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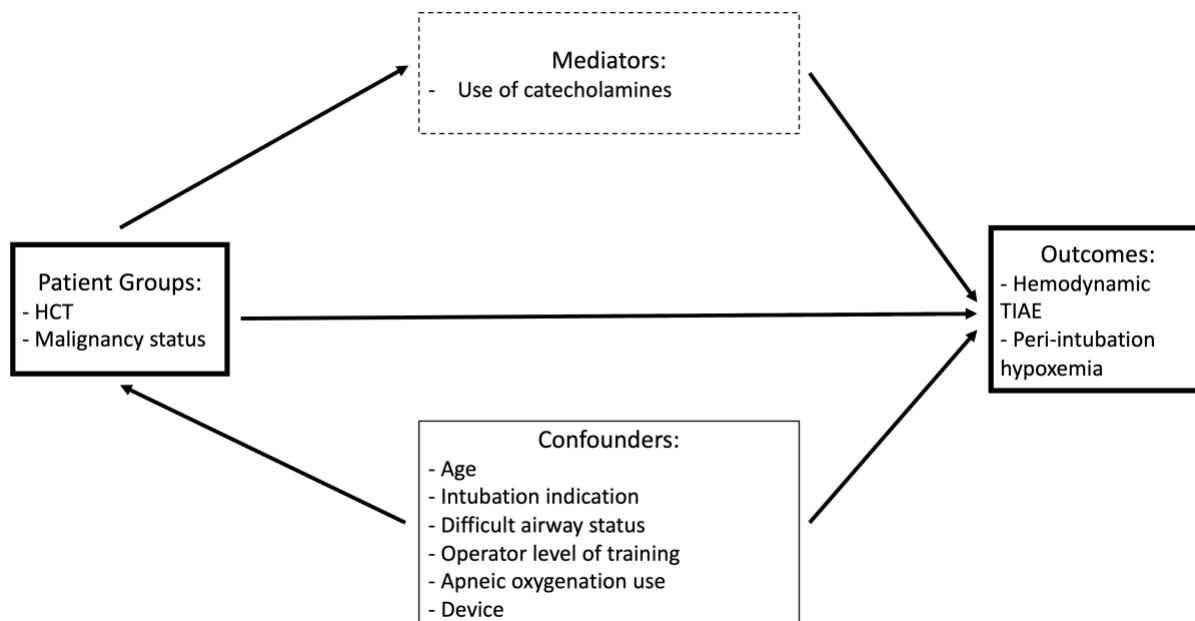
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Supplemental Figure A: Directed acyclic graph (DAG) of patient group with outcome



Supplemental Table B. Adverse hemodynamic tracheal intubation associated events and peri-intubation hypoxemia across the three groups

<b>Outcome</b>	<b>All Patients (n=1931)</b>	<b>Without Malignancy No HCT (n=1520)</b>	<b>With Malignancy No HCT (n=319)</b>	<b>HCT (n=92)</b>
<b>Hemodynamic TIAE or hypoxemia (composite outcome)</b>	277 (14%)	229 (15%)	33 (10%)	15 (16%)
<b>Hemodynamic TIAE</b>	49 (3%)	43 (3%)	4 (1%)	2 (2%)
Cardiac arrest	8 (<1%)	8 (<1%)	0 (0%)	0 (0%)
Hypotension	36 (2%)	32 (2%)	1 (<1%)	2 (2%)
Hypertension	1 (<1%)	0 (0%)	1 (<1%)	0 (0%)
Dysrhythmia	11 (<1%)	10 (<1%)	1 (<1%)	0 (0%)
<b>Hypoxemia (SpO<sub>2</sub>&lt;80%)</b>	244 (13%)	199 (13%)	32 (10%)	13 (14%)
Lowest SpO <sub>2</sub> during intubation, median (IQR)	99 (91-100)	98 (90-100)	99 (95-100)	98 (82-100)

HCT: hematopoietic stem cell transplant; TIAE: tracheal intubation associated events; SpO<sub>2</sub>: oxyhemoglobin saturation; IQR: Interquartile range; N/A: not applicable

Supplemental Table C. Characteristics of HCT patients who are or are not treated with bi-level positive airway pressure (BLPAP) ventilation prior to intubation

Characteristic	All HCT patients N=92	Without BLPAP n=57	With BLPAP n=35
Age category			
< 1 year	7 (8%)	5 (9%)	2 (6%)
1-7 year	36 (39%)	27 (47%)	9 (26%)
8-17 year	39 (42%)	21 (37%)	18 (51%)
≥18 year	10 (11%)	4 (7%)	6 (17%)
Male sex (count, %)	53 (58%)	29 (51%)	24 (69%)
Weight in kg, median (IQR)	25.0 (12.8-54.7)	20.1 (11.1-49.8)	48.9 (22.9-66.1)
Difficult airway features	21 (23%)	14 (25%)	7 (20%)
Allogeneic transplant	82 (89%)	50 (88%)	32 (91%)
Transplant source			
PSCT	38 (46%)	21 (42%)	17 (53%)
BM	36 (44%)	24 (48%)	12 (38%)
UCB	8 (10%)	5 (10%)	3 (9%)
GVHD	28 (34%)	15 (30%)	13 (41%)
Organ system affected by GVHD <sup>a</sup>			
Skin	22 (24%)	13 (23%)	9 (26%)
Liver	5 (5%)	1 (2%)	4 (11%)
Gut	15 (16%)	9 (16%)	6 (17%)
Other	4 (4%)	1 (2%)	3 (9%)
Days from transplant to intubation, median (IQR)	101 (36-367)	103 (43-351)	83 (23-512)
Provider type			
PCCM Attending	5 (5%)	4 (7%)	1 (3%)
PCCM/EM fellow	76 (83%)	45 (79%)	31 (89%)
Peds/EM resident	1 (1%)	1 (2%)	0 (0%)
APP	5 (5%)	3 (5%)	2 (6%)
Subspecialist/Other	5 (5%)	4 (7%)	1 (3%)
Device			
Direct laryngoscope	44 (48%)	32 (56%)	12 (34%)
Video laryngoscope	47 (51%)	24 (42%)	23 (66%)
LMA/FO/Other	1 (1%)	1 (2%)	0 (0%)

