Hypothesis: To determine the positivity rate of computed tomography of the abdomen and pelvis for emergency department patients presenting with acute symptoms in a community-based hospital with a level two trauma rating and compare those findings to similar studies to bring awareness to our ordering practices.

Background: A computed tomography (CT) scan is an effective imaging tool that can identify many disease processes and alter the management of patients who present for imaging. In the United States the number of CT scans has significantly increased from the mid 1990s. One particular study evaluated CT scans performed on the pediatric population in the emergency room setting for abdominal pain and found that 1% of patients were scanned in 1998 versus 15% in 2004. The amount of yearly radiation people receive has also increased due to medical imaging. Given the increase in exposure from radiation there is concern that cancer risk is increased. Data obtained in 2007 estimates that 26,000 new cancers may occur from imaging performed during that year. Our goal was to see if the positivity rates at our facility were similar to others being performed and if not, bring awareness to our ordering practices. Approximately half of the exams performed in similar studies yielded positive findings on CT in nontraumatic patients.11,12 Approximately 15% of traumatic patients yielded positive findings on CT.1,4

RESULTS
Overall positivity rate was 49% (212/532). Nontraumatic positivity yield was 43% (177/414) in nontraumatic patients. The rate was positive in 42% (5/12) for patients age 0, 22% (39/177) in traumatic patients. The rate was positive in 42% (115/274) of males and 38% (31/81) for patients age 0-22, 35% (64/153) for patients age 36-50, 53% (65/123) for patients age 51-65 and 38% (31/81) for patients greater than the age of 65. Using SPSS we ran a one-way ANOVA analysis. None of the laboratory variables, statistically significantly predicted the primary outcome in nontraumatic patients, although P value for leukocytosis approached 0.05. Lab values were not obtained in a large number of patients. 34 patients had additional findings which were significant or required additional work-up.

DISCUSSION
49% of nontraumatic patients were found to have an acute positive finding which is similar to the yield rate of positive finding for traumatic patients (20%) compared to other studies (15%). Perhaps the current ordering practices and standards of care are similar throughout many institutions within the United States and additional studies would produce similar results. However, there is a large discrepancy between traumatic and nontraumatic patient positivity rates. The biggest contributor to these findings may be due to the fact that many trauma patients undergo a full body scan when it is clinically determined they have a significant mechanism of injury. Selectivity for abdominal imaging may also be affected by the need for faster response times when dealing with patients with possible life-threatening injuries. Young adults had the lowest positivity rates (20%) while older adults had higher rates (38%-53%). The sample size for pediatric patients at our institution was low (12) but the positivity rate was still higher than the young adult, middle adult and elderly age groups. Given the small sample size any conclusions about this age group are limited.

CONCLUSION
The positivity rates in our study are similar to those in other studies and the ordering practices at our institution are likely comparable to many across the country. However, there is a large discrepancy in the rates between traumatic and nontraumatic patients which suggests there is a need for further evaluation of the utilization of abdominal and pelvic CT in the trauma setting. Our lab variables did not statistically significantly predict the primary outcome in nontraumatic patients, although the P value for leukocytosis approached 0.05. Labs were not obtained in many patients. In our study we could not discern why the labs were not obtained or whether the missing labs would change the manner in which CT scans were ordered.

REFERENCES