

Acute Kidney Injury Order Set

Understanding intravenous fluid bolus orders and monitoring:

Intravenous fluid boluses may be ordered for AKI patients based on risk of volume overload.

The order will appear as an **Initial Bolus +/- Repeat Bolus(es)**. The initial bolus volume should be given over 30 minutes. The Repeat Bolus is a **conditional order** that should be activated only if the safety parameters (defined below) have not been reached after the Initial Bolus.

Intravenous Therapies										
Isotonic crystalloids are preferred for initial management for expansion of intravascular volume in patients with AKI. Crystalloids are preferred over colloid solutions in most scenarios - exceptions may include liver failure/suspected spontaneous bacterial peritonitis, and burns.										
Risk of Fluid Overload Causing Cardio-Respiratory Compromise										
Low		No history of heart failure. Left ventricular ejection fraction greater than 55%. No history of chronic kidney disease. No third spacing of fluids.								
Intermediate		Heart failure (mild systolic dysfunction). Left ventricular ejection fraction 45-55%. History of chronic kidney disease. Minor third spacing of fluids.								
High		History of heart failure (moderate or severe dysfunction). Left ventricular ejection fraction less than 45%. History of advanced chronic kidney disease. Significant third spacing of fluids.								
Hypovolemic/Volume responsive pt - NaCl										
Order	Bolus	Volume	Unit	Frequency	Adjustable Rate	Start Priority	Stop After	Advisory Note	Additional Information	
- LOW risk - 2 item(s)										
<input type="checkbox"/> 0.9% NaCl infusion	<input checked="" type="checkbox"/>		mL	once	Give over 30 minutes	STAT		Recommended: 250 to 1000...	INITIAL bolus. LOW...	
<input type="checkbox"/> 0.9% NaCl infusion	<input checked="" type="checkbox"/>		mL	q1h	Give over 30 minutes	Routine		Recommended: 250 to 1000...	REPEAT bolus. If...	
- INTERMEDIATE risk - 2 item(s)										
<input type="checkbox"/> 0.9% NaCl infusion	<input checked="" type="checkbox"/>		mL	once	Give over 30 minutes	STAT		Recommended: 100 to 500 mL.	INITIAL Bolus...	
<input type="checkbox"/> 0.9% NaCl infusion	<input checked="" type="checkbox"/>		mL	q1h	Give over 30 minutes	Routine		Recommended: 100 to 500 mL.	REPEAT bolus. If...	
- HIGH risk - 2 item(s)										
<input type="checkbox"/> 0.9% NaCl infusion	<input checked="" type="checkbox"/>		mL	once	Give over 30 minutes	STAT		Recommended: 100 to 250 mL.	INITIAL bolus. HIGH...	
<input type="checkbox"/> 0.9% NaCl infusion	<input checked="" type="checkbox"/>		mL	q1h	Give over 30 minutes	Routine		Recommended: 100 to 250 mL.	REPEAT bolus. If...	

It is important to monitor vital signs and output to avoid volume overload.

- Vital signs should be assessed for patients receiving IV boluses directly prior to the bolus infusion and **1 hour after each bolus**.
- Output should be assessed for patients receiving IV boluses directly prior to the bolus infusion and **30 to 45 minutes after each bolus**.

Physicians will specify safety parameters and may enter efficacy targets for patients.

- If **any** of the safety parameters are met in between or after the boluses, notify the attending physician and do not proceed with the next bolus.
- One or more efficacy targets may be entered by the physician. Notify the attending physician if **all** of the efficacy targets are met and do not proceed with next bolus.

	Order	Who	When	Frequency	Additional Information
[-] Monitoring - 2 item(s)					
<input checked="" type="checkbox"/>	Vital Signs			q1h	Perform directly prior to bolus infusion...
<input checked="" type="checkbox"/>	Monitor Output			q1h	Perform directly prior to bolus infusion...
[-] Safety Parameters - 2 item(s)					
<input checked="" type="checkbox"/>	Clinical Communication				Safety Parameters: Stop bolus infusion if...
<input checked="" type="checkbox"/>	Notify	Attending Physician	Immediately - when Volume Administration Safety Concerns are...		
[-] Efficacy Targets - 2 item(s)					
<input type="checkbox"/>	Clinical Communication				Efficacy Targets: Stop bolus infusion if...
<input type="checkbox"/>	Notify	Attending Physician	Immediately - when Volume Administration Efficacy Targets are...		
[-] Notify - 1 item(s)					
<input type="checkbox"/>	Notify	Attending Physician	To re-assess patient if boluses are completed and efficacy targets...		

Monitoring					
Vital Signs - Pulse, Respirations, Oxygen Saturation, Blood Pressure, q1h, -- Perform directly prior to bolus infusion and 1 hour after completion of each bolus. Notify attending physician and do not proceed with next bolus if safety parameters have been reached or exceeded between bolus'.					
Monitor Output -, Type of Output: Urine, q1h, -- Perform directly prior to bolus infusion and 30 to 45 minutes after completion of each bolus.					
Safety Parameters					
Clinical Communication - Physician to Nurse, -- Safety Parameters: Stop bolus infusion if Volume Administration Safety Concerns are identified.					
- Respiratory rate increases by 4 breaths/minute from baseline vital signs					
- Heart rate increases by 10 beats/minute from baseline vital signs					
- Oxygen requirement increase by 2 liters/minute from baseline vital signs					
Notify - , Who: Attending Physician, When: Immediately - when Volume Administration Safety Concerns are identified.					
Efficacy Targets					
Clinical Communication - Physician to Nurse, -- Efficacy Targets: Stop bolus infusion if Volume Administration Efficacy Targets are met.					
- Urine output greater than _20_ mL/hour					
- Systolic blood pressure greater than _90_ mmHg					
- Heart rate less than _100_ beats/minute					
Notify - , Who: Attending Physician, When: Immediately - when Volume Administration Efficacy Targets are met.					
HIGH risk					
0.9% NaCl infusion - Bolus 250 mL IV once Give over 30 minutes					
Access: Peripheral Line, --INITIAL bolus. HIGH risk of fluid overload. Stop bolus infusion if Volume Administration Safety Concerns are identified.					
0.9% NaCl infusion - Bolus 100 mL IV q1h Give over 30 minutes					
Access: Peripheral Line, --REPEAT bolus. If safety parameters have not been reached or exceeded and until efficacy targets reached. HIGH risk of fluid overload., Stop After 2 Times					
? REPEAT bolus. If safety parameters have not been reached or exceeded and until efficacy targets reached.					
<Avail. Activations=1>					

Study inquiries or feedback about the tools and processes? Contact Meha Bhatt, Research Coordinator - meha.bhatt@ucalgary.ca