



Rheumatology and gastroenterology intravenous (IV) stability reference guide



Rheumatology and gastrointestinal products requiring dilution

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Drug	Last updated	Vial strength	Diluent and concentration	Further dilute in	Final concentration	Stability	Infusion/storage/precaution information	Fluid shortage considerations
Abatacept (Orencia, Orencia ClickJect)	11/2024	IV: 250 mg lyophilized powder SDV SubQ: 125 mg/mL solution in a single-dose prefilled syringe as autoinjector SubQ: 50 mg/0.4 mL, 87.5 mg/0.7 mL solution reconstituted	For powder vial: using only the silicone-free disposable syringe provided with each vial 10 mL SWFI (25 mg/mL)	100 mL NS	Max 10 mg/mL	Solution is stable at room temperature or refrigerated up to 24 hours before use	IV infusion is 30 minutes for RA, pJIA and PsA 60 minutes infusion for GvHD	Consider switching to subcutaneous formulation when clinically indicated
Belimumab (Benlysta)	11/2024	IV: 120 mg or 400 mg lyophilized powder SubQ: 200 mg/mL autoinjector or prefilled syringe	IV: 120 mg vial – 1.5 mL SWFI (80 mg/mL) 400 mg vial – 4.8 mL SWFI (80 mg/mL)	250 mL NS, ½ NS or Lactated Ringers 100 mL NS, ½ NS or Lactated Ringers if weight ≤ 40 kg	N/A	Reconstituted solution should be used immediately or stored protected from light and at refrigerated or room temperature Diluted solutions may be stored refrigerated or at room temperature	The total time from reconstitution of Benlysta to completion of infusion should not exceed 8 hours	Consider switching to subcutaneous formulation when clinically indicated
Bevacizumab (Avastin, Mvasi, Zirabev, Vegzelma, Alymsys)	11/2024	100 or 400 mg vial (25 mg/mL)	N/A	100 mL NS Do NOT mix with dextrose containing solutions	N/A	Solutions stable for up to 8 hours under refrigeration	Administer first IV infusion over 90 minutes. If tolerated, administer second infusion over 60 minutes. If tolerated, the subsequent infusions may be given over 30 minutes Protect from light	SGO (Society of Gynecologic Oncology) recommends to dilute in 50 mL NS bags to conserve fluid usage ² Medical inquiry with Genentech for Avastin suggests that dilution of Avastin is compatible and stable with 0.45% NS to a total volume of 100 mL in the event 0.9% NS is not available ³
Certolizumab pegol (Cimzia)	11/2024	SubQ: 200 mg lyophilized powder package contains everything required to reconstitute and inject SubQ: 200 mg/mL solution in a single-dose prefilled syringe	For powder vial: 1 mL SWFI (200 mg/mL)	N/A	N/A	Solution is stable after reconstitution at refrigerated temperature for up to 24 hours	SubQ injection - Prior to injecting, reconstituted drug should be at room temperature Do not leave reconstituted drug at room temperature for more than two hours prior to administration	N/A

