To address the event of the patient arresting and expiring post hip reduction, the RCA team identified that the American College of Emergency Physicians had published Practice Guidelines for Sedation and Analgesia by Non-Anesthesiologists. The Emergency Dept. leader collected data as follows:

1. Type of sedation administered per quarter in the year prior to the event (Table 1)
2. Of patients undergoing moderate sedation in the ED, the failure types by number over a one-month period (Table 2)
3. Monitoring elements documented at appropriate intervals of 45 patients undergoing moderate sedation in the ED in a 3-month period (Table 3)
4. Percentage of patients monitored per ACEP guidelines (Table 4) (prior to interventions and during interventions.)

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| **Table 1. Type of sedation administered per quarter in year prior to event** | **Q1 # cases** | **Q2 # cases** | **Q3 # cases** | **Q4 # cases** | **Yearly** |
| Minimal sedation/analgesia aka mild anxiolysis or minor pain control | 150 | 200 | 180 | 170 | 700 |
| Moderate sedation (sleepy but aroused to voice or light touch) | 30 | 40 | 25 | 35 | 130 |
| Deep sedation (requires painful stimuli to evoke purposeful response; Propofol) | 2 | 1 | 0 | 1 | 4 |
| Dissociative (Ketamine) | 2 | 1 | 4 | 3 | 10 |
| General anesthesia (pt. with no purposeful response to even repeated painful stimuli) | 0 | 0 | 0 | 0 | 0 |

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| **Table 2.**  **Guideline Elements** | **Guidelines Assessment Failures per 1 month** |
| Pre procedure evaluation | 5 |
| Pt counseling | 6 |
| Assessment of last meal | 1 |
| Monitoring | 30 |
| Personnel | 5 |
| Training | 2 |
| Emergency Equipment | 0 |
| O2 | 3 |
| IV access | 0 |
| Reversal agents | 2 |
| Recovery monitoring | 9 |

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| **Table 3.**  **Monitoring Elements Documented at appropriate intervals per chart review of 45 pts undergoing moderate sedation in ED in 3 month period** | **# documented** | **Denominator**  **(# of pts in 3 months w mod sedation)** | **# Failures** |
| Pulse oximetry | 43 | 45 | 2 |
| Response to verbal commands | 44 | 45 | 1 |
| Pulmonary ventilation (observation, auscultation) | 30 | 45 | 15 |
| Exhaled CO2 monitoring | 0 | 45 | 45 |
| BP & HR q 5 min | 15 | 45 | 30 |
| ECG for pts with cardiovascular disease (20 pts identified) | 20 | 20 | 0 |
| Recovery assessment (pt. observed until no longer at risk for CR depression) | 35 | 45 | 10 |

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| **Table 4. Percentage of pts. monitored per guidelines by week** | | |
| **Week #** | **% Pts monitored per guidelines** | **PDSA record** |
| 1 | 84.97 |  |
| 2 | 88 |  |
| 3 | 89.77 |  |
| 4 | 89.43 |  |
| 5 | 85.2 |  |
| 6 | 86.36 |  |
| 7 | 81.88 |  |
| 8 | 83.57 |  |
| 9 | 80.01 |  |
| 10 | 84.84 |  |
| 11 | 86.47 |  |
| 12 | 83.69 | Education of guidelines complete |
| 13 | 86.96 | PDSA 1 |
| 14 | 85.44 |  |
| 15 | 87.50 |  |
| 16 | 87.44 | PDSA 2 |
| 17 | 86.92 |  |
| 18 | 88.04 | PDSA 3 |
| 19 | 86.94 |  |
| 20 | 86.95 |  |
| 21 | 88.84 |  |
| 22 | 87.87 | PDSA 4 |
| 23 | 88.85 |  |
| 24 | 92.93 |  |
| 25 | 91.12 | PDSA 5 |
| 26 | 89.56 |  |
| 27 | 88.13 |  |
| 28 | 88.72 |  |
| 29 | 93.36 | PDSA 6 |
| 30 | 90.38 |  |
| 31 | 94.03 |  |
| 32 | 92.69 |  |
| 33 | 93.44 | PDSA 7 |
| 34 | 95.25 |  |
| 35 | 94.80 |  |
| 36 | 91.64 | PDSA 8 |
| 37 | 92.01 |  |
| 38 | 92.92 |  |
| 39 | 91.93 |  |
| 40 | 94.01 |  |
| 41 | 94.99 |  |
| 42 | 94.02 | PDSA 9 |
| 43 | 95.46 |  |
| 44 | 94.72 |  |
| 45 | 94.01 |  |
| 46 | 95.01 |  |
| 47 | 96.01 |  |
| 48 | 95.06 |  |
| 49 | 94.80 |  |
| 50 | 95.58 |  |
| 51 | 96.15 |  |