Decreasing Equipment Cost through Improvement of Computed Tomography Machine Utilization

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Background

- Cost per unit modeling
  - Define expense categories composing a single cost unit
  - Determine primary and secondary drivers of each unit
  - Identify modifiable drivers
  - Modify individual drivers to reduce cost
Purpose

• Reduction of cost per CT unit by performing an attribution analysis
  – Assigned costs to the components of the exam deemed expenses

• Equipment Cost identified as a main expense contributing to cost per CT unit
  – Identify modifiable drivers of equipment cost
  – Optimize those drivers to ultimately reduce cost per CT unit
Materials and Methods

- Cost per CT unit of service calculated for fiscal year 2016 at our institution
- Attribution analysis assigned costs associated with a CT unit of service
Materials and Methods

- Equipment costs were identified as a main expense
  - Primary driver: Machine utilization
  - Secondary driver: Slot time allocation
Materials and Methods

• Slot time and scheduling variations were examined to maximize machine utilization and limit idle scanner time

• New slot times were implemented based on the results of the analysis
Results

• Equipment cost calculated as 34% of each unit
  • Excluding the professional component
Results

• Initial CT schedule included **20 minute universal slot times**
• Observation revealed a single exam required **5-7 minutes of patient in-room time**
• Slot times were **reduced to 15 minutes**
• Increased machine utilization from **3 to 4 exams per hour**
• Backlog of patients waiting to be scheduled reduced, daily CT daily volume increased, and newly-available capacity allowed for the addition of **2 more CT guided procedures each day**

20 minute slot time schedule between 7am to 5pm (30 slots)

15 minute slot time schedule between 7am to 5pm (40 slots)
Conclusions

• **Equipment costs** were identified as a major expense driver of the cost per CT unit of service
• Effectors of equipment cost are primarily machine utilization and secondarily slot time allocation
• Analysis of machine utilization allowed for the implementation of a new slot time allocation scheme, which increased daily volume to reduce CT cost per unit