Supplemental Tables

Supplemental Table A

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| Supplemental Table A - Common Data Elements |
| Date |
| Providers present  Anesthesiologist  Critical Care/ED Attending  CRNA  Fellow/Resident  APP (PA/NP) |
| Indication for intubation  Oxygenation failure  Ventilation failure  Cardiac arrest  Unstable hemodynamics  Procedure  Airway Clearance  Absent airway reflexes  Other |
| Pre-oxygenation device  HFNC  NIV  BVM  NRB  NC |
| Respiratory support prior to decision to intubation  HFNC  NIV  NC Room air  Supraglottic airway  NRB mask  Other |
| Attempts RT performed laryngoscopy (click all that apply)  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6 |
| Attempt intubation successful  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6 |
| Discipline that successfully intubated the patient  RT  Critical Care/ED Attending  Anesthesiologist  CRNA  Fellow/Resident  APP (NP/PA) |
| Laryngoscopy performed during chest compressions  N/A  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6 |
| Direct laryngoscopy used  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6  N/A |
| Type(s) of laryngoscope used  Direct  CMAC  GlideScope  McGrath  Fiberoptic  Surgical |
| Video laryngoscopy used  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6  N/A |
| Cricoid manipulation prior to attempt(s)  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6  N/A |
| Cricoid manipulation during attempt(s)  Attempt 1  Attempt 2  Attempt 3  Attempt 4  Attempt 5  Attempt 6  N/A |
| SpO2  Immediately prior to first attempt  Lower SpO2 noted |
| Medications used to facilitate intubation  None  Analgosedation only  Analgosedation and paralytic |
| Physical limitations noted  Limited neck mobility  C-collar in place  Other  None |
| Best grade obtained – includes visual representation  1  2  3  4 |
| Confirmation methods used  Adequate and equal chest rise  Appropriate breath sounds  Humidity in the ETT Absent breath sounds over stomach  Second independent laryngoscopy  Exhaled CO2-capnography  Exhaled CO2-colorimetric  CXR |
| Airway related adverse events  Esophageal intubation, immediate recognition  Esophageal intubation, delayed recognition  Main stem intubation  Direct airway injury  Epistaxis  Dental trauma  Lip trauma  Vomit with aspiration  Vomit but no aspiration  None |
| Physiologic adverse events  Cardiac arrest without ROSC  Cardiac arrest with ROSC  Hypotension requiring intervention  Hypertension requiring intervention  Medication error  Dysrhythmia  Pain/agitation, additional meds required  Other  None |
| Comment – free text |

Table legend: ED=emergency department, CRNA=certified nurse anesthetist, APP=advance practice provider, PA=physician assistant, NP=nurse practitioner, HFNC=high-flow nasal cannula, NIV=noninvasive ventilation, BVM=bag-valve mask, NRB=non-rebreather, NC=nasal cannula, RT=respiratory therapist, C-collar=cervical collar, ETT=endotracheal tube, CXR=chest radiograph, ROSC=return of spontaneous circulation

Supplemental table B.

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| Cardiac Arrest - RT made initial attempt | Cardiac Arrest | No cardiac arrest | P |
| Total RT attempts | 234 | 355 |  |
| Overall RT success rate | 229 (97.9%) | 347 (97.7%) | 0.92 |
| Successful on first RT attempt | 205 (87.6%) | 326 (91.8%) | 0.092 |
| Airway related adverse events  Airway related  Esophageal intubation  Physiologic | 18 (7.7%)  5 (2.1%)  61 (26.1%) | 15 (4.2%)  11 (3.1%)  21 (5.9%) | 0.073  0.48  <0.001 |
| Providers present  Fellow, resident, or APP  Anesthesia (Anesthesiologist or CRNA)  Attending (critical care or EM) | 148 (63.2%)  14 (6.0%)  72 (30.8%) | 78 (22.0%)  171 (48.2%)  106 (29.9%) | <0.001 |
| Pre-oxygenation device  Bag-valve mask  Noninvasive ventilation  High-flow nasal cannula  Nasal cannula  Non-rebreather | 223 (95.3%)  0 (0%)  2 (0.9%)  5 (2.1%)  4 (1.7%) | 184 (51.8%)  60 (16.9%)  24 (6.8%)  19 (5.4%)  68 (19.2%) | <0.001 |
| Respiratory support prior to decision to intubate  Nasal cannula  High-flow nasal cannula  Room air  Noninvasive ventilation  Non-rebreather mask  Supraglottic airway  Other | 79 (33.8%)  18 (7.7%)  53 (22.6%)  9 (3.8%)  11 (4.7%)  20 (8.5%)  44 (18.8%) | 98 (27.6%)  54 (15.2%)  34 (9.6%)  76 (21.4%)  49 (13.8%)  1 (0.3%)  43 (12.1%) | <0.001 |
| First attempt laryngoscopy method  Direct  Video | 126 (53.8%)  108 (46.2%) | 281 (79.2%)  74 (20.8%) | <0.001 |
| Cricoid manipulation  Prior to attempt  During attempt | 12 (5.1%)  45 (19.2%) | 46 (13.0%)  103 (29.0%) | 0.002  0.007 |
| Medications to facilitate intubation  None  Analgosedation and paralytic  Analgosedation only | 222 (94.9%)  5 (2.1%)  7 (3.0%) | 50 (14.1%)  97 (27.3%)  208 (58.6%) | <0.001 |
| Physical limitations noted  Any  Limited neck mobility/c-collar | 35 (15.0%)  17 (7.3%) | 47 (13.2%)  35 (9.9%) | 0.56  0.28 |
| Best laryngeal view obtained  Grade 1  Grade 2  Grade 3  Grade 4 | 148 (63.2%)  70 (29.9%)  16 (6.8%)  0 (0%) | 250 (70.4%)  96 (27.0%)  9 (2.5%)  0 (0%) | 0.022 |

