Readmissions in the BPCI Bundle for Hip and Femur Fractures

December 8th, International Geriatric Fracture Society

Hunter Rose
College of Medicine
University of Arkansas for Medical Sciences
Little Rock, AR

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Disclosures

- Steven M. Cherney, MD
  - Johnson&Johnson- Paid consultant

- Mears, SC
  - Journal Editor: Geriatric Orthopaedic Surgery and Rehabilitation, Journal of American Geriatric Society, Archives of Orthopaedic Trauma Surgery
  - Board Member: Fragility Fracture Network, International Geriatric Fracture Society
  - Stock: Delta Orthopedics

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Bundled Payments for Care Improvement (BPCI)

- Comprehensive payment covering all aspects of patient care
- Goal: Reduce costs, increase quality and continuity of care
- New Bundle for hip and femur fractures
  - Patients in DRG 480-482 (393 procedures)
  - Predetermined reimbursement amount
- Seemingly large variance within bundle

Seemingly large variance within bundle

- Covers all areas of the femur including the hip, shaft and distal femur
- Includes a variety of procedures
- Variety in procedures may lead to great variance in cost that could dramatically effect the hospital in the bundle

Aims of Study

1. Explore the variability of procedures in the femur bundle

2. Determine the effect of procedure and fracture location on readmission rates within the femur bundle

3. Determine the effect of procedure and fracture location on cost within the femur bundle

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Methods

- Retrospective cohort hip and femur fractures in 2016
  - DRGs 480-482 from National Readmission Database ≥ age 65
  - NRD: HCUP affiliated set of inpatient databases for readmission analysis

- Initial analysis: Variance based on **readmission** in new bundle
  - Patients readmitted vs not readmitted
    - Total cost
    - Length of stay
    - Comorbidities
    - Concurrent ICD diagnoses
    - Mortality score

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Methods

- Follow up analyses: stratified same cohort based off:
  1) Anatomical location of procedure

  2) Root Procedure performed

- Demonstrate additional differences within bundle

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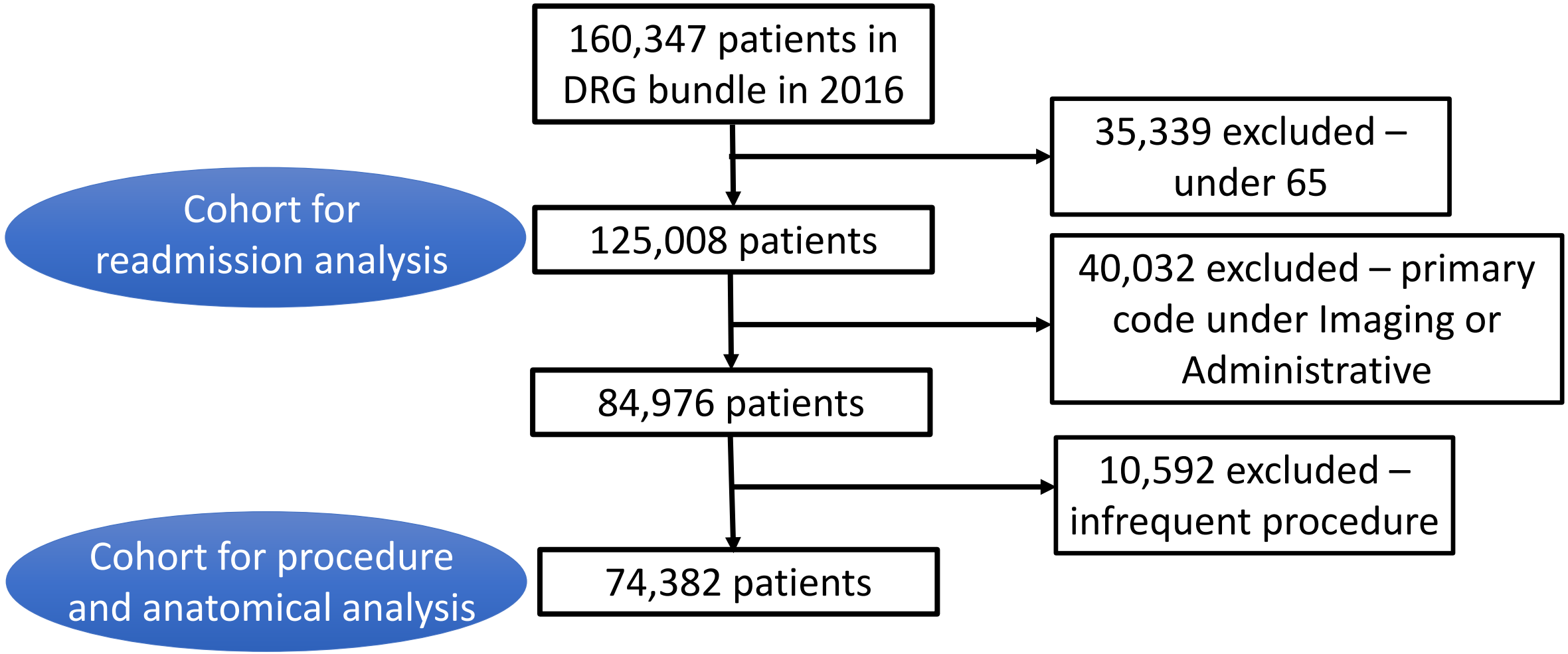
Patient Cohort



