

Supplementary Table 1. Stream 1 initial and final sort solutions.

Stream 1 – Initial sort	Category	Stream 1 – Final sort	Category
History and physical (admission or transfer summary)	Demographics and history	Weight current and admission	Demographics and history
Weight current and admission	Demographics and history	History and physical (admission or transfer summary)	Demographics and history
		Patient movement	Demographics and history
Progress notes	Daily progress	Progress notes	Clinical notes
General examination notes	Daily progress	General examination notes	Clinical notes
Chest x-ray, notes	Daily progress	Abdomen examination notes	Clinical notes
Heart rate trend over last 24 hours	Daily progress	Acute hypoxic respiratory failure	Clinical notes
Abdomen examination notes	Daily progress		
Patient movement	Daily progress	Ejection fraction baseline and current	Cardiovascular
Acute hypoxic respiratory failure	Daily progress	Dysrhythmia presence and type	Cardiovascular
		ST segment changes	Cardiovascular
Life-threatening cardiac rhythm detected (current)	Cardiovascular	SVR – systemic vascular resistance	Cardiovascular
Ejection fraction baseline and current	Cardiovascular	Hemodynamic instability prediction/risk	Cardiovascular
Acute cardiogenic shock	Cardiovascular	Life-threatening cardiac rhythm detected (current)	Cardiovascular
ST segment changes	Cardiovascular	Acute cardiogenic shock	Cardiovascular
Dysrhythmia presence and type	Cardiovascular		
Hemodynamic instability prediction/risk	Cardiovascular	Heart rate	Flowsheet
		Heart rate trend over last 24 hours	Flowsheet
		Blood pressure trend over last 24 hours	Flowsheet
CI - Cardiac index	Flowsheet	Respiratory rate	Flowsheet
CVP – central venous pressure	Flowsheet	Systolic & Diastolic Blood Pressure	Flowsheet
Fluid responsiveness	Flowsheet	MAP - mean arterial pressure	Flowsheet
norepinephrine 16,000mcg in sodium chloride 0.9% 250 ml 0.06 mcg/kg/min infusion	Flowsheet	MV – minute ventilation	Flowsheet
dobutamine 2000 mcg/ml in D5W pre-made 2 mcg/kg/min infusion	Flowsheet	Oxygen saturation	Flowsheet
Sedation continuous infusion	Flowsheet	Temperature	Flowsheet
24 hr intake/output	Flowsheet	CI - Cardiac index	Flowsheet
Blood glucose trend over last 12 hours	Flowsheet	24 hr intake/output	Flowsheet
Sedation vacation time and duration plan	Flowsheet	Fluid responsiveness	Flowsheet
IV fluid 6 hour history	Flowsheet	Hourly urine output	Flowsheet
		CVP – central venous pressure	Flowsheet
Nutrition delivery method and content	Gastrointestinal	Nutrition delivery method and content	Gastrointestinal
		Bowel Regimen	Gastrointestinal
Chest x-ray - image	Imaging	Chest x-ray - image	Imaging
Brain MRI (magnetic resonance imaging)	Imaging	Chest x-ray, notes	Imaging
		Brain MRI (magnetic resonance imaging)	Imaging

