

## Appendix 1. International Classification of Diseases-10 Diagnosis codes

	ICD-10 Diagnosis Codes	Other Information
Delivery (Epic delivery method, OR ICD-10 codes OR delivery birthdate in Epic)	O80.x-O82.x, O75.82, Z37	OR Indication of mode of delivery in Epic: 1, 2, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 3, 300, 301, 302, 4, 5, 6, OR birthdate information in Epic
Sepsis	O85, O86.04, T81.44XA, T81.12XA, A40.x, A41.x, A32.7, R65.20, R65.21, I76	
<b>End Organ Injury Codes</b>		
Neurologic	F05, G93.1, G93.40, G93.49, G93.41, I67.83, R40.20	
Cardiovascular	R57.0, R57.1, R57.8, R57.9, R65.21, I46.9, I95.1-I95.3, I95.81, I95.89, I95.9, R03.1	
Pulmonary	J96.00, J96.10, J96.20, J96.90, J98.4, J80, R06.00, R06.03, R06.09, R06.81, R06.89, R09.2	
Renal	N17.0, N17.1, N17.2, N17.8, N17.9	
Hepatic	K72.00, K72.90, K72.91, K76.2, K76.3	
Hematologic	D65, D68.8, D68.9, D69.51, D69.59, D69.6	
<b>Comorbidities</b>		
Diabetes Mellitus	E10, O24.0, O24.1, O24.3, O24.8, O24.9	
Systemic Lupus Erythematosus	M30, M31, M32, M34, D68.61, D68.62	
Obesity	O99.21, Z68.3, Z68.4	
Sickle cell disease	D57.0, D57.1, D57.2, D57.4, D57.8	
Chronic renal disease	N18	
Chronic heart disease	O99.4, I05-I09, I25, I34-I38, I42-I45, Q20-Q28	
Hypertension	O10-O11, I10-I16	

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Asthma	O99.5, J45.21, J45.22, J45.31, J45.32, J45.41, J45.42, J45.51, J45.52, J45.901, J45.902	
<b>Obstetric Comorbidities</b>		
Gestational Diabetes Mellitus	O24.4	
Gestational Hypertension	O13, O16	
Preeclampsia	O11, O14, O15	
Multiple gestation	O30, O31, Z37.2-Z37.7	
PPROM	O42.01, O42.11, O42.91	
Stillbirth	O36.4, Z37.1, Z37.3, Z37.4, Z37.7, Z37.60-Z37.64, Z37.69	
<b>Specific infection type</b>		
Chorioamnionitis/endometritis	O41.12, O41.14, O86.12	
Pneumonia	J13-J18	
Pyelonephritis	O86.21, N10, N11, N15.1, O23.0, O23.4, N13.2, N13.6, N39.0	
Necrotizing fasciitis	M72.6	
Gastrointestinal infection (cholecystitis, appendicitis)	K35-K37, K63.1, K65.1, K81.0, K81.2	
Post-procedural infection (abscess, surgical site infection, septic pelvic thrombophlebitis)	O86.81, T81.40-T81.43, O86.0, K61, R50.82	
Influenza	J09, J10, J11	
COVID-19 infection	J12.82 OR U07.1 & either J12.89 or J80	Code J12.89 introduced in January 1, 2012
Other viral infections	O98.5, J12	

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## Appendix 2. Characteristics of End-Organ Injury and Infections Among the Study Populations

