

Phenotype-based list of data elements - Tier 1

Last revised: 09-01-2025

This is a list of Tier 1 data elements that all sites must provide as the minimal list of elements to be contributed. It is understood that elements included in the PERSON (Date time of birth, biological sex, ethnicity), DEATH (datetime of death), OBSERVATION_PERIOD, VISIT_OCCURENCE and VISIT_DETAIL tables are mandatory even if not included in the table below. Beyond the list below, many more elements have been, and will be included as part of the data uploads. The richer the set, the better.

We have collected created Concept-set id's, where each set is a collection of admissible OMOP concept id's to represent the corresponding data element(s). The list of such sets continues to grow, and all participants are invited to collaborate in the construction of the inventory of concepts sets, available at ([📄 Concept Set Inventory](#)).

[B2AI OHDSI Atlas](#)

☰ Phenotype-based list of data elements - Part 1

☰ Part -3 Consolidated Reference Guide for Supporting Documentation across phenotypes

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
Laboratory	Blood Chemistry	Serum, plasma, blood, POC. All go in the MEASUREMENT domain.	Sodium		7,8	include standard Measurement domain concepts for serum, plasma or blood potassium, excluding measurements from other specimen types.
			Potassium		19	
			Creatinine		26	
			BUN		27	
		Include POC glucose	Glucose			POC glucose will have different concept_id's

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
			Total bilirubin		28	
			Direct (conjugated) bilirubin		29	Direct bilirubin is almost exclusively measured in serum or plasma as part of standard liver function panels. This reflects circulating conjugated bilirubin, which builds up in the blood when there is cholestasis or hepatobiliary obstruction.
			Indirect bilirubin		30	Indirect (unconjugated) bilirubin is not measured directly. It is calculated as: Indirect bilirubin = Total bilirubin - Direct (conjugated) bilirubin. This calculation is always done using serum or plasma values in routine clinical chemistry panels.
		Include lactate from blood gases	Lactate		31	
		.	Troponin		54	
			D-dimers		55	
			Ammonia		56	
			Serum ketones		57	
			CPK (CK)		58	
		Major inflammatory marker in Peds, neonates	Ferritin		60	
		Inflammatory marker	CRP		60	
	Hematology	Differential counts are not required	WBC count, leukocyte		61	

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
		elements but should be included if available				
			Hemoglobin		63	
			Hematocrit		64	
			Platelets		65	
	Coagulation		INR		66	
			PTT		67	
			Fibrinogen		68	
	Blood gases	All sources of blood gases (arterial, venous, capillary, central venous)	PO2		69 (arterial), 73 (venous), 76 (capillary)	
			PCO2		70 (arterial), 77 (venous), 78 (capillary)	
			pH		71, 75,	
			SaO2		72 (arterial), 74(venous), 79(capillary, 90 (central venous)	
Microbiology	Cultures	See specific SOP	Specimen obtained	Includes collection and reporting dates, negative cultures	81	Panels are currently excluded. Specify data element (currently is a mixed group)
			Site of specimen	(blood, csf, urine, etc)	82	All specimens were included, if needed - limit (see included concepts)

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
		Some results will be in the MEASUREMENT domain	Results	Positive/negative/specific results (titers, PCR, etc)	83, 85	Can be split for usability in cohort definition (positive/detected and negative/not detected separately)
	Susceptibility		Antibiotic sensitivity		84	
Procedures and interventions	Radiology	Chest radiographs, CT, MRI, other radiologic studies	Procedure, Reports (see notes below)		86, 87,88, 89	Procedures are documented in the PROCEDURE_OCCURENCE table. Many will have associated notes/reports
	EKG		Procedure, Reports			
	EEG		Procedure, Reports			
	US Head (neonate)		Procedure, Reports			
	Mechanical ventilation		Procedure		17	SA
	Tracheal intubation		Procedure		18	SA
	Tracheostomy					
	KRT	All forms of renal replacement therapy	Procedure			
	ECMO		Procedure			
	Therapeutic hypothermia (neo)				91	
	Phototherapy (neo)				20	SA

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
	Major procedures	Typically performed in OR				
	Other procedures	Any other procedure is good to include, but not mandatory.				
Drugs	Vasopressors		Dose or infusion rate, as relevant	This will depend on the specific drug		
	Anticoagulants					
	Inotropes					
	Diuretics					
	Sedatives					
	Analgesics					
	Paralytics					
	Antimicrobials					
	Chemotherapy					
	Immunosuppression	Includes all forms of steroids				
	Anticonvulsants					
	Surfactant (neo)					BAS
	Caffeine (neo)					BAS
	Albumin					
	Other drugs	Although not mandatory, it is desirable and may				