Microbiological culture	Infectious disease	Ventilator associated pneumonia prediction/risk	Infectious disease
Ventilator associated pneumonia prediction/risk	Infectious disease	Antibiotics given with day of antibiotic administration	Infectious disease
WBC – white blood cell count	Laboratory	Arterial Blood Gas pH test	Laboratory
Hematocrit	Laboratory	Base deficit/excess	Laboratory
Serum Potassium	Laboratory	Hematocrit	Laboratory
Serum Sodium	Laboratory	Serum Lactic Acid	Laboratory
Blood glucose	Laboratory	Serum Sodium	Laboratory
Arterial Blood Gas pH test	Laboratory	Serum Potassium	Laboratory
PCO2 – partial pressure of carbon dioxide	Laboratory	Blood glucose	Laboratory
Serum Lactic Acid	Laboratory	Blood glucose trend over last 12 hours	Laboratory
Base deficit/excess	Laboratory	PCO2 – partial pressure of carbon dioxide	Laboratory
Preoperative or baseline eGFR (estimated glomerular filtration rate)	Laboratory	Serum Albumin	Laboratory
PT – prothrombin time	Laboratory	Microbiological culture	Laboratory
Serum Creatinine Kinase	Laboratory	PT – prothrombin time	Laboratory
		Preoperative or baseline eGFR (estimated glomerular filtration rate)	Laboratory
		Serum Creatinine Kinase	Laboratory
		WBC – white blood cell count	Laboratory
Bowel Regimen	Medications	PCO2 – Partial pressure of CO2 trend over 24-72 hours	Laboratory
cefazolin 2 g intravenous every 8 hours	Medications		
prednisone 20 mg tablet 1 three times daily	Medications	norepinephrine 16,000mcg in sodium chloride 0.9% 250 ml 0.06 mcg/kg/min infusion	Medications
fentanyl 10 mcg/ml in NS 50 mcg/hr infusion	Medications	dobutamine 2000 mcg/ml in D5W pre-made 2 mcg/kg/min infusion	Medications
mycophenolate 500 mg tablet 1 three times daily	Medications	fentanyl 10 mcg/ml in NS 50 mcg/hr infusion	Medications
furosemide 1mg/ml 10 mg/hr infusion	Medications	Sedation continuous infusion	Medications
Medication overlap	Medications	furosemide 1mg/ml 10 mg/hr infusion	Medications
Medication contraindications (eg, vasopressors and ionotropes)	Medications		
		prednisone 20 mg tablet 1 three times daily	Medications
		mycophenolate 500 mg tablet 1 three times daily	Medications
		cefazolin 2 g intravenous every 8 hours	Medications
		Medication overlap	Medications
GCS - Glasgow coma scale	Neurologic	Medication contraindications	Medications
Cumulative neurologic medication given	Neurologic		
		Sedation vacation time and duration plan	Neurologic
		Cumulative neurologic medication given	Neurologic
Urine frequency and volume 24 hour history	Renal	GCS - Glasgow coma scale	Neurologic
CKD – chronic kidney disease	Renal	Withdrawal Symptom Score	Neurologic
		IV fluid 6 hour history	Renal

Acute respiratory distress prediction/risk	Respiratory	Urine frequency and volume 24 hour history	Renal
MV – minute ventilation	Respiratory	CKD – chronic kidney disease	Renal
PF ratio (PaO2/FiO2)	Respiratory		
I:E – ventilator inspiratory-to-expiratory time ratio	Respiratory	PF ratio (PaO2/FiO2)	Respiratory
Pulmonary hypertension	Respiratory	Cough presence and description	Respiratory
		Acute respiratory distress prediction/risk	Respiratory
Heart rate	Vitals	I:E – ventilator inspiratory-to-expiratory time ratio	Respiratory
MAP - mean arterial pressure	Vitals	Pulmonary hypertension	Respiratory
Oxygen saturation	Vitals	Weight current and admission	
Temperature	Vitals		
Respiratory rate	Vitals		
SVR – systemic vascular resistance	Vitals		

Supplementary Table 2. Stream 2 initial and final sort solutions.

Stream 2 – Initial	Category	Stream 2 – Final	
Ejection fraction baseline and current	Cardiovascular	Serum Lactic Acid	Cardiovascular
CI – cardiac index	Cardiovascular	Life-threatening cardiac rhythm detected (current)	Cardiovascular
CVP – central venous pressure	Cardiovascular	Dysrhythmia presence and type	Cardiovascular
Dysrhythmia presence and type	Cardiovascular	ST segment changes	Cardiovascular
SVR – systemic vascular resistance	Cardiovascular	IV fluid 6 hour history	Cardiovascular
ST segment changes	Cardiovascular	Ejection fraction baseline and current	Cardiovascular
MAP – Mean arterial pressure	Cardiovascular	Pulmonary hypertension	Cardiovascular
Heart rate	Cardiovascular		
IV fluid 6 hour history	Cardiovascular	General examination notes	Demographics
Serum Lactic Acid	Cardiovascular		
Fluid responsiveness	Cardiovascular	Abdomen examination notes	Gastrointestinal
Weight current and at admission	Cardiovascular	Nutrition delivery method and content	Gastrointestinal
		Bowel Regimen	Gastrointestinal
History and physical (admission or transfer summary)	Demographics		
		Hematocrit	Hematologic
Blood glucose	Gastrointestinal	PT – prothrombin time	Hematologic
Blood glucose trend	Gastrointestinal		
Bowel Regimen	Gastrointestinal	Acute cardiogenic shock	Hemodynamics
Serum Albumin	Gastrointestinal	Input & Output	Hemodynamics
		Heart rate	Hemodynamics
Hematocrit	Hematologic	Heart rate trend over last 12 hours	Hemodynamics
PT – prothrombin time	Hematologic	MAP - mean arterial pressure	Hemodynamics
		CVP – central venous pressure	Hemodynamics
Temperature	Infectious disease	CI - Cardiac index	Hemodynamics
WBC – white blood cell count	Infectious disease	Hemodynamic instability prediction/risk	Hemodynamics
Microbiological Culture	Infectious disease	dobutamine 2000 mcg/ml in D5W pre-made 2 mcg/kg/min infusion	Hemodynamics
		norepinephrine 16,000mcg in sodium chloride 0.9% 250 ml 0.06 mcg/kg/min infusion	Hemodynamics

