Saving Brain in Stroke Patients

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Introduction

In April 2014, MED-COM, the dispatch division of MEDIC Emergency Medical Services (MEDIC EMS), launched call-taker initiated activation of Stroke Alerts based off of the Stroke Diagnostic Tool on Protocol 28 (Stroke [CVA/Transient Ischemic Attack [TIA])—a tool in the Medical Priority Dispatch System™ (MPDS®) (Version 13, 2016, Priority Dispatch Corp., Salt Lake City, UT, USA).

- Call takers first contact the stroke-certified receiving facility's emergency department (ED) and then send the stroke Determinant Code and destination to the responding EMS crew.
- Once the responders are dispatched, call takers call the charge nurse at the receiving ED and provide the SDxT score and ambulance responding.
- On-scene EMS responders perform their assessments and either confirm the alert with ED or cancel it based on their findings.
- Hospital Stroke Alert teams are activated based on call taker actions.

Objective

The purpose of this study is to measure the impact of implementing call-taker initiated ED notifications, or Stroke Alerts.
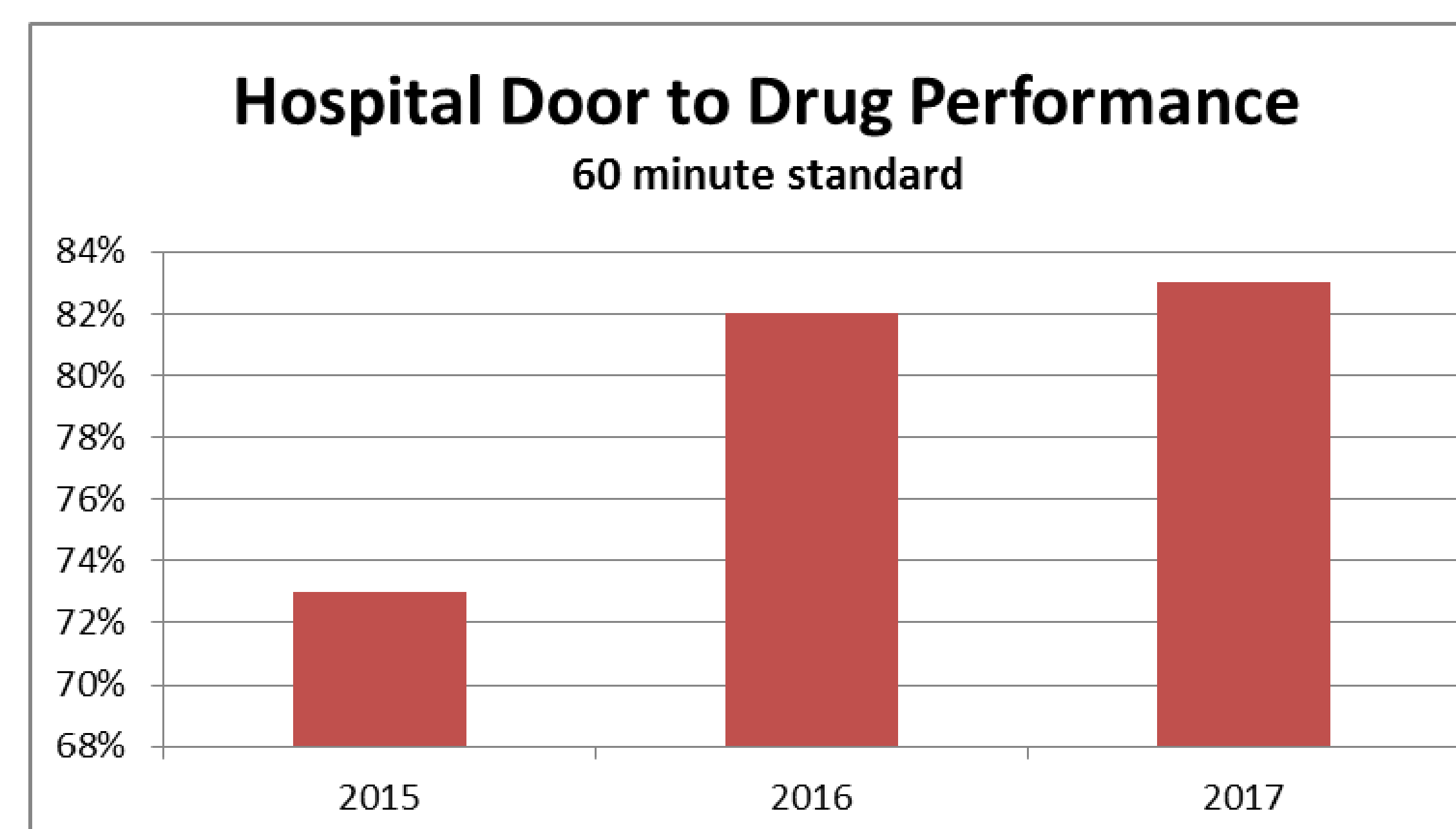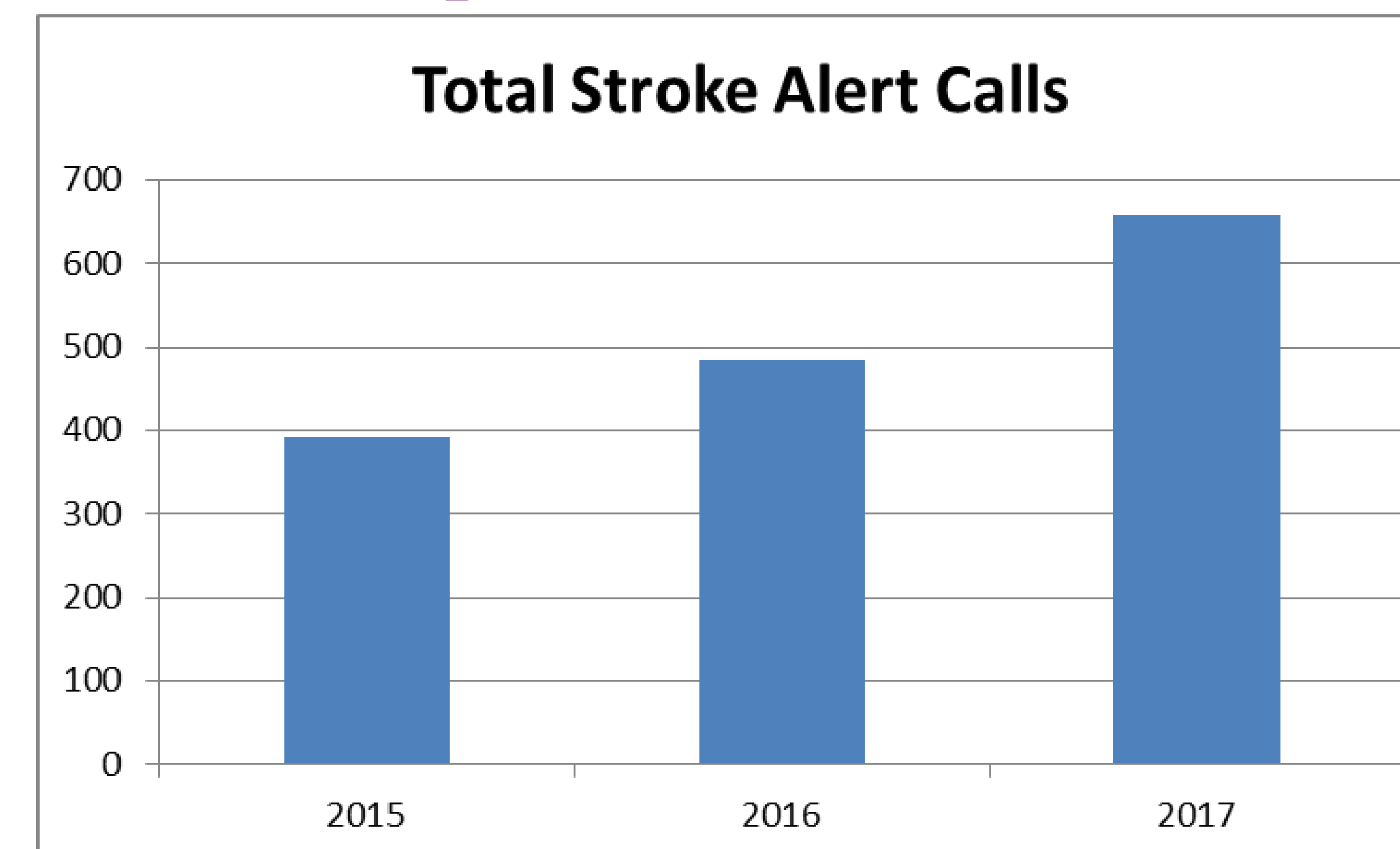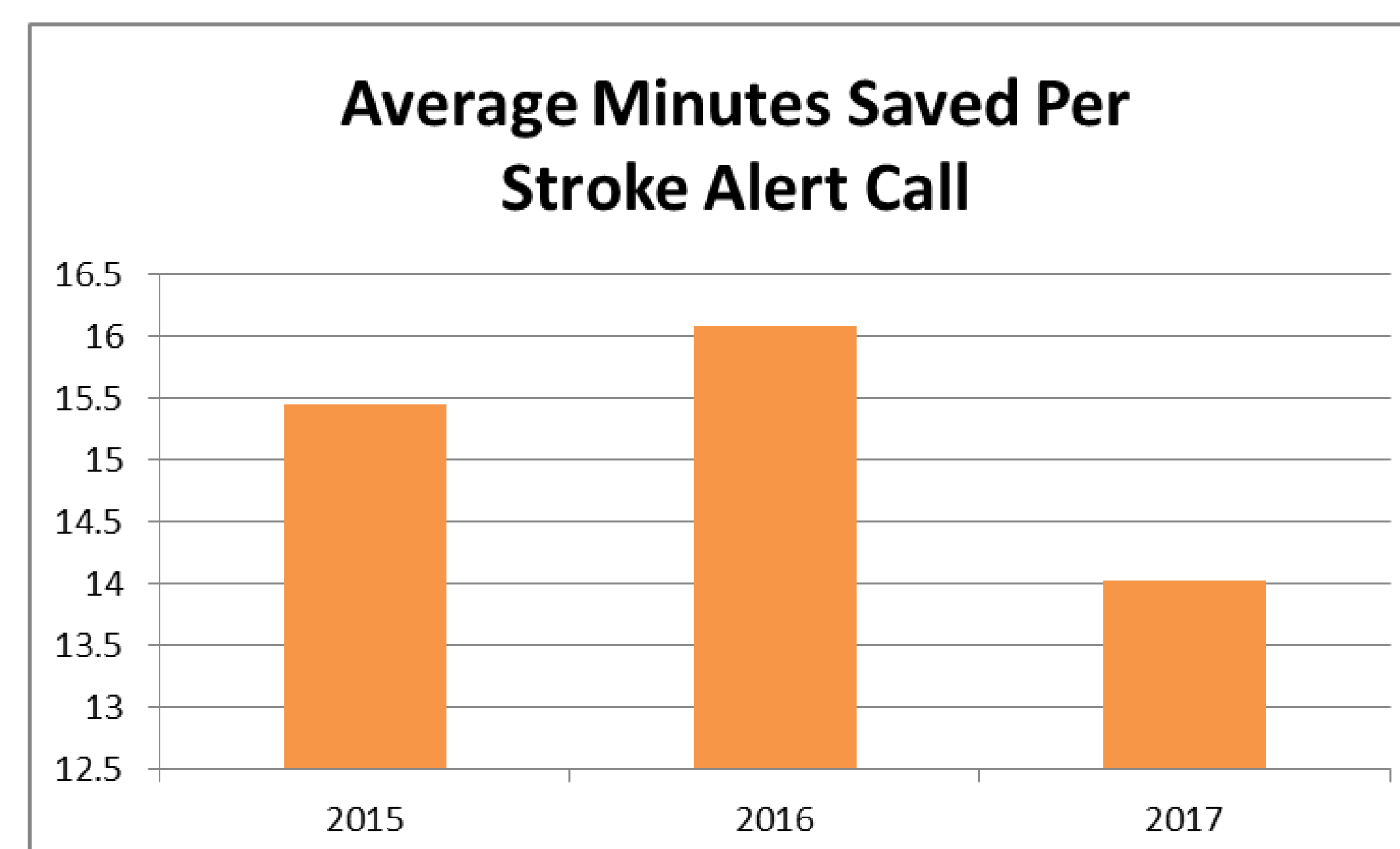
Materials and Methods

