Mortality and Operative Complexity in Rural Geriatric Emergency General Surgery Patients

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BACKGROUND

- Emergency general surgery (EGS) has high mortality and morbidity
- Specific predictors of poor EGS outcomes include increased age, rural presentation, and transfer from other hospitals[1, 2]
- Nearly 20% of the New Hampshire (NH) population is 65 or older (geriatric)[3]
- Over 40% of geriatric patients in NH live in rural areas[3]
- The majority of the geriatric EGS population at our rural tertiary center is transferred for care

Hypothesis: Rural geriatric patients transferred to our institution for EGS operations will have higher mortality and higher rates of non-home discharge compared to local admissions.

METHODS

Retrospective chart review:

Population of Interest
- Age ≥ 65
- Rural
- EGS operation within 48 hours of admission

Primary Outcomes
- In-hospital mortality
- Non-home discharge

Statistical Analysis
- Univariable
- Multivariable

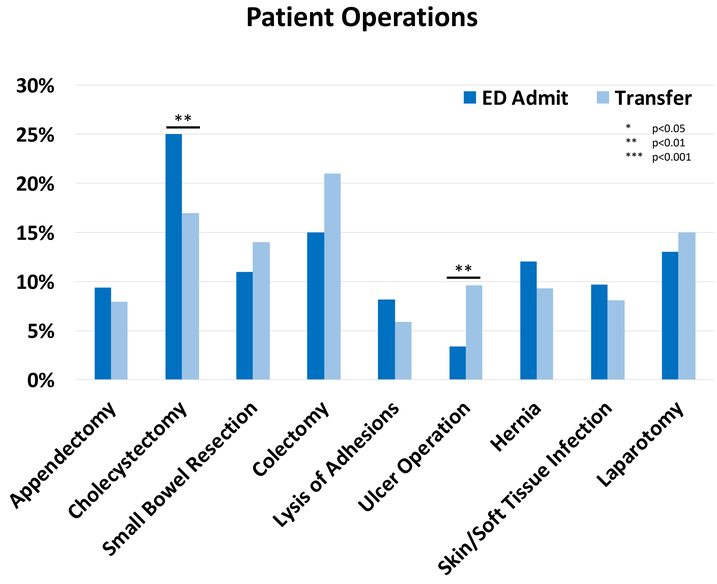
RESULTS

Patient Characteristics

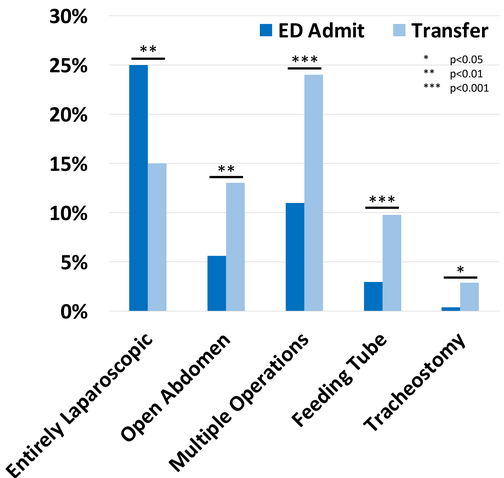
Characteristic	ED Admit (N=267)	Transfer (N=407)	p Value
Age	73 (69, 80)	74 (69, 80)	0.8
Female	139 (52%)	211 (52%)	>0.9
RUCA Category			<0.001
Isolated	117 (44%)	183 (45%)	
Large Rural	120 (45%)	79 (19%)	
Small Rural	30 (11%)	145 (36%)	
ASA Score			<0.001
1	5 (1.9%)	0 (0%)	
2	58 (22%)	57 (14%)	
3	153 (57%)	217 (53%)	
4	46 (17%)	117 (29%)	
5	5 (1.9%)	16 (3.9%)	
Charlson Comorbidity Index			0.2
0	79 (30%)	95 (23%)	
1	43 (16%)	87 (21%)	
2	55 (21%)	89 (22%)	
3+	90 (34%)	136 (33%)	

674 rural geriatric patients
60% transfer, from 29 hospitals (18 NH, 11 VT)

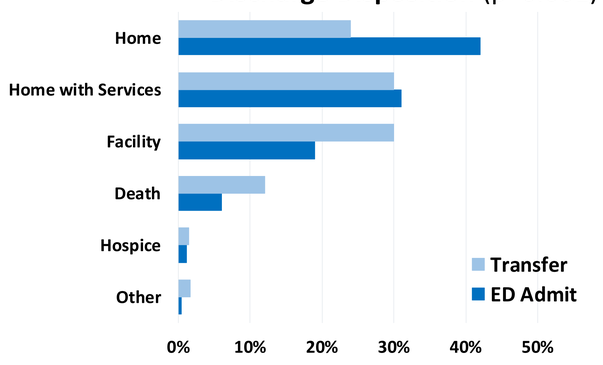
Patient Operations



Operative Complexity



Discharge Disposition (p<0.001)



In-Hospital Mortality

Characteristic	OR	95% CI	p Value
Age Group (Age 65-69 = Ref)			
70-74	2.56	1.05, 6.74	0.05
75-79	2.25	0.84, 6.33	0.11
80-84	2.99	1.07, 8.65	0.04
85-90	3.25	1.03, 10.3	0.04
>90	7.37	1.64, 29.7	0.006
Length of Stay	0.97	0.94, 0.99	0.03
ASA Class 4-5	6.19	3.31, 12	<0.001
Transfer Status (ED Admit = Ref)			
Transfer	1.64	0.82, 3.38	0.2
Multiple Operations	4.07	2.01, 8.26	<0.001

Non-Home Discharge

Characteristic	OR	95% CI	p Value
Age Group (Age 65-69 = Ref)			
70-74	1.80	1.01, 3.26	0.05
75-79	1.96	1.06, 3.67	0.03
80-84	1.68	0.84, 3.35	0.14
85-90	6.94	3.37, 14.6	<0.001
>90	17.3	6.13, 55.1	<0.001
Length of Stay	1.15	1.11, 1.20	<0.001
ASA Class 4-5	3.84	2.43, 6.14	<0.001
RUCA Category (Isolated Rural = Ref)			
Large Rural	2.19	1.33, 3.64	0.002
Transfer Status (ED Admit = Ref)			
Transfer	1.49	0.95, 2.36	0.083
Steroid Use	2.20	1.15, 4.24	0.02

CONCLUSIONS

- Geriatric EGS patients transferred for care have higher ASA class and operative complexity, but similar comorbidity profiles compared to local admissions
- Transfer patients had significantly longer length of stay, higher mortality, and rates of non-home discharge
- Despite this, transfer status was NOT independently associated with mortality or non-home discharge
- Additional studies are warranted to evaluate the transfer process in these at-risk adults

REFERENCES

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