Cumulative neurological medication given	Neurologic	Blood glucose trend over last 48 hours	Hemodynamics
GCS – Glasgow Coma Scale	Neurologic	Blood glucose	Hemodynamics
Patient movement	Neurologic	SVR – systemic vascular resistance	Hemodynamics
		Base deficit/excess	Hemodynamics
PF ratio (PaO2/FiO2)	Pulmonary	Fluid responsiveness	Hemodynamics
24 hr Intake/Output	Renal	Temperature	Infectious disease
Serum Sodium	Renal	WBC – white blood cell count	Infectious disease
Serum Potassium	Renal	Microbiological culture	Infectious disease
Preoperative or baseline eGFR (estimated glomerular filtration rate)	Renal	days on antibiotic	Infectious disease
Urine frequency and volume 24 hour history	Renal		
		GCS - Glasgow coma scale	Neurologic
Abdomen Examination notes	unsorted	Patient movement	Neurologic
Acute respiratory distress prediction	unsorted	Cumulative neurologic medication given	Neurologic
Arterial Blood Gas pH test	unsorted	Sedation continuous infusion	Neurologic
Base deficit/excess	unsorted	Sedation vacation time and duration plan	Neurologic
Brain MRI (magnetic resonance imaging)	unsorted	Brain MRI (magnetic resonance imaging)	Neurologic
Chest x-ray - image	unsorted	CT head	Neurologic
Cough presence and description	unsorted		
General examination notes	unsorted	Preoperative or baseline eGFR (estimated glomerular filtration rate)	Pharmacy
Heart rate	unsorted	Medication overlap	Pharmacy
Hemodynamic instability prediction	unsorted	mycophenolate 500 mg tablet 1 three times daily	Pharmacy
I:E – ventilator inspiratory-to-expiratory time ratio	unsorted	prednisone 20 mg tablet 1 three times daily	Pharmacy
Life-threatening cardiac rhythm detected (current)	unsorted	Medication contraindications	Pharmacy
Medication contraindications	unsorted	fentanyl 10 mcg/ml in NS 50 mcg/hr infusion	Pharmacy
Medication overlap	unsorted		
MV – minute ventilation	unsorted	History and physical (admission or transfer summary)	Progress Note
Nutrition delivery method and content	unsorted		
Oxygen saturation	unsorted	24 hr intake/output	Pulmonary
PCO2 – partial pressure of carbon dioxide	unsorted	Acute hypoxic respiratory failure	Pulmonary
Progress notes	unsorted	Respiratory rate	Pulmonary
Respiratory rate	unsorted	FiO2	Pulmonary
Sedation continuous infusion	unsorted	Oxygen saturation	Pulmonary
Sedation vacation time and duration plan	unsorted	Oxygenation Index	Pulmonary
Serum Creatinine Kinase	unsorted	Arterial Blood Gas pH test	Pulmonary
Ventilator associated pneumonia prediction	unsorted	Chest x-ray - image	Pulmonary
Acute cardiogenic shock	unsorted	PCO2 – partial pressure of carbon dioxide	Pulmonary
Acute hypoxic respiratory failure	unsorted	Chest x-ray, notes	Pulmonary
CKD – chronic kidney disease	unsorted	I:E – ventilator inspiratory-to-expiratory time ratio	Pulmonary
		Acute respiratory distress prediction/risk	Pulmonary
		Ventilator associated pneumonia prediction/risk	Pulmonary
		MV – minute ventilation	Pulmonary

