**Supplemental Digital Content 3: Individual Study Details – High Importance Studies**

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| **First Author (year), Country** | **Subquestion Addressed\*** | **Study Design** | **Clinical Task** | **Study Participants** | **Outcome Category** | **Primary Outcome** | **MERSQI Score‡** |
| Alwy Al-beity et al (2019), Tanzania | 1 | RCT | OB/GYN | 331 providers | Clinical Metrics of Care | Postpartum hemorrhage in-facility near misses | 16.5 |
| Arul et al (2021), United States | 1 | 1-Group pre-post | Neonatal Resuscitation | 27 providers | Safety Event Mitigation | Latent safety threat mitigation | 12 |
| Bhatia et al (2021), Australia | 1 | 2-Group Historical Control | Neonatal Resuscitation | 445 providers | Mortality, Clinical Metrics of Care | Neonatal mortality, Neonatal resuscitation requiring intubation | 14 |
| Bohmann et al (2021), Germany | 1 | 2-Group Historical Control | NeuroCritical Care | 21 providers | Clinical Metrics of Care | Door-to-needle time | 15 |
| Cheung et al (2020), Hong Kong | 3 | 2-Group Non-randomized Comparative | Infection Prevention | 1415 providers | Participant Reactions and Perceptions | Perceptions of comfort | 10 |
| de Melo et al (2021), Brazil | 1 | 2-Group Historical Control | OB/GYN | 36 providers | Clinical Metrics of Care | Uterotonic use within 24 hrs. | 14 |
| Gallagher et al (2021), Australia | 1 | 2-Group Historical Control | OB/GYN | 102 deliveries | Diagnostic Decision Making | Decision to delivery interval | 14 |
| Greer et al (2019), United States | 1 | 1-Group Pre-post | OB/GYN | 120 providers | Safety Event Mitigation | Latent safety threat identification | 12 |
| Harvey et al (2019), United States | 1 | 2-Group Historical Control | Trauma | 39 providers | Clinical Metrics of Care, Non-technical Skills | Time to Ultrasound, Trauma performance observation tool | 13.5 |
| Hazwani et al (2020), Saudi Arabia | 1 | 2-Group Historical Control | Resuscitation | 24 providers | Mortality, Clinical Metrics of Care | Post cardiac arrest mortality, Time to CPR | 14 |
| Josey et al (2018), United States | 2 | 2-Group Non-randomized Comparative | Resuscitation | 572 providers | Mortality | Post cardiac arrest mortality | 16.5 |
| Leng et al (2018), United Kingdom | 1 | 2-Group Historical Control | Outpatient Medication | 26 providers | Clinical Metrics of Care | Antibiotic administration within 4 hrs. | 14 |
| Lutgendorf et al(2017), United States | 1 | 2-Group Historical Control | OB/GYN | 113 providers | Clinical Metrics of Care | Postpartum hemorrhage rate | 8.5 |
| Mduma et al (2015), Tanzania | 1 | 2-Group Historical Control | Neonatal Resuscitation | 117 providers | Mortality, Clinical Metrics of Care | Neonatal mortality, Need for bag-mask ventilation | 14 |
| Miller et al (2012), United States | 1 | 2-Group Historical Control | Trauma | 80 providers | Non-technical Skills | Clinical Teamwork Scale score | 12.5 |
| Minai et al (2014), Pakistan | 3 | RCT | Airway Management | 57 providers | Technical Skills, Need for Remediation | Intubation checklist completion, Need for remediation | 14 |
| Patterson et al (2013), United States | 1 | 2-Group Historical Control | Trauma | 218 providers | Safety Event Mitigation | Latent safety threat identification | 12 |
| Sodhi et al (2015), India | 1 | 2-Group Historical Control | Resuscitation | 220 providers | Mortality | Post cardiac arrest mortality | 14 |
| Sorenson et al (2015), Denmark | 3 | RCT | Perinatal | 97 providers | Participant Reactions and Perceptions, Participant Knowledge, Safety Event Mitigation | Learner perceptions, Learner Stress, MCQ test, Safety event identification | 13.5 |
| Sprehe et al (2016), United States | 3 | 2-Group Non-randomized Comparative | Resuscitation | 120 providers | Technical Skills, Participant Reactions and Perceptions,  | Learner perceptions, AHA megacode checklist score | 12 |
| Steinemann et al (2011), United States | 1 | 2-Group Historical Control | Trauma | 137 providers | Clinical Metrics of Care, Non-technical Skills | Nontechnical skills scale for trauma score  | 13.5 |
| Ulmer et al (2022), Switzerland | 1 | 1-Group Pre-post | Provider Communication Skills | 15 providers | Non-technical Skills | Qualitative analysis of communication skill | 11 |
| van den Broek et al (2019), South Africa | 1 | RCT | OB/GYN | 127 centers | Diagnostic Decision Making | Recognition of obstetric emergency | 16.5 |
| Venture et al (2014), United States | 1 | 1-Group Pre-post | OB/GYN | 133 providers | Safety Event Mitigation | Latent safety threat mitigation | 10 |

\*1: In-situ Simulation as Addition to Standard Training; 2: Optimal Frequency of In-Situ Simulation; 3: In-situ Simulation Compared to Traditional Simulation.

‡Further detail on individual quality characteristics can be found in **Supplemental Digital Content 4**.