NSW Health

UPDATED Critical disruption to the supply of multiple intravenous fluid bags

SAFETY ALERT 012/24

Issue Date:	30 July 2024
Replaces:	SA:011/24
Content reviewed by:	System Sustainability and Performance, Medication Shortage Assessment and Management Team, Infection Prevention and Control, Emergency Care Institute and other relevant clinical experts.
Distributed to	Chief Executives; Directors of Clinical Governance; Director, Regulation and Compliance Unit
KEY MESSAGE:	NSW Health facilities and clinicians are aware of the ongoing critical disruptions to supply of multiple intravenous fluid bags, recommendations to conserve supply, mandatory audit requirements and information regarding the establishment of a **local** Intravenous (IV) fluid Stewardship Group.
ACTION REQUIRED BY:	Chief Executives, Directors of Clinical Governance
REQUIRED ACTION:	1. Distribute this Safety Alert to all relevant clinicians and clinical departments where intravenous fluids are held, prescribed, and/or administered, and include this Safety Alert in relevant handovers and safety huddles. 2. Undertake a local risk assessment and incorporate the below recommendations to manage the disruption of supply of intravenous fluids. 3. Ensure a system is in place to document actions taken in response to this Safety Alert. 4. Escalate any **concerns regarding supply** to HealthShare NSW via email HSNSW-EmergencyManagementUnit@health.nsw.gov.au or phone 02 8644 9288. 5. Escalate any **clinical concerns** to CEC-MedicationSafety@health.nsw.gov.au. 6. Confirm receipt and distribution of this Safety Alert within **24 hours** to: CEC-MedicationSafety@health.nsw.gov.au.
DEADLINE:	COB 31 July 2024
We recommend you also inform:	Directors, Managers and Staff of: • All clinical areas • Pharmacy • Nursing/Midwifery • Medical Services • Drug and Therapeutics Committees Clinical Product Managers Infection Prevention and Control Other relevant clinicians, departments and committees.
Website:	https://www.health.nsw.gov.au/sabs/Pages/default.aspx http://internal.health.nsw.gov.au/quality/sabs/index.html
Review date:	September 2024

Made obsolete 6 August 2024 - Replaced by SA:013/24

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What is updated in the Safety Alert from SA:011/24?

This Safety Alert replaces SA:011/24 – *Critical disruption to the supply of multiple intravenous fluid bags*, which has now been rescinded. The criticality of this disruption to supply has escalated, and the Safety Alert has been updated to include further recommendations (some previously communicated to LHDs/SHNs via Chief Executives in a memo from the Clinical Excellence Commission on Friday 26 July 2024), inclusions of mandatory audit requirements and information regarding the establishment of an Intravenous (IV) fluid Stewardship Group. **Compliance with the recommendations within this Safety Alert is essential to minimise impact on clinical activities despite supply chain constraints.**

Situation

There is an ongoing global disruption to supply (with intermittent stock available) of IV fluid bags due to manufacturing issues and increases in demand. This is now an **extreme risk** due to shipment delays. The date of return to normal supply is being closely monitored by HealthShare NSW, CEC and the Ministry of Health.

The primary products affected include:

- Glucose 5% bags (Baxter, B. Braun and Fresenius Kabi) – all volumes.
- Hartmann's solution bags (Baxter, B. Braun and Fresenius Kabi) – all volumes.
- Sodium chloride 0.9% bags (Baxter, B. Braun and Fresenius Kabi) – all volumes.

Supply of alternative crystalloid solutions (such as Plasma-Lyte 148) are **not** expected to fulfill the shortfall in supply of Hartmann's solution.

The Therapeutic Goods Administration (TGA) continues to review applications and approve the use of international alternatives under Section 19A (S19A) of the *Therapeutic Goods Act 1989*, however supply is limited. Refer to the TGA shortage information page for further information. HealthShare NSW is negotiating with suppliers for a bulk order of these products for use across all NSW Health Facilities. Individual facilities are **not** to place separate orders for S19A products.

Background

IV fluid bags are used to manage or correct deficiencies in hydration and electrolyte imbalance. They are also used as diluents for compatible IV medicines.

Assessment

- If the preferred IV fluid bag (diluent and/or volume) is not available, alternative products or methods of administration will need to be used considering clinical safety, appropriateness and compatibility.
- LHDs/SHNs must establish an IV Fluid Stewardship Group to ensure conservation strategies are in place and there is clinically appropriate distribution of IV fluids across all NSW Health facilities. This is to minimise impact on clinical activities despite supply chain constraints. (Refer to Attachment A).