PF ratio (PaO2/FiO2)	Pulmonary
Cough presence and description	Pulmonary
Weight current and admission	Renal
Serum Creatinine	Renal
Serum Sodium	Renal
Serum Potassium	Renal
Urine frequency and volume 24 hour history	Renal
Serum Albumin	Renal
CKD – chronic kidney disease	Renal
furosemide 1mg/ml 10 mg/hr infusion	Renal
cefazolin 2 g intravenous every 8 hours	unsorted
Progress notes	unsorted

Supplementary Table 3. Stream 3 initial and final sort solutions.

Stream 3 – Initial	Category	Stream 3 – Final	Category
History and physical	AdmissionData/Demographics	Temperature	Admission data/demographics
Patient movement	AdmissionData/Demographics	Respiratory rate	Admission data/demographics
Cough presence and description	AdmissionData/Demographics	Oxygen saturation	Admission data/demographics
GCS – Glasgow Coma Scale	AdmissionData/Demographics	Weight current and admission	Admission data/demographics
Temperature	AdmissionData/Demographics	History and physical (admission or transfer summary)	Admission data/demographics
Weight current and at admission	AdmissionData/Demographics	Cough presence and description	Admission data/demographics
Progress notes	Daily Progress/Problem List	General examination notes	Daily progress/problem list
General examination notes	Daily Progress/Problem List	Progress notes	Daily progress/problem list
IV fluid 6 hour history	Daily Progress/Problem List	Acute cardiogenic shock	Daily progress/problem list
Urine frequency and volume 24 hour history	Daily Progress/Problem List	Pulmonary hypertension	Daily progress/problem list
24 hr Intake/Output	Daily Progress/Problem List	CKD – chronic kidney disease	Daily progress/problem list
Sedation vacation time and duration plan	Daily Progress/Problem List	Abdomen examination notes	Daily progress/problem list
Dysrhythmia presence and type	Hemodynamic Monitoring	Life-threatening cardiac rhythm detected (current)	Hemodynamic monitoring
Life-threatening cardiac rhythm detected (current)	Hemodynamic Monitoring	MAP - mean arterial pressure	Hemodynamic monitoring
ST segment changes	Hemodynamic Monitoring	Heart rate	Hemodynamic monitoring
Heart rate trend over last 24 hours	Hemodynamic Monitoring	Heart rate trend over last 12 hours	Hemodynamic monitoring
Heart rate	Hemodynamic Monitoring	Fluid responsiveness	Hemodynamic monitoring
MAP – Mean arterial pressure	Hemodynamic Monitoring	Dysrhythmia presence and type	Hemodynamic monitoring
Fluid responsiveness	Hemodynamic Monitoring	ST segment changes	Hemodynamic monitoring
CI – cardiac index	Hemodynamic Monitoring	CVP – central venous pressure	Hemodynamic monitoring

