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NYU Grossman School of Medicine

STRATEGIES AND CHALLENGES IDENTIFYING EMERGENCY DEPARTMENTS WITHIN CENTERS FOR MEDICARE & MEDICAID SERVICES DATA WAREHOUSE

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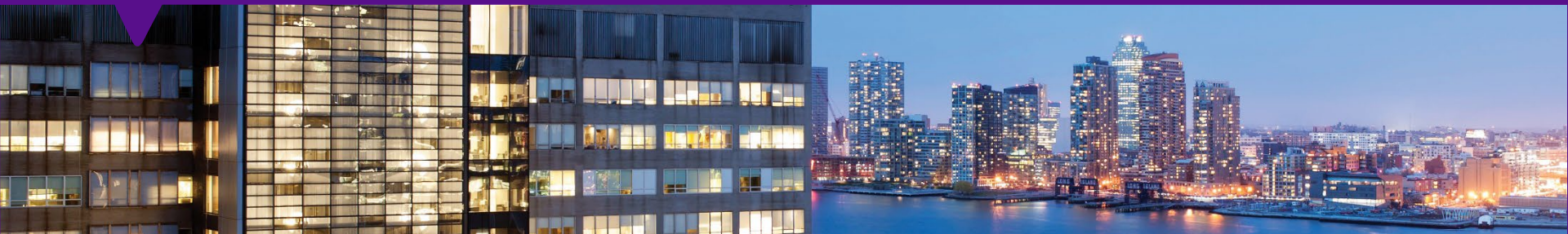

Disclosure

No conflict of interest

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Context: Parent Award

- **Primary Palliative Care for Emergency Medicine (PRIM-ER)**
  - Cluster randomized, stepped wedge trial
  - An education, training and technical support quality improvement (QI) intervention
  - 35 Emergency Departments in 18 Health Systems (healthcare organizations jointly owned or managed) across the US
  - Outcomes:
    - Emergency Department (ED) disposition to acute care
    - Healthcare utilization within 6 months
    - Survival

Aim

- Our study is using CMS Medicare claims data to identify patients who were treated at our study sites, 35 EDs around the country
- In the process of trying to identify this patient cohort, we encountered some challenges
- Specifically, we were not able to uniquely identify all of the ED sites using the CMS facility code
- We have developed two novel strategies to fully identify the EDs

Our aim here is to describe these challenges in more detail, as well as our two-step strategy, in order to help other researchers who are planning to work or are currently working with CMS data.

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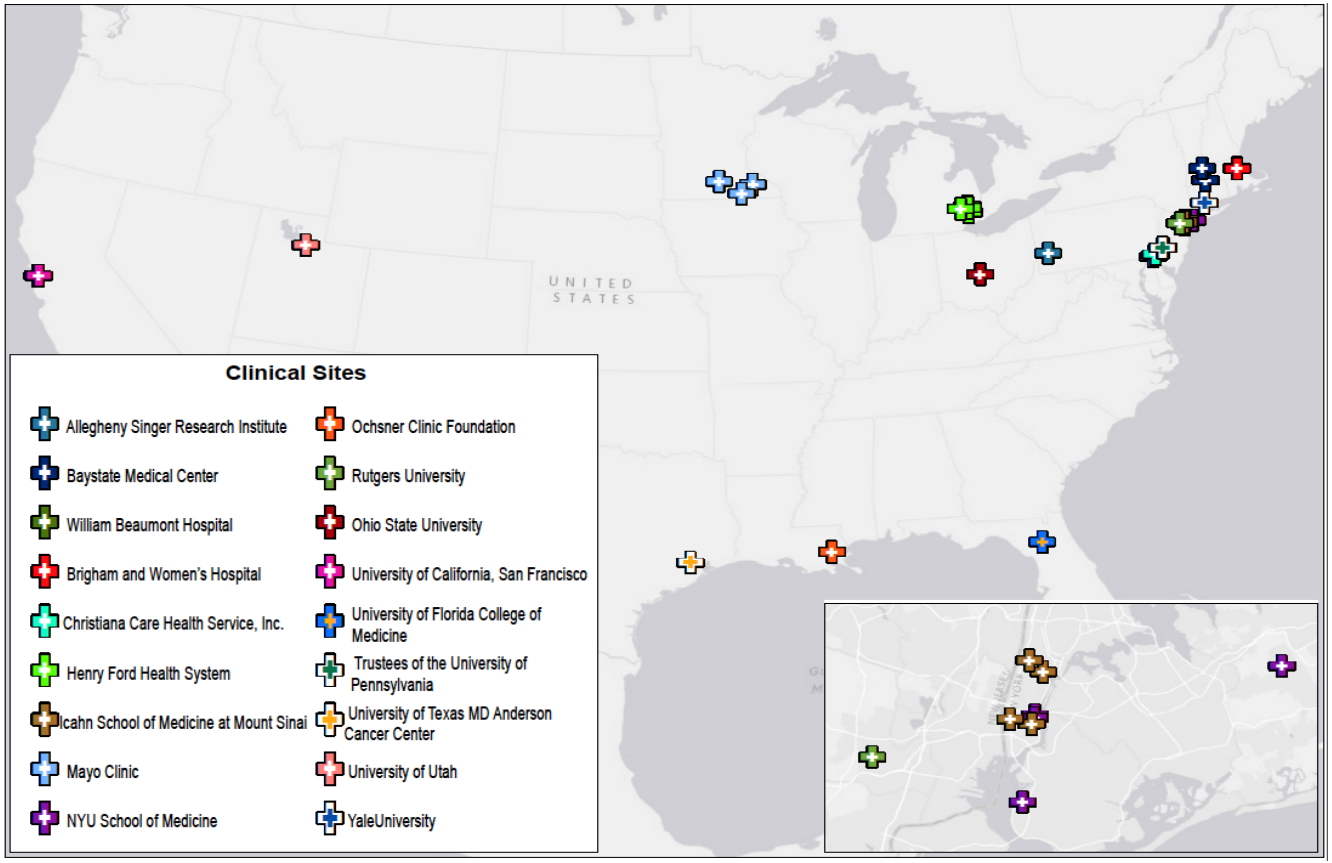
18 Health Systems



