

IPSO Collaborative: Fluid Resuscitation Method Recommendations

Sepsis Guidelines — Initial Resuscitation: Rapid Fluid Bolus Completion within 15 minutes

Initial Goal Volume	Method <i>(in order of recommendation)</i>	Nursing Considerations
< 500 ml	Push-Pull	<ul style="list-style-type: none"> ▪ Requires large bore tubing, stop-cock, 20 or 30ml syringe
	Syringe Disconnect/Reconnect	<ul style="list-style-type: none"> ▪ Ideally requires two trained providers ▪ Recommend discard of each syringe after use ▪ Consider limiting use in patients with central lines due to infection risk
	Pump Bolus	<ul style="list-style-type: none"> ▪ ONLY consider in patients ≤ 12kg <ul style="list-style-type: none"> ○ IV pump set to highest rate (999ml/hr) can only deliver 240mls in 15 minutes (goal for bolus to be completed within 15 minutes of initiation)
> 500 ml	Push-Pull	<ul style="list-style-type: none"> ▪ Requires large bore tubing, stop-cock, 20 or 30ml syringe
	Pressure Bag	<ul style="list-style-type: none"> ▪ Delivers ‘whole bag’ volumes (500/1000 mL) <ul style="list-style-type: none"> ○ Extra volume can be removed prior to administration if desired ▪ Inflate to pressure of 300 mmHg and monitor for optimization ▪ Do not use with IV catheter smaller than 22g to prevent infiltration
	Rapid Infuser	<ul style="list-style-type: none"> ▪ Volume aliquots are determined by type of rapid infuser ▪ Ideally use with 20 gauge IV or larger * ▪ Do NOT use with Intraosseous Needles (IOs) due to increased resistance in marrow space ▪ If large bore T-connector unavailable, connect directly to catheter or needleless valve to prevent increased resistance and loss of flow rate

Special Considerations	IV Gauge and Fluid Bolus Capacity*																												
<ul style="list-style-type: none"> ▪ Ideally one staff member maintains responsibility for fluid resuscitation. ▪ Utilize a 20ml push-pull syringe size for the ease of bolus administration and calculation. ▪ Use of large bore, short length catheters is ideal for rapid fluid resuscitation. ▪ Consider more invasive procedures for access if unable to obtain peripheral IV in 15 minutes. * <ul style="list-style-type: none"> ○ IO catheters should be considered when IV access can't be quickly obtained. <ul style="list-style-type: none"> • Fluid boluses via IO in conscious patients can be extremely painful, 2% lidocaine should be considered for pain management. * ○ Rapid Infusion Catheters (RIC) may also be used. <ul style="list-style-type: none"> • These large bore, short length catheters can be threaded over an existing small bore PIV, or inserted traditionally by a trained provider. ▪ Consider use of large bore T-connector and/or Y-connector: A standard t-connector limits the flow rate to that of a 22-gauge IV. 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">IV Gauge</th> <th style="text-align: center;">Max rate in ml/min</th> <th style="text-align: center;">500ml bolus</th> <th style="text-align: center;">1000ml bolus</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">24g</td> <td style="text-align: center;">20ml/min</td> <td style="text-align: center;">25 min</td> <td style="text-align: center;">50 min</td> </tr> <tr> <td style="text-align: center;">22g</td> <td style="text-align: center;">35ml/min</td> <td style="text-align: center;">14 min</td> <td style="text-align: center;">28 min</td> </tr> <tr> <td style="text-align: center;">20g</td> <td style="text-align: center;">65ml/min</td> <td style="text-align: center;">7.5 min</td> <td style="text-align: center;">15 min</td> </tr> <tr> <td style="text-align: center;">18g</td> <td style="text-align: center;">105ml/min</td> <td style="text-align: center;">5 min</td> <td style="text-align: center;">10 min</td> </tr> <tr> <td style="text-align: center;">16g</td> <td style="text-align: center;">220ml/min</td> <td style="text-align: center;">2.25 min</td> <td style="text-align: center;">4.5 min</td> </tr> <tr> <td style="text-align: center;">14g</td> <td style="text-align: center;">330ml/min</td> <td style="text-align: center;">1.5 min</td> <td style="text-align: center;">3 min</td> </tr> </tbody> </table>	IV Gauge	Max rate in ml/min	500ml bolus	1000ml bolus	24g	20ml/min	25 min	50 min	22g	35ml/min	14 min	28 min	20g	65ml/min	7.5 min	15 min	18g	105ml/min	5 min	10 min	16g	220ml/min	2.25 min	4.5 min	14g	330ml/min	1.5 min	3 min
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*See manufacturer specific values and recommendations