Australian Commission on **Safety and Quality** in Health Care

Guidance for health service organisations and clinicians

Conservation strategies and safety considerations during intravenous (IV) fluids shortage

Key messages

- In 2024, the Therapeutic Goods Administration (TGA) notified the health system of a global shortage of intravenous (IV) fluids; and assisted by approving overseas-registered alternative IV fluids under Section 19A (S19A). TGA continues to provide information about the shortage of IV fluids.
- Some S19A alternative IV fluids contain a larger volume of air than is typical for Australian registered products. There is a risk of air embolism when administering IV fluids without the use of in-line air detection.
- It is best practice to apply principles for conserving medicines while maintaining safety. This includes using the smallest possible volume of IV fluids for the required indication; regularly reviewing patients receiving IV infusions; and switching to alternative routes of administration, such as the oral route, as soon as possible.
- Refer to the Australian Commission on Safety and Quality in Health Care (the Commission) 'Sip Til Send' Guideline and Australian and New Zealand College of Anaesthetists (ANZCA) Fasting Guideline for further guidance.

Purpose

This guidance outlines best practice conservation strategies which are relevant regardless of the status of IV fluid supply. The guidance was first developed by the Commission to assist health service organisations and clinicians with conservation strategies and safety considerations related to a disrupted supply of IV fluids in Australia.

The Issue

IV fluids have an important role in managing or correcting deficiencies in hydration and electrolyte imbalances. They are also used as diluents to deliver compatible IV medicines.

In July 2024, the TGA advised of a global supply disruption to multiple IV fluid products. Many factors contributed to shortage including global supply limitations, unexpected increases in demand, and manufacturing issues. The shortage included multiple bag sizes of sodium chloride 0.9% and compound sodium lactate (Hartmann's solution) products. The TGA continues to update information for health services and consumers about the availability of IV fluids. This includes information on overseas-registered alternative intravenous fluids approved by the TGA under Section 19A of the *Therapeutic Goods Act 1989* and listed on the TGA S19A approvals database.

Conservation Strategies

This guidance draws from the general principles described in Conserving medicines with a focus on medicines shortages. For IV fluids, the following should be considered where possible:

- Use the smallest possible volume of IV fluids for the required indication. For example, if a 100 mL flush is required as part of a chemotherapy protocol, use a 100 mL bag instead of a 500 mL bag
- Use smaller bag sizes for slower rate infusions. For example, use a 250 mL bag for an infusion rate of 20 mL/hour or less, and reserve 500 mL bags for infusion rates of 21 mL/hour to 40 mL/hour
- Regularly review patients receiving IV infusions and switch to alternative routes of administration as soon as possible. Prioritise oral or enteral routes where clinically appropriate. For example, for administration of electrolytes, analgesia and antibiotics (particularly those with high bioavailability)
- Leverage existing strategies to assist such as:
    - Antimicrobial stewardship - IV to Oral Antibiotic Switch resources. See page 6
    - Regularly assess patients who may be suitable for oral hydration prior to the initiation or continuation of IV fluid therapy. Refer to local guidelines/protocols on oral rehydration
- Review patients to ensure vascular patency, and that vascular access devices (VADs) are flushed, locked and capped where possible. Remove VADs when not in use
- Avoid using IV fluids for non-IV administration including off-label use. For example, wound flushing, eye irrigation or as a weight on traction devices
- Reserve products such as glucose 5% solution for patients susceptible to hypoglycaemia. For example, women and children may be more susceptible to hypoglycaemia when fasting exceeds 24 hours
- Use 10 mL or 20 mL ampoules of sodium chloride 0.9% in place of small volume IV fluid bags, where possible. For example, to prepare medicines for use in a syringe driver
- Administer medicines via IV push injection rather than using IV infusions, wherever appropriate
- There may be circumstances where alternative fluid ampoules or IV fluid bags need to be considered for reconstituting or delivering IV medicines. For example, sterile water for injection ampoules instead of sodium chloride 0.9% ampoules for reconstitution purposes; or compound sodium lactate (Hartmann's) solution instead of sodium chloride 0.9% bags for administration via infusion and vice-versa. Refer to the Australian Injectable Drugs Handbook for information on compatibility of IV fluids
- Administer medicines by the most appropriate route with reference to instructions for each medicine. Note that central venous access devices may have different recommendations to peripheral lines. Refer to **Table 1** for additional information on specific population groups

- Apply robust governance and stewardship principles to the conservation and stock management of IV fluids, for example:
  - Ensure relevant practice changes are incorporated into policies, procedures and guidelines, and communicated to clinicians
  - Monitor adherence to conservation strategies
  - Limit stock held in clinical areas and conduct regular stock counts to inform escalations
  - Reduce minimum/maximum quantities for stock held in ward storage or imprest areas for the duration of the supply constraint.

Table 1 Information sources on the most appropriate route for the administration of injectable medicines by population group.

Population	Reference for most appropriate route
Adults	Refer to the Australian Injectable Drugs Handbook.
Children (1 month to 16 years)	Subcutaneous and intramuscular administration in children is traumatic and should not be used unless clinically required or standard procedure. Refer to the Paediatric Injectable Medicines Handbook (PIMH).
Neonates (up to 28 days corrected age)	Retain standard practice when administering IV fluids and medicines. Refer to the Australasian Neonatal Medicines Formulary. The administration of antibiotics via IV push injection is **not** recommended in neonates.

Conservation strategies – surgical patients

- Limit IV fluids administered to surgical patients, wherever possible and clinically appropriate
- Minimise fasting in surgical patients to reduce need for fluid replacement
- Provide access to clear oral fluids up to two hours prior to surgery for adults and up to one hour prior to surgery for paediatric patients
- Implement evidence-based protocols in elective and selected emergency procedures, that minimise the need for intraoperative IV fluid administration. Refer to the Commission 'Sip Til Send' Guideline and the ANZCA Fasting Guideline for further guidance
- Review the need for 'routine' IV infusions and avoid pre-emptive priming of IV giving sets prior to patient perioperative admission unless the requirement for IV fluid administration is confirmed
- Avoid excessive fluid restriction in patients undergoing major surgery. This can be harmful and lead to an increased risk of acute kidney injury and infection

Safety considerations

The Principles for safe selection and storage of medicines should be applied when using S19A alternatives. Some specific issues are outlined below, and **Table 2** includes a list of other safety considerations.

Risk of air embolism

All bags of IV fluids contain varying amounts of air. There is a risk of air embolism when any IV fluid is administered without the use of an in-line air detection device. Some IV fluid products, particularly certain S19A alternatives, may have a higher risk of air embolism due to a larger volume of residual air within the bag than is typical for Australian registered products.

Prior to use, bags should be inspected for any differences in presentation. Any associated safety issues should be considered, with specific provisions for bags with larger than normal amounts of air. Take appropriate steps to mitigate the risk where administration without an in-line air detection is necessary.

All IV fluid products should be used in accordance with the manufacturer's instructions for use. NSW Health has published information on the risk of air embolism when administering intravenous fluids without in-line air detection.

Maintain best practice for injectable medicines

Refer to the Australian Injectable Drugs Handbook.

Irrigation fluids are **not** suitable for injection or infusion.

IV fluids should be in place for a maximum duration consistent with local procedures and guidelines, but not usually more than 24 hours.

Partially used or previously spiked IV fluid bags must **never** be re-spiked or reconnected to the same or another patient.

Ensure compatibility of the medicine with the selected diluent when administering medicines via the IV route and that the final concentration is within the acceptable range for administration/stability.

Some medicines interact with the composition of different types of plastics used for IV fluid bags. Consider the plastic type and its compatibility with medicines prior to changing between IV fluid bag products. For example, ciclosPORIN, TACrolimus and DIAzepam are incompatible with polyvinyl chloride (PVC).

Digital systems

Consider the need for an alert within electronic medication management (eMM) systems when prescribing IV fluids to alert clinicians of any disruption to supply.

Where appropriate, consider local eMM system configurations to enable preferential selection of order sentences/care sets using lower volumes of fluids for IV administration.

Consider whether infusion pumps and other programmable medical devices may be impacted by any changes in IV bag volume/composition.

Table 2 Safety considerations when conducting a local risk assessment.

Safety issue	Consideration
Presentation	Consider the labelling language and whether translation is required. Consider the material(s) utilised to make the bag. For example: Polyvinyl chloride (PVC), plastic polypropylene and non-PVC.
Available volume(s)	Consider the available bag volume(s) and impact on patient administration.
Storage	Consider the use of additional signage on shelving or stock containers to assist with alerting clinicians to the disruption to supply at the point of use (for example, 'ALERT: CRITICAL DISRUPTION TO SUPPLY – consider alternate options available').
Other	Ensure pH range is suitable. Check for any excipients and any manipulation requirements for the port protector.

Useful resources

- About the shortage of intravenous (IV) fluids. Therapeutic Goods Administration (TGA). 24 Oct 2025 [cited 4 Nov 2025]
- PG07BP Guideline on pre-anaesthesia consultation and patient preparation Background paper 2024 Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine (ANZCA) [cited 6 Nov 2025]
- Australian Commission on Safety and Quality in Health Care guidance on improving pre-procedural fluid management using the practice of 'Sip Til Send'
- Therapeutic Goods Administration (TGA) publishes medicine updates and information on approved products under Section 19A, on the TGA Section 19A approvals database
- Australian Commission on Safety and Quality in Health Care guidance on conserving medicines within a focus on medicines shortages
- Therapeutic Guidelines [online]. Melbourne: Therapeutic Guidelines Limited
- Australian Injectable Drugs Handbook [online]. Melbourne: Advanced Pharmacy Australia (AdPha)
- Australian Medicines Handbook [online]. Adelaide: Australian Medicines Handbook Pty Ltd
- Australian Commission on Safety and Quality in Health Care general information for prescribers and pharmacists on how to manage antimicrobial shortages in acute and primary healthcare settings
- Australian Commission on Safety and Quality in Health Care Conserving medicines with a focus on medicines shortages provides options and strategies for conserving medicines primarily in the acute care setting
- Australian Commission on Safety and Quality in Health Care Principles for safe selection and storage of medicines provides guidance on risk reduction strategies to address safe selection and storage of all medicines.

State and Territory safety alerts and guidance

- NSW Health Safety Notice 002/25 UPDATED Disruption to supply of multiple intravenous fluid bags (29 Jan 2025; made obsolete Oct 2025)
- Agency for Clinical Innovation (ACI) New South Wales: Fact sheet: Preoperative fasting (Sip Til Send) (15 Aug 2024)
- Clinical Excellence Commission (CEC) New South Wales: Information for NSW Health clinicians: Intravenous (IV) fluid bags – International alternatives and associated safety considerations (24 Jul 2025)
- Clinical Excellence Commission (CEC) New South Wales: Risk of air embolism when administering intravenous fluids without in-line air detection (22 Aug 2024) provides further information about the risk of air embolism when administering IV fluids without the use of in-line air detection
- Intravenous (IV) fluid shortage: Latest updates on the intravenous (IV) fluid shortage in Victoria - Update 7 Nov 2025
- Safer Care Victoria: Sip Til Send fluid fasting guidance assists clinicians in managing fasting times for clear liquids for patients who are undergoing general anaesthesia and/or procedural sedation.
- Queensland Health: Patient Safety Alert 20/2024 – Supply disruption affecting intravenous fluid products (11 Oct 2024)
- South Australia Health: Medication Safety Alert 01/24 – Critical disruption to supply of multiple intravenous fluid bags (23 Jul 2024).

Antimicrobial stewardship processes – IV to oral antibiotic switch resources

Several resources are available to guide IV to oral antibiotic switch:

- Therapeutic Guidelines Antibiotic. Guidance for antimicrobial intravenous to oral switch
- Australian Commission on Safety and Quality in Health Care: Antimicrobial Stewardship in Australian Health Care (2023) (See Chapters 3 and 20)
- Australian Commission on Safety and Quality in Health Care: Antimicrobial Stewardship Clinical Care Standard (2020)
- Clinical Excellence Commission (CEC) NSW: IV to Oral Antibiotic Switch
- Children's Health Queensland Hospital and Health Service: Antimicrobial treatment: Early intravenous to oral switch – Paediatric Guideline
- South Australia Health: IV to Oral Switch Clinical Guideline for Adult Patients: Can Antimicrobials S.T.O.P.? (2023)
- Perth Children's Hospital: Children's Antimicrobial Management Program (ChAMP) – Intravenous to Oral Switch Guideline.

For more information

Please visit: Medicines shortages and discontinuations