Supplemental Tables

Supplemental Table A

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| Supplemental Table A - Common Data Elements |
| Date |
| Providers presentAnesthesiologistCritical Care/ED AttendingCRNAFellow/ResidentAPP (PA/NP) |
| Indication for intubationOxygenation failureVentilation failureCardiac arrestUnstable hemodynamicsProcedureAirway ClearanceAbsent airway reflexesOther |
| Pre-oxygenation deviceHFNCNIVBVMNRBNC |
| Respiratory support prior to decision to intubationHFNCNIVNCRoom airSupraglottic airwayNRB maskOther |
| Attempts RT performed laryngoscopy (click all that apply)Attempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6 |
| Attempt intubation successfulAttempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6 |
| Discipline that successfully intubated the patientRTCritical Care/ED AttendingAnesthesiologistCRNAFellow/ResidentAPP (NP/PA) |
| Laryngoscopy performed during chest compressionsN/AAttempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6 |
| Direct laryngoscopy usedAttempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6N/A |
| Type(s) of laryngoscope usedDirectCMACGlideScopeMcGrathFiberopticSurgical |
| Video laryngoscopy usedAttempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6N/A |
| Cricoid manipulation prior to attempt(s)Attempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6N/A |
| Cricoid manipulation during attempt(s)Attempt 1Attempt 2Attempt 3Attempt 4Attempt 5Attempt 6N/A |
| SpO2Immediately prior to first attemptLower SpO2 noted |
| Medications used to facilitate intubationNoneAnalgosedation onlyAnalgosedation and paralytic |
| Physical limitations notedLimited neck mobilityC-collar in placeOtherNone |
| Best grade obtained – includes visual representation1234 |
| Confirmation methods usedAdequate and equal chest riseAppropriate breath soundsHumidity in the ETTAbsent breath sounds over stomachSecond independent laryngoscopyExhaled CO2-capnographyExhaled CO2-colorimetricCXR |
| Airway related adverse eventsEsophageal intubation, immediate recognitionEsophageal intubation, delayed recognitionMain stem intubationDirect airway injuryEpistaxisDental traumaLip traumaVomit with aspirationVomit but no aspirationNone |
| Physiologic adverse eventsCardiac arrest without ROSCCardiac arrest with ROSCHypotension requiring interventionHypertension requiring interventionMedication errorDysrhythmiaPain/agitation, additional meds requiredOtherNone |
| 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 eventsAirway relatedEsophageal intubationPhysiologic | 18 (7.7%)5 (2.1%)61 (26.1%) | 15 (4.2%)11 (3.1%)21 (5.9%) | 0.0730.48<0.001 |
| Providers presentFellow, resident, or APPAnesthesia (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 deviceBag-valve maskNoninvasive ventilationHigh-flow nasal cannulaNasal cannulaNon-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 intubateNasal cannulaHigh-flow nasal cannulaRoom airNoninvasive ventilationNon-rebreather maskSupraglottic airwayOther | 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 methodDirectVideo | 126 (53.8%)108 (46.2%) | 281 (79.2%)74 (20.8%) | <0.001 |
| Cricoid manipulationPrior to attemptDuring attempt | 12 (5.1%)45 (19.2%) | 46 (13.0%)103 (29.0%) | 0.0020.007 |
| Medications to facilitate intubationNoneAnalgosedation and paralyticAnalgosedation only | 222 (94.9%)5 (2.1%)7 (3.0%) | 50 (14.1%)97 (27.3%)208 (58.6%) | <0.001 |
| Physical limitations notedAnyLimited neck mobility/c-collar | 35 (15.0%)17 (7.3%) | 47 (13.2%)35 (9.9%) | 0.560.28 |
| Best laryngeal view obtainedGrade 1Grade 2Grade 3Grade 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 eventsAirway relatedEsophageal intubationPhysiologicDesaturation < 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<0.0010.450.52 |
| Providers presentFellow, resident, or APPAnesthesia (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 IntubationRespiratory failureUnstable hemodynamicsAbsent airway reflexesAirway clearanceProcedureOther | 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 deviceBag-valve maskNoninvasive ventilationHigh-flow nasal cannulaNasal cannulaNon-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 intubateNasal cannulaHigh-flow nasal cannulaRoom airNoninvasive ventilationNon-rebreather maskSupraglottic airwayOther | 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 attemptsDuring attempts | 32 (11.4%)76 (27.0%) | 14 (18.9%)27 (36.5%) | 0.0860.11 |
| Medications to facilitate intubationNoneAnalgosedation and paralyticAnalgosedation only | 26 (9.3%)183 (65.1%)72 (25.6%) | 24 (32.4%)25 (33.8%)25 (33.8%) | <0.001 |
| Physical limitations notedAnyLimited neck mobility/c-collar | 40 (14.2%)30 (10.7%) | 7 (9.5%)5 (6.8%) | 0.280.31 |
| Best laryngeal view obtainedGrade 1Grade 2Grade 3Grade 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