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Methods

- Centers for Medicare & Medicaid Services (CMS) Data Warehouse
- Used inpatient and outpatient facility claims
  - Revenue codes “0450”, “0451”, “0452”, “0456”, “0459”, and “0981” to identify emergency room visits
- Timeframe: January 1, 2013 to December 31, 2020
- ED disposition calculated from patient discharge status on the outpatient claims files and coded as “acute care” from all inpatient claim visits

Methods (cont.)

- We identified our study EDs using CMS's Certification Number (CCN), a 6-digit number that identifies certified Medicare facilities
- We encountered challenges identifying location of ED services when hospitals or freestanding EDs within the same health system bill in a consolidated fashion
    - Freestanding EDs provide emergency care but are structurally separate and distinct from a hospital

Challenges

1. Inability to identify distinct EDs when they share a common CCN
2. Including patient claims from other non-PRIMER EDs within same health system using just CCN
3. No Medicare claims from freestanding EDs when transferred to main hospital for inpatient stay

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Developing Strategies

In addition to the traditional method of using CCN to identify hospitals, we identified two strategies for further identifying ED patient claim data

Strategy 1: CCN-Zip Code Matching

1. Examine unique combinations of 9-digit claim service facility zip code (zip code where the service was provided)
2. Match billing zip codes to physical zip code location of ED
3. Only keep claims where billing zip code matches the first 5 digits of physical zip code

CCN-Zip Code Matching, Example #1:

ED	CCN	9-digit CMS facility zip code	5-digit zip code of physical ED	Number of patient claims
Allegheny General Hospital	390050	15212-4756	15212	22,372
Allegheny General Hospital	390050	15214-4769	15212	1
Allegheny General Hospital	390050	15501-2223	15212	2
Allegheny General Hospital	390050	15501-2223	15212	2
Allegheny General Hospital	390050	15212-4756	15212	2

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CCN-Zip Code Matching, Example #2:

ED	CCN	9-digit CMS facility zip code	5-digit zip code of physical ED	Number of patient claims
Beaumont Hospital – Royal Oak	230130	48073-6712	48073	110,446
Beaumont Hospital – Royal Oak	230130	48007-5042	48073	7
Beaumont Hospital – Royal Oak	230130	48073-0006	48073	1
Beaumont Hospital – Royal Oak	230130	48085-1117	48073	10
Beaumont Hospital – Royal Oak	230130	48230-1507	48073	1
Beaumont Hospital - Troy	230269	48085-1117	48085	92,452
Beaumont Hospital - Troy	230269	48073-6712	48085	204
Beaumont Hospital - Troy	230269	48007-5042	48085	5
Beaumont Hospital - Troy	230269	48083-1118	48085	2