	COHORT 1: Cases <i>excluding</i> chorioamnionitis and endometritis cases			COHORT 2: Cases including chorioamnionitis and endometritis cases		
	Sepsis cases (n=647)	Sepsis cases with end organ injury (n=228)	Controls (n=2588)	Sepsis cases (n=1049)	Sepsis cases with end organ injury (n=238)	Controls (n=13,542)
End organ injury system*						
Only 1 organ system injury code	128 (19.8%)	128 (56.1%)	24 (0.9%)	182 (17.3%)	182 (76.5%)	570 (4.2%)
Any 2 organ system injury codes	53 (8.2%)	53 (23.2%)	1 (<0.1%)	45 (4.3%)	45 (18.9%)	16 (0.1%)
3 or more organ system injury codes	47 (7.3%)	47 (20.6%)	0 (0%)	11 (1.0%)	11 (4.6%)	3 (0.0%)
Central Nervous System	25 (3.9%)	25 (11.0%)	1 (<0.1%)	5 (0.5%)	5 (2.1%)	1 (0.0%)
Cardiovascular (including hypotension)	126 (19.5%)	126 (55.3%)	6 (0.2%)	151 (14.4%)	151 (63.4%)	159 (1.2%)
Respiratory	55 (8.5%)	55 (24.1%)	1 (<0.1%)	14 (1.3%)	14 (5.9%)	15 (0.1%)
Renal	82 (12.7%)	82 (36.0%)	3 (0.1%)	73 (7.0%)	73 (30.7%)	124 (0.9%)
Hepatic	15 (2.3%)	15 (6.6%)	0 (0%)	5 (0.5%)	5 (2.1%)	1 (0.0%)
Hematologic	90 (13.9%)	90 (39.5%)	15 (0.6%)	60 (5.7%)	60 (25.2%)	313 (2.3%)
Type of infection*						

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Chorioamnionitis/endometritis	N/A	N/A	N/A	1049 (100.0%)	238 (100.0%)	135,42 (100.0%)
Pneumonia	67 (10.4%)	46 (20.2%)	3 (0.1%)	20 (1.9%)	5 (2.1%)	15 (0.1%)
Pyelonephritis	103 (15.9%)	47 (20.6%)	24 (0.9%)	44 (4.2%)	12 (5.0%)	169 (1.2%)
Necrotizing fasciitis	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)
Gastrointestinal infection	21 (3.2%)	13 (5.7%)	1 (0.0%)	5 (0.5%)	3 (1.3%)	2 (0.0%)
Post-procedure infection	54 (8.3%)	21 (9.2%)	3 (0.1%)	65 (6.2%)	12 (5.0%)	59 (0.4%)
Influenza	9 (1.4%)	3 (1.3%)	1 (0.0%)	3 (0.3%)	1 (0.4%)	23 (0.2%)

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### Appendix 3. Sensitivity Analysis After Removing Hemorrhage Cases (Excluding Chorioamnionitis and Endometritis)

Criterion	Threshold	Sepsis by Diagnosis Codes				Sepsis WITH End Organ Injury by Diagnosis Codes			
		Overall positive screen rate (Sepsis pts; n=482)	Overall positive screen rate (Comp pts; n=1928)	Sensitivity	Specificity	Overall positive screen rate (Sepsis pts; n=139)	Overall positive screen rate (Comp pts; n=556)	Sensitivity	Specificity
<b>CMQCC screen</b>									
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 15	361 (74.9%)	421 (21.8%)	74.9%	78.2%	119 (85.6%)	170 (30.6%)	85.6%	69.4%
Heart rate (beats per minute)	> 110	361 (74.9%)	120 (6.2%)	74.9%	93.8%	106 (76.3%)	52 (9.4%)	76.3%	90.6%
Respiratory rate (breaths per minute)	> 24	246 (51.0%)	165 (8.6%)	51.0%	91.4%	111 (79.9%)	58 (10.4%)	79.9%	89.6%
Temperature (°C)	< 36 or > 38	388 (80.5%)	273 (14.2%)	80.5%	85.8%	121 (87.1%)	95 (17.1%)	87.1%	82.9%
Any two		428 (88.8%)	122 (6.3%)	88.8%	93.7%	134 (96.4%)	51 (9.2%)	96.4%	90.8%
<b>SIRS screen</b>									
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 12	435 (90.2%)	899 (46.6%)	90.2%	53.4%	130 (93.5%)	288 (51.8%)	93.5%	48.2%
Heart rate (beats per minute)	> 90	450 (93.4%)	423 (21.9%)	93.4%	78.1%	126 (90.6%)	185 (33.3%)	90.6%	66.7%