Number of attempts, median (IQR)	1 (1-1)	1 (1-1)	1 (1-1)
Use of apneic oxygenation	42 (46%)	21 (37%)	21 (60%)
Indication for intubation <sup>b</sup>			
Respiratory	61 (66%)	29 (51%)	32 (91%)
Shock	13 (14%)	9 (16%)	4 (11%)
Neurologic	10 (11%)	9 (16%)	1 (3%)
Procedural	25 (27%)	21 (37%)	4 (11%)
Use of catecholamine infusion peri-intubation	16 (17%)	12 (21%)	4 (11%)
Hemodynamic TIAE or SpO <sub>2</sub> <80% during intubation	15 (16%)	8 (14%)	7 (20%)

<sup>a</sup>Categories are not mutually exclusive. Encounters with multiple sites of GVHD had each site counted.

<sup>b</sup>Indications are not mutually exclusive. Encounters with multiple indications for intubation had all indications listed

HCT: hematopoietic stem cell transplant; BLPAP: bi-level positive airway pressure; IQR: interquartile range; PSCT: peripheral stem cell transplant; BM: bone marrow; UCB: umbilical cord blood; GVHD: graft versus host disease; PCCM: pediatric critical care medicine; EM: emergency medicine; APP: advanced practice provider (includes nurse practitioners and hospitalists); LMA: laryngeal mask airway; FO: fiber optic

Supplemental Table D: Characteristics of HCT patients who are or are not treated with non-invasive positive pressure ventilation (NIPPV) prior to intubation

Characteristic	All HCT patients N=92	Without NIPPV n=38	With NIPPV n=54
Age category			
< 1 year	7 (8%)	4 (11%)	3 (6%)
1-7 year	36 (39%)	18 (47%)	18 (33%)
8-17 year	39 (42%)	14 (37%)	25 (46%)
≥18 year	10 (11%)	2 (5%)	8 (15%)
Male sex (count, %)	53 (58%)	21 (55%)	32 (59%)
Weight in kg, median (IQR)	25.0 (12.8-54.7)	19.8 (11.1-50.2)	36.6 (17.6-59.6)
Difficult airway features	21 (23%)	11 (29%)	10 (19%)
Allogeneic transplant	82 (89%)	33 (87%)	49 (91%)
Transplant source			
PSCT	38 (46%)	14 (42%)	24 (50%)
BM	36 (44%)	16 (48%)	20 (41%)
UCB	8 (10%)	3 (9%)	5 (10%)
GVHD	28 (34%)	8 (24%)	20 (41%)
Organ system affected by GVHD <sup>a</sup>			
Skin	22 (24%)	8 (21%)	14 (26%)
Liver	5 (5%)	0 (0%)	5 (9%)
Gut	15 (16%)	4 (11%)	11 (20%)
Other	4 (4%)	1 (3%)	3 (6%)
Days from transplant to intubation, median (IQR)	101 (36-367)	96 (36-360)	105 (36-374)
Provider type			
PCCM Attending	5 (5%)	2 (5%)	3 (6%)
PCCM/EM fellow	76 (83%)	30 (79%)	46 (85%)
Peds/EM resident	1 (1%)	1 (3%)	0 (0%)
APP	5 (5%)	2 (5%)	3 (6%)
Subspecialist/Other	5 (5%)	3 (8%)	2 (4%)
Device			
Direct laryngoscope	44 (48%)	18 (47%)	26 (48%)
Video laryngoscope	47 (51%)	19 (50%)	28 (52%)
LMA/FO/Other	1 (1%)	1 (3%)	0 (0%)

Number of attempts, median (IQR)	1 (1-1)	1 (1-1)	1 (1-1)
Use of apneic oxygenation	42 (46%)	16 (42%)	26 (48%)
Indication for intubation <sup>b</sup>			
Respiratory	61 (66%)	18 (47%)	43 (80%)
Shock	13 (14%)	5 (13%)	8 (15%)
Neurologic	10 (11%)	9 (24%)	1 (2%)
Procedural	25 (27%)	14 (37%)	11 (20%)
Use of catecholamine infusion peri-intubation	16 (17%)	5 (13%)	11 (20%)
Hemodynamic TIAE or SpO <sub>2</sub> <80% during intubation	15 (16%)	5 (13%)	10 (19%)

<sup>a</sup>Categories are not mutually exclusive. Encounters with multiple sites of GVHD had each site counted.

<sup>b</sup>Indications are not mutually exclusive. Encounters with multiple indications for intubation had all indications listed

HCT: hematopoietic stem cell transplant; BLPAP: bi-level positive airway pressure; IQR: interquartile range; PSCT: peripheral stem cell transplant; BM: bone marrow; UCB: umbilical cord blood; GVHD: graft versus host disease; PCCM: pediatric critical care medicine; EM: emergency medicine; APP: advanced practice provider (includes nurse practitioners and hospitalists); LMA: laryngeal mask airway; FO: fiber optic