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Initial Analysis: **Readmitted** patients (n = 125,008)

- 20.7% readmitted

Variable	Not Readmitted (99,050)	Readmitted (25,959)	P value
Cost on initial admission	$16,844	$18,427	<0.01
Length of stay	5.42	6.24	<0.01
Comorbidities	3.19	3.83	<0.01
Chronic Diagnoses	12.92	14.77	<0.01
Mortality Score	6.54	8.98	<0.01

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Follow up analysis: **root procedure**, then **anatomical location** of procedure

- **Root procedure**:
  - Reposition
  - Insertion
  - Multiple primary codes
- **Anatomical Location:**
  - Upper Femur
  - Shaft of Femur
  - Lower Femur

Follow up analysis: Patient cost varies by **root procedure**

Variable	Reposition (54,317)	Insertion (9,387)	Multiple Procedures (2,528)	P-Value
Cost on initial admission	$17,374	$15,300	$19,190	<0.01
Length of stay	13.37	12.77	13.94	<0.01
Comorbidities	3.34	3.23	3.42	<0.01
Chronic Diagnoses	13.37	12.77	13.93	<0.01
Mortality Score	7.04	7.11	7.56	<0.01
% Readmitted	20.7%	19.6%	21.8%	<0.01

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Follow up analysis: Patient cost varies by **anatomical location**

Variable	Upper Femur (53,475)	Shaft of Femur (4,380)	Lower Femur (5,844)	P-value
Cost on initial admission	$16,473	$19,498	$20,589	<0.01
Length of stay (days)	5.48	5.77	6.09	<0.01
Comorbidities	3.30	3.33	3.48	<0.01
Chronic Diagnoses	13.18	13.54	14.05	<0.01
Mortality Score	7.21	6.55	5.95	<0.01
% Readmitted	20.7%	18.3%	20.6%	<0.01

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Discussion: Initial analysis

- **Readmitted patients** exhibited
  - Increased cost on initial admission
  - More comorbidities
  - Increased number of chronic diagnoses
  - Increased Elixhauser mortality score and readmit score

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Discussion: Follow up analyses

When stratified by their coded primary **root procedure**, patients varied in the following:

- Readmittance
- Cost on initial admission
- Length of stay
- Comorbidities
- Chronic diagnoses
- Mortality Score

When stratified by their coded **anatomical position**, patients varied in the following:

- Readmittance
- Cost on initial admission
- Length of stay
- Comorbidities
- Chronic diagnoses
- Mortality Score

- These procedures are all reimbursed under the same bundle

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Conclusions

- Readmissions add substantially to overall cost
- Hospitals need to mitigate effects of readmission to maintain profit
- Large variance in multiple variables related to cost that the bundle doesn’t account for
  - Root procedure, anatomical location, variance in readmission
- The one-size-fits-all model for bundle reimbursement may be too rigid
  - Bundle may need to be more specific and further stratified

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Contributors

- Dr. Simon Mears
- Dr. Steven Cherney
- Dr. Hanna Jensen
- Dr. Saleema Karim

Paper Masters

Acknowledgments

- UAMS Trauma Research Team
- Judy Bennett: Outcome databases and references

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Thank You!

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