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Respiratory rate (breaths per minute)	> 20	347 (72.0%)	478 (24.8%)	72.0%	75.2%	129 (92.8%)	154 (27.7%)	92.8%	72.3%
Temperature (°C)	< 36 or > 38	388 (80.5%)	273 (14.2%)	80.5%	85.8%	121 (87.1%)	95 (17.1%)	87.1%	82.9%
Any two		463 (96.1%)	397 (20.6%)	96.1%	79.4%	136 (97.8%)	132 (23.7%)	97.8%	76.3%
<b>MEWC</b>									
Systolic BP (mm Hg)	< 90 or > 160	133 (27.6%)	241 (12.5%)	27.6%	87.5%	69 (49.6%)	91 (16.4%)	49.6%	83.6%
Diastolic BP (mm Hg)	> 100	39 (8.1%)	98 (5.1%)	8.1%	94.9%	21 (15.1%)	45 (8.1%)	15.1%	91.9%
Heart rate (beats per minute)	< 50 or > 120	260 (53.9%)	50 (2.6%)	53.9%	97.4%	82 (59.0%)	24 (4.3%)	59.0%	95.7%
Respiratory rate (breaths per minute)	< 10 or > 24	250 (51.9%)	200 (10.4%)	51.9%	89.6%	114 (82.0%)	70 (12.6%)	82.0%	87.4%
Pulse oximetry (%)	< 95	196 (40.7%)	210 (10.9%)	40.7%	89.1%	94 (67.6%)	80 (14.4%)	67.6%	85.6%
Temperature (°C)	< 36 or > 38	388 (80.5%)	273 (14.2%)	80.5%	85.8%	121 (87.1%)	95 (17.1%)	87.1%	82.9%
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 15	361 (74.9%)	421 (21.8%)	74.9%	78.2%	119 (85.6%)	170 (30.6%)	85.6%	69.4%
Any one		465 (96.5%)	729 (37.8%)	96.5%	62.2%	136 (97.8%)	253 (45.5%)	97.8%	54.5%
<b>UKOSS</b>									
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 17	290 (60.2%)	252 (13.1%)	60.2%	86.9%	99 (71.2%)	105 (18.9%)	71.2%	81.1%
Heart rate (beats per minute)	> 100	400 (83.0%)	243 (12.6%)	83.0%	87.4%	111 (79.9%)	102 (18.3%)	79.9%	81.7%

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Respiratory rate (breaths per minute)	> 20	347 (72.0%)	478 (24.8%)	72.0%	75.2%	129 (92.8%)	154 (27.7%)	92.8%	72.3%
Temperature (°C)	< 36 or > 38	388 (80.5%)	273 (14.2%)	80.5%	85.8%	121 (87.1%)	95 (17.1%)	87.1%	82.9%
Any two		436 (90.5%)	179 (9.3%)	90.5%	90.7%	132 (95.0%)	64 (11.5%)	95.0%	88.5%
<b>MEWT</b>									
Severe MEWT									
Pulse (beats per minute)	> 130	152 (31.5%)	11 (0.6%)	31.5%	99.4%	57 (41.0%)	4 (0.7%)	41.0%	99.3%
Respiratory rate (breaths per minute)	> 30	154 (32.0%)	61 (3.2%)	32.0%	96.8%	91 (65.5%)	22 (4.0%)	65.5%	96.0%
MAP (mm Hg)	< 55	13 (2.7%)	8 (0.4%)	2.7%	99.6%	11 (7.9%)	3 (0.5%)	7.9%	99.5%
SpO2 (%)	< 90	37 (7.7%)	25 (1.3%)	7.7%	98.7%	26 (18.7%)	10 (1.8%)	18.7%	98.2%
Blood Pressure (mm Hg)	> 160/110	66 (13.7%)	185 (9.6%)	13.7%	90.4%	32 (23.0%)	74 (13.3%)	23.0%	86.7%
Any one severe		268 (55.6%)	263 (13.6%)	55.6%	86.4%	113 (81.3%)	99 (17.8%)	81.3%	82.2%
Non-severe MEWT									
Temperature (°C)	< 36 or > 38	388 (80.5%)	273 (14.2%)	80.5%	85.8%	121 (87.1%)	95 (17.1%)	87.1%	82.9%
Blood Pressure (mm Hg)	< 85/45	60 (12.4%)	54 (2.8%)	12.4%	97.2%	42 (30.2%)	13 (2.3%)	30.2%	97.7%

