Front-End Emergency Department Redesign Significantly Improves Median Door to Balloon Time

Authors:

Sheila Murphy, RN
Cardiovascular Data Coordinator for Cardiac Catheterization Laboratory
Orange Regional Medical Center, Middletown, New York
No Affiliations

Robin Brennan, RN, MSN
Nursing Director, Emergency Services
Orange Regional Medical Center, Middletown, New York
No Affiliations

Gary Silverman, MD, FACC, Interventional Cardiologist
Medical Director, Cardiac Catheterization Laboratory
Orange Regional Medical Center, Middletown, New York
Crystal Run Health Care System, Middletown, New York

Debora Snyder, MSN, RN, CEN
Senior Administrator of Emergency Services and Women and Children Service
Orange Regional Medical Center, Middletown, New York
No Affiliations

Anuj Vohra, DO, CPE, FAVP
Chairman and Medical Director, Residency Core Faculty and Department of Emergency Medicine
Orange Regional Medical Center, Middletown, New York
No Affiliations

Background:

Orange Regional Medical Center is the first new hospital to open in New York in over a decade. Since opening in 2011, volumes have increased yearly. Inpatient census has gone from high census to full during many times of the year. Full in house capacity led to increase wait times for Emergency Department patients including cardiac patients. As a result, door to electrocardiogram (EKG) times were sub-optimal, particularly for walk in patients. Our multidisciplinary Door to Balloon Time Task Force, begun in November of 2011 to achieve Best Practice in STEMI care, has worked to make many improvements, which has resulted in improvement of Door to Balloon Times. However, consistent achievement of door to EKG time within 10 minutes for walk in patients remained difficult. For this reason and other reasons, the Emergency Department aggressively sought out a solution to the throughput challenges that became a barrier to that improvement. By implementing a radically changed
front-end process, all presenting Emergency Department patients receive the same level of care regardless of volume. The new process allows for rapidly identifying walk-in patients with atypical cardiac complaints. As a result, the median Door to Balloon Time has been improved by fifteen minutes as reflected in the National Cardiovascular Data Registry (NCDR®) Quarter 2 2017 published dashboard results.

**Methods:**

The methods involved a multi-faceted strategy with planning for more than 6 months, gaining administrative support for the final plan, collaboration with all disciplines to outline potential barriers, and comprehensive communication and education to all front line staff involved. The following steps were instrumental for the development of the plan:

- A multidisciplinary team was formed
- Research completed including literature search
- Site visits with the Executive team
- Conferences attended
- Pilot projects in our Emergency Department

The “Rapid Assessment Zone” was developed, consisting of:

- High performing Emergency Department (ED) Physician in initial intake process of triage, registration, and rooming (front end). Instead of the physician being involved successively to the triage process, it is now concurrent.
- Registered Nurse in waiting room (Emergency Severity Index Greeter)
- Team triage approach
- Develop Rapid Assessment Zone (RAZ) intake criteria
- Develop Bypass criteria
- Two avenues for front end EKGs (triage and RAZ)
- Purchase of additional EKG machine
- Realigned hours of staffing for ED Physician, Nurse and Tech
- Additional hours of coverage for ED Physician and Nurse
- Weekly meetings to create goals and process
- Regular meetings to review progress and adapt needed changes
- Bi-weekly meetings to share outcomes and process updates
- Education provided to all team members of Emergency Department
  - ED Physicians
  - Nurses
  - Technicians
  - Diagnostic Imaging
  - Pharmacy
  - Clerks
  - Registration
Established metrics to determine effectiveness

- Arrival to Room
- Arrival to Provider
- Arrival to discharge
- Door to balloon time

Results:
Results exceeded expectations in more than metrics. The Rapid Assessment Zone project unified our ED team showing an increase in engagement, morale, and retention. Staff has an increased satisfaction in their work environment and has shared the decision making, and the accomplishment for our front-end redesign process.

- Median door to balloon time was reduced by fifteen minutes since program pilot.
- Arrival to room improved
- Arrival to provider improved
- Arrival to discharge improved
- Received 2017 Greater Hudson Valley Hospital System Gold Quality Award for our Door to Balloon Time Task Force Team
- Received 2017 Greater Hudson Valley Hospital System Quality Award for most innovative project- RAZ
- Received 2017 Greater Hudson Valley Hospital System Patient Experience Award- RAZ

We continue to strive for excellence. Our next goal is to achieve NCDR® 90th percentile for median door to balloon time. We continue to meet regularly to review our progress for door to balloon time and other objectives.

Conclusions:
Thorough planning for this project was a key factor for its success. Aligning with key leadership, including involvement with the Door to Balloon Time Task Force and Cardiac Catheterization Laboratory helped to define a measurable goal for the project.

Essential elements of the project:

- Executive leadership support
  - Funding, Staffing, Capital budget
- Unified vision with ED Medical leadership and Nursing leadership
- Alignment of ED Physicians and Nursing
- Inclusion and buy-in from all areas that support the Emergency Department
  - ED Physicians
  - ED Nurses
  - Environmental
The newest goals for best practice STEMI care, is to achieve balloon/intervention time within 90 minutes of first medical contact. The Emergency Department and the Door to Balloon Time Task Force is continuing to achieve excellence by increased collaboration with local Emergency Medical Service (EMS) and regional Urgent Care Centers.

References:
