

Process Improvement: Door to Diuresis in Acute Heart Failure

A DNP Project

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Introduction - Objectives

- ▶ To improve efficiency of acute heart failure medication delivery
- ▶ To reduce barriers to providing heart failure evidence based patient care
- ▶ To improve acute heart failure patient outcomes: 30-day readmission and length of stay
- ▶ **PICOT Question; In patients with principal diagnosis heart failure who exhibit signs of volume overload, does the prompt administration of intravenous diuretics, within 60 minutes of arrival, reduce in-hospital length of stay and/or 30-day readmission?**



Methodology: Process Improvement

- ▶ **Plan:** evaluated baseline, identified stakeholders, gain consensus regarding path to targeted outcomes
 - ▶ Documented February 2015 door to diuretic, 30-day readmission rate, and length of stay
 - ▶ Developed EMR heart failure orders
 - ▶ Educated ECU and Heart Failure Unit staff, physicians, pharmacists and other stakeholders
 - ▶ Daily audit with shared results at monthly Heart Failure Committee
- ▶ **Do:** plan implementation
 - ▶ Daily evaluation patient by patient
 - ▶ Continuous communication regarding outcomes
 - ▶ Identification of barriers resulting in barrier plan

Methodology: Process Improvement

- ▶ Check – ongoing assessment and communication of outcomes
 - ▶ Daily audit
 - ▶ Monthly aggregate data reported to Heart Failure Committee
 - ▶ Realignment of initiative to address barriers
- ▶ Act – addressing barriers
 - ▶ EMR HF orders were formatted for ease of use, adopted by hospital medicine physicians
 - ▶ ECU physicians were encouraged to write orders after assessment and not handoff first orders to consulted physician
 - ▶ Pharmacy requested to expedite medication reconciliation to make orders available for prompt staff response

Methodology – Intervention

- ▶ **Formative outcomes communicated with each meeting and huddle opportunity to increase awareness**
- ▶ **Plan supported by evidence-based literature communicated to Nursing Research Council and FMOLHS IRB members as questions developed**
- ▶ **Barriers were identified and discussed with the Heart Failure Committee to realign plan for success**

Methodology – Outcome Measures

- ▶ **Door to diuretic in minutes and hours (mean and median)**
 - ▶ **Door defined as patient arrival and registered in hospital system**
 - ▶ **Diuretic defined as intravenous administration of diuretic as ordered**
- ▶ **30-day readmission rate measured by percentage**
 - ▶ **Measured 45 days after discharge.**
 - ▶ **All readmissions after heart failure admission were counted**
- ▶ **Length of stay measured in days**
 - ▶ **Measured by Comparion Data Base with stay beinging and ending as per hospital standard measure**

Results

- ▶ Reduction in door to diuretic minutes from group 1 to Group 2 = 70.66%.
- ▶ Reduction in door to diuretic mean minutes $p < 0.000000005$, highly significant
- ▶ 30-day readmission was reduced 81.45%,
- ▶ length of stay was reduced by 1.95 days,
- ▶ Sample financial impact:
 - ▶ Group 2 -savings of \$70,200. Calculated as \$450 savings per day times 1.95 days per patient saved times 80 patients in Group 2. Savings multiplied by the entire population of heart failure patients in the hospital for similar care would be significant annualized.

Discussion/Conclusions

- ▶ Need for improvement in door to diuretic was demonstrated in Group 1 extended hours
- ▶ Lack of standardized heart failure orders in EMR format - barrier
- ▶ Lack of ED physician writing orders – barrier
- ▶ Delay in pharmacy reconciling orders – barrier
- ▶ Lack of timeliness of diuretic administration benefits – barrier
- ▶ Reduction in door to diuretic administration demonstrates significant improvement $p < 0.000000005$
- ▶ Reduction in door to diuretic administration time reduces care implementation delay resulting in decrease 30-day readmit and LOS
- ▶ Door to diuretic to approximately 2.5 hours demonstrates significant improvement, however further improvement needed to reach 60 minute target.

REFERENCES

- ▶ Distributed by handout