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Pulse (beats per minute)	< 50 or > 110	365 (75.7%)	134 (7.0%)	75.7%	93.0%	109 (78.4%)	57 (10.3%)	78.4%	89.7%
Respiratory rate (breaths per minute)	> 24 or < 10	250 (51.9%)	200 (10.4%)	51.9%	89.6%	114 (82.0%)	70 (12.6%)	82.0%	87.4%
Pulse oximetry (%)	< 93	102 (21.2%)	80 (4.1%)	21.2%	95.9%	61 (43.9%)	32 (5.8%)	43.9%	94.2%
Any two non-severe		332 (68.9%)	68 (3.5%)	68.9%	96.5%	119 (85.6%)	24 (4.3%)	85.6%	95.7%
Overall MEWT		372 (77.2%)	289 (15.0%)	77.2%	85.0%	124 (89.2%)	107 (19.2%)	89.2%	80.8%

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#### Appendix 4. Sensitivity Analysis After Removing Hemorrhage Cases Among Chorioamnionitis and Endometritis Cases

		Sepsis by Diagnosis Codes				Sepsis WITH End Organ Injury by Diagnosis Codes			
Criterion	Threshold	Overall positive screen rate (Sepsis pts; n=785)	Overall positive screen rate (Comp pts; n=13542)	Sensitivity	Specificity	Overall positive screen rate (Sepsis pts; n=142)	Overall positive screen rate (Comp pts; n=13542)	Sensitivity	Specificity
CMQCC screen									
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 15	660 (84.1%)	7875 (58.2%)	84.1%	41.8%	120 (84.5%)	7875 (58.2%)	84.5%	41.8%
Heart rate (beats per minute)	> 110	615 (78.3%)	6203 (45.8%)	78.3%	54.2%	119 (83.8%)	6203 (45.8%)	83.8%	54.2%
Respiratory rate (breaths per minute)	> 24	333 (42.4%)	2042 (15.1%)	42.4%	84.9%	89 (62.7%)	2042 (15.1%)	62.7%	84.9%
Temperature (°C)	< 36 or > 38	691 (88.0%)	11422 (84.3%)	88.0%	15.7%	124 (87.3%)	11422 (84.3%)	87.3%	15.7%
Any two		731 (93.1%)	8148 (60.2%)	93.1%	39.8%	130 (91.5%)	8148 (60.2%)	91.5%	39.8%
SIRS screen									
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 12	759 (96.7%)	10442 (77.1%)	96.7%	22.9%	137 (96.5%)	10442 (77.1%)	96.5%	22.9%
Heart rate (beats per minute)	> 90	760 (96.8%)	11087 (81.9%)	96.8%	18.1%	138 (97.2%)	11087 (81.9%)	97.2%	18.1%
Respiratory rate (breaths per minute)	> 20	544 (69.3%)	5237 (38.7%)	69.3%	61.3%	117 (82.4%)	5237 (38.7%)	82.4%	61.3%
Temperature (°C)	< 36 or > 38	691 (88.0%)	11422 (84.3%)	88.0%	15.7%	124 (87.3%)	11422 (84.3%)	87.3%	15.7%