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CCN-Zip Code Matching, Example #3:

ED	CCN	9-digit CMS facility zip code	5-digit zip code of physical ED	Number of patient claims
Christiana Hospital	080001	19801-1013	19718	166,865
Christiana Hospital	080001	19718-0002	19718	17,725
Christiana Hospital	080001	19709-9602	19718	2,529
Christiana Hospital	080001	19713-2055	19718	32
Christiana Hospital	080001	19713-2049	19718	11
Christiana Hospital	080001	19801-0002	19718	9
Christiana Hospital	080001	19718-0023	19718	8
Christiana Hospital	080001	19709-5838	19718	6

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CCN-Zip Code Matching, Example #3:

- By examining the zip codes, we realized the first row which didn't match the physical zip code of our study site, was actually another hospital in the same health system

ED	CCN	9-digit CMS facility zip code	5-digit zip code of physical ED	Number of patient claims
Christiana Hospital	080001	19801-1013	19718	166,865
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Christiana Hospital	080001	19713-2049	19718	11
Christiana Hospital	080001	19801-0002	19718	9
Christiana Hospital	080001	19718-0023	19718	8
Christiana Hospital	080001	19709-5838	19718	6

CCN-Zip Code Matching, Example #4:

ED	CCN	9-digit CMS facility zip code	5-digit zip code of physical ED	Number of patient claims
UF Shands	100113	32610-3003	UF Shands: 32608 UF Springhill: 32606 UF Kanapaha: 32608	59,265
UF Shands	100113	32606-5635		2,252
UF Shands	100113	32608-4611		1,753
UF Shands	100113	32607-4144		9
UF Shands	100113	32608-1532		2
UF Shands	100113	32600-0008		1
UF Shands	100113	32601-6271		1
UF Shands	100113	32608-1136		1

- 3 EDs in same health system share CCN
- 2 share the same physical zip code (32608)
- Majority of claims fall into billing zip 32610 – no match to physical EDs zip codes

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Strategy 2: Matching NPI to ED

1. Matched physician claims with ED facility claims
2. Extracted the list of physician National Provider Identifier (NPI) numbers
   - NPI is a unique 10-digit identification number issued to health care providers
   - Limited the list to providers who had at least 50 patient claims
3. Sent list to key personnel at each system to manually identify the specific ED location with which a provider was primarily associated
   - Defined as working 50% or more of their time

Matching NPI to ED, Example:

Health System	CCN	NPI	ED where FTE >= 50%
UF Shands	100113	1376864827	UF Shands Hospital
UF Shands	100113	1467468983	UF Shands Hospital
UF Shands	100113	1538454772	UF Shands Hospital
UF Shands	100113	1841421294	UF Shands Hospital
UF Shands	100113	1700078896	UF Shands Hospital
UF Shands	100113	1487739512	UF Springhill
UF Shands	100113	1720347941	UF Springhill
UF Shands	100113	1922364553	UF Springhill
UF Shands	100113	1881915692	UF Kanapaha
UF Shands	100113	1831282979	UF Kanapaha

Freestanding ED issue

Majority of patients who go to the freestanding ED and need to be admitted for inpatient care are almost always transferred to the main hospital:

1) No Medicare claims record of the transfer
    - Not able to track which inpatient stays at the main hospital originated at the freestanding ED
2) No Medicare claim record for the initial visit
    - Only one bill generated from main hospital inpatient stay

Freestanding ED issue (cont.)

Impact on our main outcome analysis:

- ED disposition reliant on having a claim from the correct ED
    - No record of patients who visit a freestanding ED first
    - Cannot tease out how many of the dispositions to acute care from the main hospitals should actually be attributed to the freestanding EDs
    - Underrepresentation of visits at the freestanding EDs
    - Inflation of inpatient visits at the main hospital
    - Ultimately, we did not include these two health systems in our analysis

Limitations

- Our second strategy (Matching NPI to ED) relies on having a working relationship with key personnel at the health system
- We ultimately were not able to use health systems with freestanding EDs given our main outcome relied on knowing where the origin of the visit took place

Conclusions

- Our two strategies increased confidence that our patient claims were correctly associated with one of our EDs
- Sharing these strategies would be beneficial to other researchers working with CMS data and encounter similar ED identification issues

Thank You Team!

Site Principal Investigators & Champions	
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Thank You Team!

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THANK YOU

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