

## Effect of Advanced Age and Vital Signs on Admission from an ED Observation Unit

### STUDY QUESTION

Are patients ages 65 or older more likely to require inpatient admission after placement in an ED observation unit, or can these patients safely be discharged after a period of observation?

### STUDY DESIGN

**Design:** Prospective, observational cohort study

**Setting:** 20-bed observation unit affiliated with and adjacent to the ED of a tertiary-care level 1 trauma center that sees approximately 72,000 patient annually. The study took place from July 2010 through March 2011.

**Patients:** All patients 18 years or older who were on an observation unit protocol, excluding pregnant women and trauma patients. Patient enrollment occurred when a research assistant was available between 8:00 am and midnight, 7 days per week.

**Description of Intervention:** A survey was taken to collect demographics and medical history. ED vital signs, laboratory data, observation protocol and ultimate disposition were also collected. These data were analyzed to determine if there was a greater likelihood for admission after a period of observation.

**Outcomes:** Admission or discharge disposition decision after completing a period of observation.

Of the 300 enrolled patients, 35 were 65 or older (12%). 33 patients required admission (11%), with admission rates of 2.9% for those 65 or older and 12.1% for younger adults. On multivariable analysis, age was determined to have an odds ratio for admission of 0.30. On the other hand, systolic blood pressure above 180 mm Hg had an odds ratio of 4.19, log Charlson comorbidity score had an odds ratio of 2.93 and white blood cell count of  $14,000/\text{mm}^3$  or greater had an odds ratio of 11.35.

### CONCLUSION

Age 65 or greater was not an independent predictor of the likelihood of inpatient admission after a period of ED observation. Systolic blood pressure above 180 mm Hg, log Charlson comorbidity score and white blood cell count of  $14,000/\text{mm}^3$  or greater were independent predictors of ultimate admission.

### ABSTRACTED FROM

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### MAIN RESULTS

### COMMENTARY by Erick A. Eiting, MD, MPH, MMM (Keck School of Medicine of USC)

Emergency department observation units are an appropriate setting to care for patients who require a period of observation rather than a full inpatient admission. While many of these patients are safely and successfully discharged from the ED observation unit, some patients will ultimately require admission. Independent predictors of admission could help guide emergency physicians to ensure appropriate patient disposition from the ED, which is advantageous for billing and patient flow purposes. One previous study demonstrated a higher likelihood of admission from ED observation units for patients 65 and older (26% vs. 18%), but did not control for co-morbid conditions or observation protocol type.[1] Certain laboratory and vital sign abnormalities have been previously demonstrated to increase the likelihood of admission from an ED observation unit.[2] Age has been explored as an independent predictor of admission from an ED observation unit for certain conditions, but not for all observation patients.[3] The findings in this study have practical applications that should help emergency physicians to make clinical decisions about the most appropriate disposition for geriatric patients. Age alone should not necessarily be a reason for inpatient admission rather than ED observation, but accepted institutional protocols for observation unit admission should be used.[4] The size of the study makes it a bit difficult to generalize about findings and apply them to other settings. Additional study with a larger population of patients 65 and over would be helpful in reassuring physicians that age alone is not an independent predictor of admission from an ED observation unit.

### REFERENCES

1. Ross MA, Compton S, Richardson D, Jones R, Nittis T, Wilson A: **The Use and Effectiveness of an Emergency Department Observation Unit for Elderly Patients.** *Ann Emerg Med* 2003, **41**:668-677.
2. Burkhardt J, Peacock WF, Emerman CL: **Predictors of emergency department observation unit outcomes.** *Acad Emerg Med* 2005, **12**(9):869-874.
3. Madsen TE, Bledsoe J, Bossart P: **Appropriately screened geriatric chest pain patients in an observation unit are not admitted at a higher rate than nongeriatric patients.** *Crit Pathw Cardiol* 2008, **7**(4):245-247.
4. Moseley MG, Hawley MP: **Emergency department observation units and the older patient.** *Clin Geriatr Med* 2013, **29**(1):71-89.