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Cyclophosphamide (Cytoxan)	01/2022	IV: 500, 1000 or 2000 mg vial powder for injection; 500 mg/2.5 mL, 1 g/5 mL, 2 g/10 mL solution	For powder form: 25, 50 or 100 mL of SWFI or NS, depending on dose (20 mg/mL)	100 to 250 mL NS, ½ NS, D5W or D5NS	Minimum 2 mg/mL	Reconstituted solution in NS is stable for 24 hours at room temperature and 6 days refrigerated Solutions diluted for infusion in ½ NS are stable for 24 hours at room temperature and for 6 days refrigerated; solutions diluted D5W or D5NS are stable for 24 hours at room temperature and for 36 hours refrigerated	Administer as IV infusion over 1 to 24 hours Doses >500 mg to 2 g may be administered over 20-30 minutes Ensure adequate hydration to minimize bladder toxicity	Consider switching to injection solution formulation of the product, which does not require reconstitution If using powder formulation, then reconstitute with fluid directly from the dilution bag, which will be used instead of separating NS or SWFI
Ferric carboxymaltose (Injectafer)	11/2024	750 mg/15 mL (50 mg/mL), 100 mg/2mL (50 mg/mL) solution in SDV	N/A	250 mL NS	2 to 4 mg/mL (must be ≥ 2 mg/mL)	Solutions diluted in NS at concentration of 2 to 4 mg/mL are stable for 72 hours at room temperature	Administer as IV infusion over 15 minutes May be administered as slow IV push undiluted at a rate of 100 mg/minute for doses ≤ 750 mg	Consider using undiluted for lower doses or an alternative IV iron that can be administered undiluted or diluted in lower volume of diluent (i.e., Venofer)
Denosumab (Prolia)	01/2022	SubQ: Single-dose prefilled syringe containing 60 mg in a 1 mL solution	N/A	N/A	N/A	Store refrigerated; stable at room temperature for 14 days	N/A	N/A
Golimumab (Simponi Aria)	11/2024	IV: 50 mg/4 mL (12.5 mg/mL) solution SDV SubQ: 50 mg/0.5 mL; 100 mg/mL	N/A	100 mL NS or ½ NS	N/A	Diluted solution is stable at room temperature for up to 4 hours	Use in-line LPB filter Infuse the diluted solution over 30 minutes	Consider switching to subcutaneous formulation when clinically indicated
Guselkumab (Tremfya)	11/2024	IV: 200 mg/20 mL SubQ: 100 mg/1 mL, 200 mg/2 mL solution in prefilled syringe or autoinjector	N/A	250 mL NS	0.8 mg/mL	Diluted solution is stable at room temperature for up to 10 hours. Infusion must be completed within 10 hours after the dilution in the infusion bag	Administer IV infusion over 1 hour Use in-line filter	N/A
Iron sucrose (Venofer)	11/2024	IV infusion or IV push: 50 mg/2.5 mL, 100 mg/5 mL, or 200 mg/10 mL (20 mg/mL) SDV	N/A	IV push: No dilution IV infusion: Max 100-200 mg in 100 mL NS	Do not dilute to <1 mg/mL	Store at controlled room temperature Do not freeze When diluted, in concentrations between 2-10 mg per mL or undiluted in the syringe or IV: concentration 1-2 mg/mL is stable at room temperature or refrigerated for 7 days	Do not dilute to concentrations below 1 mg/mL Do not mix Venofer with other medications	Use undiluted when clinically indicated