Table legend: RT=respiratory therapist, APP=advanced practice provider, CRNA=certified nurse anesthetist, EM=emergency medicine

Supplemental Table C

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| Video laryngoscopy - RT made initial attempt | Video | Direct | P |
| Total RT attempts | 281 | 74 |  |
| Overall RT success rate | 277 (98.6%) | 70 (94.6%) | 0.040 |
| Successful on first RT attempt | 265 (94.3%) | 61 (82.4%) | 0.001 |
| Adverse events  Airway related  Esophageal intubation  Physiologic  Desaturation < 80%, n=228/43 | 7 (2.5%)  3 (1.1%)  18 (6.4%)  15 (5.3%) | 8 (10.8%)  8 (10.8%)  3 (4.1%)  4 (5.4%) | 0.002  <0.001  0.45  0.52 |
| Providers present  Fellow, resident, or APP  Anesthesia (Anesthesiologist or CRNA)  Attending (critical care or EM) | 47 (16.7%)  155 (55.2%)  79 (28.1%) | 31 (41.9%)  16 (21.6%) 27 (36.5%) | <0.001 |
| Indication for Intubation  Respiratory failure  Unstable hemodynamics  Absent airway reflexes  Airway clearance  Procedure  Other | 146 (52.0%)  32 (11.4%)  22 (7.8%)  24 (8.5%)  16 (5.7%)  41 (14.6%) | 43 (58.1%)  5 (6.8%)  9 (12.2%)  0 (0%)  4 (5.4%)  13 (17.6%) | 0.089 |
| Pre-oxygenation device  Bag-valve mask  Noninvasive ventilation  High-flow nasal cannula  Nasal cannula  Non-rebreather | 124 (44.1%)  54 (19.2%)  23 (8.2%)  17 (6.0%)  63 (22.4%) | 60 (81.1%)  6 (8.1%)  1 (1.4%)  2 (2.7%)  5 (6.8%) | <0.001 |
| Respiratory support prior to decision to intubate  Nasal cannula  High-flow nasal cannula  Room air  Noninvasive ventilation  Non-rebreather mask  Supraglottic airway  Other | 85 (30.2%)  46 (16.4%)  23 (8.2%)  64 (22.8%)  39 (13.9%)  1 (0.4%)  23 (8.2%) | 13 (17.6%)  8 (10.8%)  11 (14.9%)  12 (16.2%)  10 (13.5%)  0 (0%)  20 (27.1%) | <0.001 |
| Cricoid manipulation  Prior to attempts  During attempts | 32 (11.4%)  76 (27.0%) | 14 (18.9%)  27 (36.5%) | 0.086  0.11 |
| Medications to facilitate intubation  None  Analgosedation and paralytic  Analgosedation only | 26 (9.3%)  183 (65.1%)  72 (25.6%) | 24 (32.4%)  25 (33.8%)  25 (33.8%) | <0.001 |
| Physical limitations noted  Any  Limited neck mobility/c-collar | 40 (14.2%)  30 (10.7%) | 7 (9.5%)  5 (6.8%) | 0.28  0.31 |
| Best laryngeal view obtained  Grade 1  Grade 2  Grade 3  Grade 4 | 210 (74.7%)  66 (23.5%)  5 (1.8%)  0 (0%) | 40 (54.1%)  30 (40.5%)  4 (5.4%)  0 (0%) | 0.002 |

Table legend: RT=respiratory therapist, APP=advanced practice provider, CRNA=certified nurse anesthetist, EM=emergency medicine