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
		be easier to simply provide information on all drugs.				
Flowsheets-Vitals	Blood pressure (invasive)		Systolic, diastolic, mean			
	Blood pressure (non-invasive)		Systolic, diastolic, mean			
	Blood pressure (site)	Include central venous pressure				
			heart rate/ pulse			
			respiratory rate			
			pulse oximetry (SpO2)			
			temperature			
			APGAR (neonate)		43 ten minute 44 one minute 45 five minute	
	Biometrics		weight	kg		
			height	cm		
			Head circumference (infant, neonate)	cm	90	
			Length (neo/peds)	cm		
			Gestational age	weeks	50	
			Birth weight	g	92	

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
	Intakes		IV maintenance	cc		
			IV bolus	cc		
			IV drug infusions	cc/hr		
		Significant volumes may be given with antibiotics, for example.	Other IV volumes	cc		
		Blood products, see transfusion guidelines	Whole blood	cc		
			RBC	cc		
			platelet	cc		
			plasma	cc		
			cryoprecipitate	cc		
		Other intakes	oral intake	cc		
			GI feeds	cc		
			Infant feeds	Milk type		
	output		urine (all forms)	cc	11*	
			drains	cc		There are different concept sets for different types of drains
			blood loss	cc		
			dialysis	cc		
			CKRT, all forms	cc		

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
			Other output	cc		
	nursing assessments		Delirium score	CAM-ICU or similar	10	
			Pediatric Delirium score	CAPD, pCAM-ICU, psCAM-ICU		
		The Richmond Agitation-Sedation Scale (RASS) is a common agitation scores, but others are permissible.	Agitation score	RASS	9	
			Pediatric sedation score	State Behavior Scale		
			Neonatal abstinence syndrome	Neonatal abstinence syndrome score	37	
			Glasgow		13	
			Neonatal Pain	NPASS	39	
			Neonatal reflexes	Suck, grasp, moro	35, 36, 42	
	mechanical ventilation	Ventilator settings (typically represented in OBSERVATION table)	Rate setting			
			Mode setting	Assist Control-Volume Control, Pressure Control, Pressure-Regulated Volume Control, SIMV, High frequency (neo), Pressure Support/CPAP, Volume Support, Blow by, Other		

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			FIO2 setting	Fraction, should be in the [.21,1] range. So 100% O2 is 1 and room air is 0.21.	16	TCP
			PEEP setting		15	
			Tidal volume setting			
			Other settings	(Inspiratory time [s], Inspiratory Flow setting[l/min],PEEP-Hi, PEEP-Lo, Pressure support [cmH2O], others)		
		Ventilator measurements	Total rate			
			Minute ventilation		12*	
			Peak pressure			
			Mean airway pressure		14*	
	Non-invasive ventilation	Ventilation settings	Rate setting-NIV			
			CPAP-setting-NIV	cm H2O		
		Some settings apply to both invasive and non-invasive ventilation	PS support-NIV	cm H2O		
			Other settings	EPAP, IPAP	15	

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
			Mode setting - NIV	CPAP, BiPAP, other		
	Other respiratory		Oxygen flow			
			Nitric oxide	flow		
				concentration		
			Heliox	%		
			Airway	Endotracheal tube, tracheal cannula, other		
			Respiratory device	High Flow NC, Face Mask, Trach Collar, Nasal Cannula, Other		
	ECMO		Start and stop times			
			Type			
			Sweep			
			Pump speed			
Notes	Class	Clinical notes	H & P			
			Progress notes			
			Discharge summary			
			Other clinical notes (desirable, not mandatory)	(operative reports, rapid response, consults, ancillary services,		

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
				chaplain, social service, etc.)		
		Reports	Radiology, EEG, ECG, Echo			
			Other reports (desirable, not mandatory)	(US, PFT's, etc.)		
Conditions	Diagnostic codes		All			
	Problems		All			
Code Status		All recorded changes should be reported	Code Status	Full code, Comfort measures only, Comfort care, DNR, DNI, other limited, other		
Waveforms	Numerics	Monitors	All available	See SOP		
		EEG		Persyst		
	Waveforms		ECG, PPG			
			Other monitor waveforms	All available		
			EEG			
Images	Radiology		CXR	See SOP		
			CT	Head, CTAP, CT-angio, etc.		
			MRI			

Domain	Subdomain	Clinical Justification, comment	Data elements	Units/choices	Concept set id	Recommendations for concept set creation
			Other radiology	Abdominal, trauma-related,etc.		