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Infliximab (Remicade, Inflectra, Avsola, Renflexis, Zymfentra)	11/2024	IV: 100 mg lyophilized powder SDV SubQ: 120 mg/mL	10 mL SWFI (10 mg/mL) Use a syringe equipped with a 21-gauge or smaller needle	250 mL NS May use 500 mL NS if high dose Discard any unused portion of the reconstituted solution remaining in the vial(s)	Max concentration 4 mg/mL	Unopened vials may be stored at room temperature up to a maximum of 30°C (86°F) for a single period of up to 6 months, provided this does not exceed the original expiration date. Write the new expiration date in the space provided on the carton. Once removed from the refrigerator, vials cannot be returned to the refrigerator. Once reconstituted, infusion must begin within 3 hours (Avsola, Inflectra, Remicade) or 4 hours (Renflexis)	Administer IV using LPB in-line filter. Begin infusion within 3 hours of reconstitution and dilution. Infusion must last at least 2 hours	Consider switching to subcutaneous formulation when clinically indicated Zymfentra SubQ is indicated only for the maintenance treatment of ulcerative colitis and Crohn's disease, starting at week 10 or after completing the IV induction regimen with an infliximab product
Mepolizumab (Nucala)	01/2022	SubQ: 100 mg of lyophilized powder SDV; 100 mg/mL, single-dose, prefilled autoinjector or single-dose prefilled syringe	For powder form: 1.2 mL SWFI (100 mg/mL)	N/A	N/A	Store reconstituted solution below 30°C (86°F) Do not freeze, and discard if not used within 8 hours of reconstitution	For 100 mg dose, remove 1 mL of reconstituted solution For 40 mg dose, remove 0.4 mL of reconstituted solution	N/A
Methotrexate	01/2022	50 mg/2 mL (25 mg/mL), 250 mg/10 mL (25 mg/mL), and 1 g/40mL (25 mg/mL) solutions 1 g lyophilized powder There are many manufacturers, so this list may not be complete	For powder form: NS or D5W to concentration of less than 25-50 mg/mL Use preservative-free for IT	D5W for IV injection Sterile NS for IT	Max concentration of 50 mg/mL	IT solutions should be given immediately Diluted solutions stable for 24 hrs at room temperature	Protect from light May be given IV, SubQ or IM	Consider switching to oral formulation when clinically indicated
Mirikizumab-mrkz (Omvo)h	11/2024	IV: 300 mg/15 mL (20 mg/mL) SDV SubQ: 100 mg/mL prefilled pen or prefilled syringe	N/A	IV: 50 mL to 250 mL NS or D5W	N/A	If needed, the prefilled pen or prefilled syringe may be stored at room temperature up to 30°C (86°F) for up to 2 weeks in the original carton Diluted solution is stable refrigerated for 48 hours. Total time outside of refrigerator may not exceed 5 hours starting at the time of vial puncture	Administer IV infusion over 30 minutes Store refrigerated at 2°C to 8°C (36°F to 46°F) Do not freeze. Do not use Omvo if it has been frozen Do not shake Protect from light	If IV is necessary, use 50 mL bag of NS or D5W where appropriate. Do not mix with other drugs Consider using SubQ when clinically indicated

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Ocrelizumab (Ocrevus, Ocrevus Zunovo)	11/2024	IV: 300 mg/10 mL (30 mg/mL) SDV SubQ: Ocrelizumab 920 mg and hyaluronidase-ocsq 23,000 units/23 mL	N/A	10 mL (300 mg) of solution in 250 mL NS or 20 mL (600 mg) of solution in 500 mL NS	1.2 mg/mL 40 mg – 1000 units/mL	Diluted solution is stable up to 24 hours refrigerated or 8 hours at room temperature	Use in-line filter Administer IV infusion at the titrated rate in manufacturer's packaged label. Monitor for at least one hour after infusion is complete Administer SubQ over 10 minutes. Monitor for 1 hour following first injection and for at least 15 minutes following subsequent injections	Consider switching to subcutaneous formulation when clinically indicated
Omalizumab (Xolair)	01/2022	SubQ: 75 mg/0.5 mL and 150 mg/mL solution SDV; 150 mg lyophilized powder SDV	For powder - 1.4 mL SWFI	N/A	N/A	Protect from light Stable for 8 hours following reconstitution when refrigerated, or for 4 hours after reconstitution when stored at room temperature	Administer SubQ	N/A
Pegloticase (Krystexxa)	01/2022	IV: 8 mg/1 mL sterile concentrate	N/A	250 mL NS or ½ NS	N/A	Diluted solution in infusion bags is stable for 4 hours refrigerated and at room temperature. It is recommended that diluted solutions be stored under refrigeration and not frozen. Must be used within 4 hours of dilution Protect from light	Before administration, allow the diluted solution to reach room temperature. Solution in a vial or in an intravenous infusion fluid should never be heated artificially (e.g., hot water, microwave)	Consider alternative treatment options for gout



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Reslizumab (Cinqair)	01/2022	IV: 100 mg/10 mL (10 mg/mL) solution SDV	N/A	50 mL NS	N/A	Administer immediately after preparation. If not used immediately, store diluted solutions in the refrigerator or at room temperature up to 25°C (77°F) for up to 16 hours Protect from light	For IV infusion only: The time between preparation of Cinqair and administration should not exceed 16 hours Use an infusion set with an in-line, LPB filter. Flush with NS after infusion is complete Is compatible with polyethersulfone (PES), polyvinylidene fluoride (PVDF), nylon, and cellulose acetate in-line infusion filters	N/A
Risankizumab-rzaa (Skyrizi)	11/2024	SubQ injection: 150 mg/mL SD prefilled pen, 90 mg/mL, or 150 mg/mL prefilled syringe 180 mg/1.2 mL (150 mg/mL, or 360 mg/2.4 mL (150 mg/mL) in each single-dose prefilled cartridge IV: 600 mg/10 mL (60 mg/mL) SDV	N/A	IV induction doses: Crohn's disease: 600 mg in 100 mL, or 250 mL, or 500 mL D5W or NS Ulcerative colitis: 1200 mg in 250 mL, or 500 mL NS or D5W	N/A	Use the prepared infusion immediately. If not used immediately, store the diluted Skyrizi solution for up to 20 hours between 36°F to 46°F (2°C to 8°C) Refrigerate Protect from light Immediately after preparation or removal from refrigeration, the diluted Skyrizi solution can be stored at room temperature at up to 77°F (25°C), protected from sunlight, for 4 hours (cumulative time from start of dilution to start of infusion)	Do not shake the vial or diluted solution Do not mix with other infusions Do not freeze Exposure to indoor light is acceptable during room temperature storage and administration	Consider using subcutaneous formulation when clinically indicated
Rituximab (Rituxan, Ruxience, Truxima, Riabni)	01/2022	IV: 100 or 500 mg vial solution for injection (10 mg/mL)	N/A	NS or D5W to final concentration of 1 mg/mL to 4 mg/mL	1 to 4 mg/mL	Solutions stable for 24 hours under refrigeration (7 days for Riabni) and additional 24 hours at room temperature (8 hours for Ruxience)	Administer as IV infusion: initial infusion should start at 50 mg/hour and if no reaction the rate should be increased by 50 mg/hour every 30 minutes to a max rate of 400 mg/hr	Consider switching to Rituxan Hycela subcutaneous formulation for oncology indications only

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Rituximab and hyaluronidase (Rituxan Hycela) Only indicated for oncology use	01/2022	SubQ: 1,400 mg rituximab and 23,400 Units hyaluronidase human per 11.7 mL (120 mg/2,000 Units per mL) 1,600 mg rituximab and 26,800 Units hyaluronidase human per 13.4 mL (120 mg/2,000 Units per mL)	N/A	N/A	120 mg/2,000 Units per mL	Stable in the refrigerator up to 48 hours and 8 hours at room temperature up to 30°C (86°F) in diffuse light	Administer SubQ in the abdomen 11.7 mL from 1,400 mg/23,400 Units vial over 5 minutes 13.4 mL from 1,600 mg/26,800 Units vial over 7 minutes Observe 15 minutes following administration	N/A
Romosozumab-aqqg (Evenity)	01/2022	SubQ: 105 mg/1.17 mL solution in a single-use prefilled syringe	N/A	N/A	N/A	Stable at room temperature in original container for 30 days	A full dose of Evenity requires two single-use prefilled syringes	N/A
Spesolimab-sbzo (Spevigo)	11/2024	IV: 450 mg/7.5 mL (60 mg/mL) solution in a single-dose vial SubQ: 150 mg/1mL solution in prefilled syringe	N/A	100 mL NS	900 mg/100 mL	Stable up to 4 hours in refrigerator if not used immediately Protect from light	Refrigerate Protect from light Undiluted vial can be stored at room temperature for up to 24 hours	Consider switching to subcutaneous formulation in patients who are not experiencing a psoriasis flare
Tildrakizumab (Ilumya)	11/2024	100 mg/mL (1mL) solution in prefilled syringe	N/A	N/A	N/A	Stable at room temperature for up to 30 days. Once stored at room temperature, do not place back in refrigerator	Administer SubQ	N/A
Tocilizumab IV (Actemra, Tyenne, Tofidience, Actemra ACTPen)	11/2024	IV: 80 mg/4 mL (20 mg/mL), 200 mg/10 mL (20 mg/mL), 400 mg/20 mL (20 mg/mL) SDV SubQ: 162 mg/0.9 mL solution prefilled syringe (only Actemra and Tyenne products)	N/A	Patients weighing under 30 kg: use a 50 mL infusion bag or bottle of NS, or ½ NS Patients at or above 30 kg weight: use a 100 mL infusion bag or bottle of NS, or ½ NS ½ NS is compatible with Actemra and Tyenne only	N/A	Actemra: NS dilution is stable refrigerated or at room temperature for 24 hours. ½ NS dilution is stable refrigerated for 24 hours or at room temperature for 4 hours Tofidience: NS dilution is stable refrigerated for 24 hours or at room temperature for 12 hours Tyenne: NS or ½ NS dilution is stable refrigerated for 24 hours or at room temperature for 4 hours	Protect from light Administer IV infusion over 60 minutes	Consider utilizing Actemra or Tyenne if NS is not available since they are compatible with ½ NS Consider switching to subcutaneous formulation when clinically indicated