This was a retrospective, descriptive study collected and analyzed of three years data gathered by the call audit process on both the EMD and the ambulance patient care reports. Data gathered from the Stroke Certified receiving hospitals were also collected while collaborating with the hospital Stroke Coordinator. The collected data comes from the quality auditor during the quality review process; alert times were compared with call-taker contact time to the ED and the transporting ambulance contact time to the ED. When analyzed by the continuous quality improvement team, the data reveal the amount of time saved, accuracy of call taker assessment and patient outcomes once at the hospital.

The *First*, First Responders

Call Takers Helping Hospitals Meet Stroke Alert Standards

Activating the hospital stroke alert process from the point of call intake is helping hospitals meet defined standards of 60 minutes from arrival at the hospital to medication administration.

Total Stroke Alert Calls

Average Minutes Saved Per Stroke Alert Call

Hospital Door to Drug Performance
60 minute standard

Results

When implementing this process in 2014, the hypothesis was that ED notification could be reduced by 18 minutes on average for each call-taker activated stroke alert. By the end of 2017, this hypothesis had been reasonably confirmed with average times saved of :

- 15 minutes and 45 seconds on average in 2015
- 16 minutes and 08 seconds on average in 2016
- 14 minutes and 14 seconds on average in 2017

Impact

With 1.9 million neurons lost for every minute of delay, the impact is 0.5 cm of brain tissue damaged per 12 minutes. 2016 yielded 919 billion neurons saved, or 29.77 inches (484 minutes). An NCAA basketball is 29.5 inches in circumference.

Discussion

After receiving phone call from the 9-1-1 call taker for following occurs.
- The emergency department (ED) contacts the neurologist and the laboratory.
- The ED advises computerized tomography (CT) of the need for imaging.
- A brief stop in the ED to be evaluated by the ED physician for stability.
- The EMS crew takes the patient directly to the CT scanner on their ambulance cot.

Conclusion

Implementation of early alert activation to the ED by the call-taker saves time in administering clot busting drugs to a stroke patient leading to more brain tissue saved and better patient outcomes reducing death and mortality.

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