Hemodynamic instability prediction	Hemodynamic Monitoring	Ejection fraction baseline and current	Hemodynamic monitoring
Ejection fraction baseline and current	Hemodynamic Monitoring	CI - Cardiac index	Hemodynamic monitoring
SVR – systemic vascular resistance	Hemodynamic Monitoring	SVR – systemic vascular resistance	Hemodynamic monitoring
CVP – central venous pressure	Hemodynamic Monitoring	Hemodynamic instability prediction/risk	Hemodynamic monitoring
Brain MRI (magnetic resonance imaging)	Imaging	Chest x-ray - image	Imaging
Hematocrit	Laboratory	Chest x-ray, notes	Imaging
WBC – white blood cell count	Laboratory	Brain MRI (magnetic resonance imaging)	Imaging
Serum Sodium	Laboratory	Microbiological culture	Immunology and oncology
Serum Potassium	Laboratory	Prior Microbial Cultures	Immunology and oncology
Blood glucose	Laboratory	Temperature	Immunology and oncology
Serum Albumin	Laboratory	WBC – white blood cell count	Immunology and oncology
Blood glucose trend over last 12 hours	Laboratory	Antibiotic history	Immunology and oncology
Preoperative or baseline eGFR (estimated glomerular filtration rate)	Laboratory		
Serum Lactic Acid	Laboratory	CBC with Differential	Laboratory
PT – prothrombin time	Laboratory	Base deficit/excess	Laboratory
Microbiological Culture	Laboratory	Serum Sodium	Laboratory
Medication contraindications	Medications	Serum Potassium	Laboratory
Cumulative neurological medication given	Medications	Serum Creatinine	Laboratory
Sedation continuous infusion	Medications	Serum Albumin	Laboratory
Bowel Regimen	Medications	Serum Lactic Acid	Laboratory
Medication overlap	Medications	Blood glucose	Laboratory
Acute respiratory distress prediction	Respiratory	PT – prothrombin time	Laboratory
Ventilator associated pneumonia prediction	Respiratory	Blood glucose trend over last 48 hours	Laboratory
I:E – ventilator inspiratory-to-expiratory time ratio	Respiratory	Medication contraindications	Medications
MV – minute ventilation	Respiratory	norepinephrine 16,000mcg in sodium chloride 0.9% 250 ml 0.06 mcg/kg/min infusion	Medications
PF ratio (PaO2/FiO2)	Respiratory	dobutamine 2000 mcg/ml in D5W pre-made 2 mcg/kg/min infusion	Medications
Oxygen saturation	Respiratory	Sedation continuous infusion	Medications
Abdomen examination notes	unsorted	Sedation vacation time and duration	Medications
Arterial Blood Gas pH test	unsorted	plan	Medications
Base deficit/excess	unsorted	fentanyl 10 mcg/ml in NS 50 mcg/hr infusion	Medications
Chest x-ray - image	unsorted	Cumulative neurologic medication given	Medications
Chest x-ray, notes	unsorted	Bowel Regimen	Medications
Nutrition delivery method and content	unsorted	prednisone 20 mg tablet 1 three times daily	Medications
Respiratory rate	unsorted	cefazolin 2 g intravenous every 8 hours	Medications
		mycophenolate 500 mg tablet 1 three times daily	Medications
		furosemide 1mg/ml 10 mg/hr infusion	Medications
		Medication overlap	Medications

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Serum Creatinine	unsorted	GCS - Glasgow coma scale	Neurology
Acute cardiogenic shock	unsorted	ICP	Neurology
Acute hypoxic respiratory failure	unsorted		
CKD – chronic kidney disease	unsorted	24 hr intake/output	Nutrition and GI
Pulmonary hypertension	unsorted	IV fluid 6 hour history	Nutrition and GI
furosemide 1mg/ml 10 mg/hr infusion	unsorted	Urine frequency and volume 24 hour history	Nutrition and GI
dobutamine 2000 mcg/ml in D5W pre-made 2 mcg/kg/min infusion	unsorted	Nutrition delivery method and content	Nutrition and GI
norepinephrine 16,000mcg in sodium chloride 0.9% 250 ml 0.06 mcg/kg/min infusion	unsorted	Preoperative or baseline eGFR (estimated glomerular filtration rate)	Nutrition and GI
mycophenolate 500 mg tablet 1 three times daily	unsorted		
fentanyl 10 mcg/ml in NS 50 mcg/hr infusion	unsorted	Arterial Blood Gas pH test	Respiratory
prednisone 20 mg tablet 1 three times daily	unsorted	Acute hypoxic respiratory failure	Respiratory
cefazolin 2 g intravenous every 8 hours	unsorted	MV – minute ventilation	Respiratory
History and physical	AdmissionData/Demographics	PF ratio (PaO2/FiO2)	Respiratory
Patient movement	AdmissionData/Demographics	Ventilator associated pneumonia prediction/risk	Respiratory
Cough presence and description	AdmissionData/Demographics	Acute respiratory distress prediction/risk	Respiratory
GCS – Glasgow Coma Scale	AdmissionData/Demographics	I:E – ventilator inspiratory-to-expiratory time ratio	Respiratory
Temperature	AdmissionData/Demographics		
Weight current and at admission	AdmissionData/Demographics		
Progress notes	Daily Progress/Problem List		
General examination notes	Daily Progress/Problem List		
IV fluid 6 hour history	Daily Progress/Problem List		
Urine frequency and volume 24 hour history	Daily Progress/Problem List		
24 hr Intake/Output	Daily Progress/Problem List		
Sedation vacation time and duration plan	Daily Progress/Problem List		