed with CCR for diagnoses:
- **73% of Breast Cancer cases**
- **68 % Colon Cancer cases**

For Surgery
- **67% Breast**

Limitations

Limitations

- Old data
- One state
- No access to plan-specific requirements for submission of itemized claims

Review of studies we will do

PROJECTS

Project 1 studies utilization of screening tests for breast, colorectal and prostate cancer, examining the predictors for and outcomes of underutilization, appropriate utilization, and overutilization of these tests.

Project 2 studies receipt and quality of cancer treatment in Texas; whether specific patients, cancer types, and areas of the state are at risk for substandard therapy; and the impact of the availability of specific cancer specialists on cancer therapy.

Project 3 assesses post-treatment surveillance testing, both underuse and overuse, with respect to guidelines, for those with breast, colon, lung and pancreatic cancer. It measures how patient, provider and system characteristics affect such care.

Project 4 measures supportive care in Texas cancer patients, compared to national guidelines. It assesses the use and outcomes of supportive processes such as emesis prevention, infection prevention, bone health, cardiac health and end of life care.

Variables will use

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Table 6.2 Variables to be used by CERCIT investigators.

Variable	Data Source	Description	Use
Patient Characteristics			
Demographic Characteristics			
Age (claims)	MCARE, MCAID, INS	Age at beginning of cohort year (2000-2012) or time of treatment	Selection/ Predictor
Gender	TCR, MCARE, MCAID, INS	Male/female Linkage Variable	Linkage, Predictor
Date of Birth	TCR, MCARE, MCAID, INS	Day, Month, Year for linkage: Month and Year released	Linkage
Social Security Number	TCR, MCARE, MCAID, INS	Not released	Linkage
Race /Ethnicity	TCR, MCARE, MCAID Part D	Calculated from Race and Ethnicity: Non-Hispanic Black, Hispanic, Non-Hispanic White, Other	Predictor
Diagnosis Age	TCR	Age at diagnosis (yrs)	Predictor

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Contextual			
Place of residence	MCARE, MCAID, INS	Zip code, county, and state at end of first quarter of year following diagnosis	Predictor
Residence/Beale Code	TCR	Urban/Rural	Predictor
Zip code of residence	TCR,MCARE, MCAID	Zip code	Link to census
County at diagnosis	TCR	Texas county	Predictor
Hospital Referral Region/ Hospital Service Area	Dartmouth Atlas	Texas-HRR: 22 Referral areas; HSA: 208 service areas for secondary and tertiary care[32]	Predictor
Home ownership	Census	% households own vs. rent[341]	Predictor
Racial concentration	Census	% white; % African American[341]	Predictor
Income	Census	Median household income of zip code[341]	Predictor
Education	Census	%<12 years of education of zip code[341]	Predictor

Health Care System Access			
Enrollment	MCARE, MCAID, INS	Enrollment in specific parts of insurance plan by month	Selection
Medicaid State Buy-in	MCARE	Yes/no enrolled in Medicaid	Selection
Primary Care Physician	MCARE, MCAID, INS	Yes/ no based on physician specialty: general practitioner, family physician, general internist, or a geriatrician[342, 343]	Predictor
Continuity of Care	MCARE, MCAID, INS	Algorithm using primary care physician as defined above and CPT codes for outpatient or inpatient Evaluation and management 99201 to 99205, 99211 to 99215 and CPT codes 99221 to 99223, 99251 to 99255, 99231 to 99233 99201 to 99205, 99211 to 99215[342,343]	Predictor
Insurance type	MCARE, MCAID, INS	Medicare/Medicaid/private	Selection
Availability of Physicians	AMA / census	By specialty (e.g., Primary care, Gastroenterologist, Oncologist, Surgeon) per 1,000 persons in beneficiary's geographic area of HRR or HSA	Predictor
Availability of Mammography facilities	FDA	Mammography facility in county[66]	Predictor
Census Tract	TCR	Census Tract	Link to census
Distance from provider/facility	TCR,MCARE, MCAID,	Calculated via zip codes	Predictor

Follow-up Characteristics			
Vital status	TCR	Alive/dead	Outcome/ Selection
Date of last contact	TCR	Month and year (date of death if vital status = dead)	Calculate observa-tion time
Date of Death	MCARE, MCAID	Month day and year	Outcome
Cause of death	TCR	ICD-10 from death certificate, Cancer/other cause	Selection
Disease Characteristics			
Date of Cancer Diagnosis	TCR	Month and year of diagnosis	Trends
Stage of Disease	TCR	SEER Summary Stage	Selection
Type of Cancer	TCR	Breast, lung, colorectal, prostate, pancreas, Non-Hodgkin's lymphoma ICD-03 Topography[344, 345]	Selection
Histologic type	TCR	ICD-03 Morphology, Behavior[344, 345]	Selection
Grade	TCR	Well, moderately, poorly/undifferentiated [344, 345]	Predictor
Tumor size	TCR	Millimeters[344-346]	Predictor
Lymph nodes examined	TCR	Number of regional lymph nodes examined [344-346]	Predictor

PSA (prostate)	TCR	Lab Value available 2004+[344-346]	Predictor/ Outcome
Estrogen Receptor (breast)	TCR	Positive/negative/unknown available 2010+[344-346]	Predictor
Comorbidity	MCARE, MCAID, INS	Charlson/Pompei/Klabunde Index (0,1,2+)[159]	Predictor
Treatment Characteristics			
Surgery primary site	TCR,	As first treatment Yes=10-98/ No=00, 99[344, 345]	Predictor
	MCARE, MCAID, INS	ICD-09 diagnosis and procedure codes, CPT/HCPCS codes[347]	
Surgery Date	MCARE, MCAID, INS	Corresponding date from claims Month Day Year[348]	
Radiation of primary site	TCR	Type of radiation as first treatment 0=None; 1=Beam radiation; 2=Radioactive implants; 3=Radioisotopes; 4=Combination 5=Radiation, NOS; 9=Unknown if radiation administered[344,345]	Predictor
	MCARE, MCAID, INS	ICD-09 diagnosis and procedure codes, CPT/HCPCS codes[347]	

Last Radiation Date	MCARE, MCAID, INS	Corresponding date from claims Month Day Year[348]	
Chemotherapy	TCR	As first treatment Yes/No[344]	Predictor
	MCARE, MCAID, INS	Yes/No ICD-09 diagnosis and procedure codes, CPT/HCPCS codes JCodes[15,163,149,347]	
Chemotherapy drug	MCARE, MCAID, INS	ICD-09 diagnosis and procedure codes, CPT/HCPCS codes JCodes[15,163,149,347]	Selection
Last chemotherapy date	MCARE, MCAID, INS	Month Day Year last chemo claim	
Anti-hormonal therapy	TCR,	As first treatment Yes/No[344]	Predictor/ Selection
	MCARE, MCARE Part D, MCAID, INS	Yes/No Based on JCodes & NDC codes; ICD9 procedure, CPT/HCPCCS for: anastrozole, letrozole, exemestane, LHRH agonists & antagonists, anti-androgens, orchiectomy[15,163,149,347]	

Physician Characteristics			
Physician	AMA, MCARE,	Medicare UPIN or provider number	Linkage
Type of specialty	AMA, MCARE, MCAID, INS	General Practitioner, Family Physician, Internist, Gynecologist, Geriatrician, Gastroenterologist, medical oncologist, radiation oncologist, surgeon, surgical oncologist, Medical oncology/ palliative care/other	Predictor
Board certification	AMA	Board certified in specialty – yes/no; Board certified in sub-specialty - yes/no	Predictor
Type of practice	AMA	Solo vs. group vs. multi-specialty group vs. other	Predictor
Location of practice	AMA	Urban vs. Rural	Predictor
Race/Ethnicity	AMA	White, Black, Hispanic, other	Predictor
Gender	AMA	Male/female	Predictor
Years since Graduation	AMA	Difference between the year of first relevant claim for each patient and the year of graduation	Predictor
Academic Affiliation	AMA	Teaching (yes/no)	Predictor
Annual Volume of Cancer Patients	MCARE	Number of unique cancer patients seen by the physician in prior year	Predictor
Age	AMA	Years	Predictor

THANK YOU!


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Comparative Effectiveness Research
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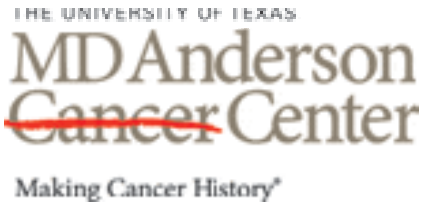
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