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Any two		781 (99.5%)	11724 (86.6%)	99.5%	13.4%	140 (98.6%)	11724 (86.6%)	98.6%	13.4%
<b>MEWC</b>									
Systolic BP (mm Hg)	< 90 or > 160	201 (25.6%)	1943 (14.3%)	25.6%	85.7%	68 (47.9%)	1943 (14.3%)	47.9%	85.7%
Diastolic BP (mm Hg)	> 100	37 (4.7%)	421 (3.1%)	4.7%	96.9%	10 (7.0%)	421 (3.1%)	7.0%	96.9%
Heart rate (beats per minute)	< 50 or > 120	461 (58.7%)	3604 (26.6%)	58.7%	73.4%	91 (64.1%)	3604 (26.6%)	64.1%	73.4%
Respiratory rate (breaths per minute)	< 10 or > 24	344 (43.8%)	2181 (16.1%)	43.8%	83.9%	91 (64.1%)	2181 (16.1%)	64.1%	83.9%
Pulse oximetry (%)	< 95	265 (33.8%)	2924 (21.6%)	33.8%	78.4%	65 (45.8%)	2924 (21.6%)	45.8%	78.4%
Temperature (°C)	< 36 or > 38	691 (88.0%)	11422 (84.3%)	88.0%	15.7%	124 (87.3%)	11422 (84.3%)	87.3%	15.7%
WBC (cells x 10 <sup>9</sup> /L)	< 4 or > 15	660 (84.1%)	7875 (58.2%)	84.1%	41.8%	120 (84.5%)	7875 (58.2%)	84.5%	41.8%
Any one		764 (97.3%)	12506 (92.3%)	97.3%	7.7%	137 (96.5%)	12506 (92.3%)	96.5%	7.7%
<b>UKOSS</b>									
WBC	< 4 or > 17	541 (68.9%)	5837 (43.1%)	68.9%	56.9%	105 (73.9%)	5837 (43.1%)	73.9%	56.9%
Heart rate (beats per minute)	> 100	712 (90.7%)	8903 (65.7%)	90.7%	34.3%	129 (90.8%)	8903 (65.7%)	90.8%	34.3%
Respiratory rate (breaths per minute)	> 20	544 (69.3%)	5237 (38.7%)	69.3%	61.3%	117 (82.4%)	5237 (38.7%)	82.4%	61.3%
Temperature	< 36 or > 38	691 (88.0%)	11422 (84.3%)	88.0%	15.7%	124 (87.3%)	11422 (84.3%)	87.3%	15.7%

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(°C)									
Any two of the above		744 (94.8%)	9145 (67.5%)	94.8%	32.5%	135 (95.1%)	9145 (67.5%)	95.1%	32.5%
<b>MEWT</b>									
Severe MEWT									
Pulse (beats per minute)	> 130	247 (31.5%)	1539 (11.4%)	31.5%	88.6%	53 (37.3%)	1539 (11.4%)	37.3%	88.6%
Respiratory rate (breaths per minute)	> 30	151 (19.2%)	792 (5.8%)	19.2%	94.2%	50 (35.2%)	792 (5.8%)	35.2%	94.2%
MAP (mm Hg)	< 55	25 (3.2%)	87 (0.6%)	3.2%	99.4%	18 (12.7%)	87 (0.6%)	12.7%	99.4%
SpO2	< 90	38 (4.8%)	272 (2.0%)	4.8%	98.0%	12 (8.5%)	272 (2.0%)	8.5%	98.0%
Blood Pressure (mm Hg)	> 160/110	76 (9.7%)	885 (6.5%)	9.7%	93.5%	20 (14.1%)	885 (6.5%)	14.1%	93.5%
Any one severe		374 (47.6%)	3130 (23.1%)	47.6%	76.9%	87 (61.3%)	3130 (23.1%)	61.3%	76.9%
Non-severe MEWT									
Temperature (°C)	< 36 or > 38	691 (88.0%)	11422 (84.3%)	88.0%	15.7%	124 (87.3%)	11422 (84.3%)	87.3%	15.7%
Blood Pressure (mm Hg)	< 85/45	107 (13.6%)	856 (6.3%)	13.6%	93.7%	44 (31.0%)	856 (6.3%)	31.0%	93.7%
Pulse (beats per minute)	< 50 or > 110	618 (78.7%)	6249 (46.1%)	78.7%	53.9%	119 (83.8%)	6249 (46.1%)	83.8%	53.9%
Respiratory rate (breaths per minute)	> 24 or < 10	344 (43.8%)	2181 (16.1%)	43.8%	83.9%	91 (64.1%)	2181 (16.1%)	64.1%	83.9%
Pulse oximetry (%)	< 93	104 (13.2%)	922 (6.8%)	13.2%	93.2%	32 (22.5%)	922 (6.8%)	22.5%	93.2%
Any two non-severe		553 (70.4%)	5189 (38.3%)	70.4%	61.7%	110 (77.5%)	5189 (38.3%)	77.5%	61.7%

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Overall MEWT		603 (76.8%)	6183 (45.7%)	76.8%	54.3%	118 (83.1%)	6183 (45.7%)	83.1%	54.3%
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