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Ustekinumab (Stelara)	01/2022	IV: 130 mg/26 mL SDV (5 mg/mL) SubQ: 45 mg/0.5 mL or 90 mg/mL syringe or SDV	N/A	IV: 250 mL NS or 250 mL ½ NS	N/A	Diluted infusion is stable at room temperature for up to 7 hours	Complete infusion within 8 hours of dilution Do not use SubQ injection in IV drip	Consider switching to subcutaneous formulation when clinically indicated
Vedolizumab (Entyvio, Entyvio Pen)	11/2024	IV: 300 mg of lyophilized powder/20 mL SubQ: 108 mg/0.68 mL	4.8 mL SWFI (300 mg/5 mL)	250 mL NS or LR	N/A	Diluted solution in NS is stable refrigerated for 24 hours or at room temperature for 12 hours. Diluted solution in LR is stable refrigerated for 6 hours	Once reconstituted and diluted, use the infusion solution as soon as possible	Consider switching maintenance doses to subcutaneous formulation when clinically indicated

Key:

- D5NS = dextrose 5% in normal saline
- D5W = 5% dextrose in water
- g = gram
- GvHD = graft-versus-host disease
- IT = intrathecal
- IV = intravenous
- LPB = Low Protein Binding
- LR = lactated ringers
- NS = normal saline (0.9% NaCl)
- ½ NS = half normal saline (0.45% NaCl)
- PES = polyethersulfone
- pJIA = polyarticular juvenile idiopathic arthritis
- PsA = psoriatic arthritis
- RA = rheumatoid arthritis
- Refrigerator temperature = 2°C–8°C (36°F–46°F)
- Room temperature = 20°C–25°C (68°–77 °F)
- SDV = single dose vial
- SubQ = subcutaneous
- SWFI = sterile water for injection

References: 1. Various medication specific package inserts <http://dailymed.nlm.nih.gov/dailymed/about.cfm> 2. SGO. (2024, October 15). SGO Clinical Practice Advisory: Intravenous Solutions Shortage Guidelines. Society of Gynecologic Oncology. <https://www.sgo.org/news/iv-solutions-shortage-guidelines> 3. Genentech Medical Inquiry for Avastin on 11/6/24. Data accessed on file on June 24, 2022 by Genentech. 4. Lexi-Comp, Inc. Online <http://online.lexi.com/lco/action/home> (accessed multiple times at update) 5. Facts & Comparisons eAnswers (accessed multiple times at update)