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Recommendations

Mandatory QARS audit:

- Facilities **must** complete twice weekly audits every **Monday and Thursday** to determine current stock levels and usage of IV fluids.
    - LHDs/SHNs must determine how the audit is completed within their District/Network - either at a District/Network level, facility **or** ward/unit level. **Please ensure duplication of data entry does not occur.** (Note - the CEC and HealthShare NSW will be reviewing facility and district level data only.)
    - The audit is to be completed by **close of business** on these days.
    - A link to the audit will be provided by the CEC to CEOs, DONGs and the QARS Advisory Group via email on Monday and Thursday mornings. Facilities will be able to review their own data within the QARS portal.

Inventory control strategies:

- When assessing IV fluid bag stock holdings, consider the following:
    - Identify all locations where IV fluids are stored and ensure mechanisms are in place to share stock both within and between facilities in your district/network.
    - Reduce quantities held in imprest areas throughout the disruption to supply.
    - Prioritise supply of IV fluids to clinical areas with clinically appropriate high usage requirements and critical needs. For example, conserve sodium chloride 0.9% 100 mL for the administration of vasopressors/inotropes in critical care settings.
    - Be aware of locations where specific volumes of fluid are required (e.g. sodium chloride 0.9% 500 mL required to prime and flush transducers).
    - Ensure supply of IV fluid is appropriately rotated to minimise potential wastage of stock due to expiry.
- All LHDs/SHNs must establish an IV fluid Stewardship Group by **COB Friday 2 August 2024** to assist with conserving supply of IV fluids. Refer to **Attachment A** for further information.

Stock ordering/distribution:

- Facilities are directed not to place orders for sodium chloride 0.9% IV bags and Hartmann's solutions with suppliers/wholesalers (this applies to both Australian registered and S19A supply).
- HealthShare NSW will be centralising IV fluid orders for sodium chloride 0.9% products and Hartmann's solution. HealthShare NSW will work with suppliers/wholesalers to distribute stock based on historical usage, considering the QARS audit results and the quantities available from suppliers. HealthShare NSW will provide further communications as soon as possible.
- Escalate concerns regarding this disruption to supply to HealthShare NSW via email HSNSW-EmergencyManagementUnit@health.nsw.gov.au or phone 02 8644 2288

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General conservation strategies:

- Use the smallest possible volume of IV fluids.
- Ensure regular review of patients receiving IV infusions and switch to alternative routes of administration as soon as possible, prioritising enteral route where clinically appropriate (for example, electrolytes, analgesia and antibiotics).
    - Where possible, leverage existing strategies to assist with this change (such as Antimicrobial Stewardship processes).
- Review and remove any unnecessary vascular access devices.
- Keep Vein Open (KVO) fluids in adult patients must be reviewed and cannulas flushed, locked and capped where possible.
- Do **not** use IV fluids for non-IV administration including off-label use (for example, wound flushing, eye irrigation or as traction devices).
- Limit quantities of IV fluid bags placed in warmers.
- Restrict balanced salt solutions (for example, Hartmann's, Plasma-Lyte and Ionolyte) for use in resuscitation, ICU and surgery.
- Consider using 10 mL or 20 mL ampoules of normal saline or water for injection when pre-mixing medicines for use in a syringe driver where possible (order quantities of ampoules may need to be increased).
- Give medicines by subcut/IM/IV push route where possible. Refer to instructions for each medicine, noting that central lines may have different recommendations to peripheral lines.
    - In adults - refer to the Australian Injectable Drugs Handbook (AIDH)
    - In children (>1 Month – 16 years) refer to the Paediatric Injectable Medicines Handbook (PIMH)
    - In neonates (up to 28 days corrected gestational age) standard practice should **not** change when administering IV fluids and medications. Refer to the Australasian Neonatal Medicines Formulary (ANMF) for guidance. Note that the IV push route is not recommended for administration of antibiotics in neonates.
- Refer to **Tables 1** and **2** for a list of antibiotics which may be given as IV bolus injection (i.e. push) in adult and paediatric patients as a general guide. Refer to the AIDH and PIMH for specific administration criteria for each antibiotic.

Conservation strategies – surgical patients:

- IV fluids administered to day surgery patients should be limited, wherever possible.
- Implement 'Sip to Send' protocols in elective surgical patients to minimise need for intraoperative IV fluid requirements.
- Planned procedures should not proceed if patients require IV fluid therapy for a duration of time that is in excess of your LHD/SHN/SHS current holdings.

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- Avoid pre-emptive (i.e. prior to patient admission) priming of IV lines unless certain of IV fluid requirements.
- Minimise fasting in surgical patients to reduce need for fluid replacement

Safety considerations:

- Ensure clinicians are aware that fluids marketed for irrigation are **unsuitable** for injection or infusion.
- Ensure that the management and administration of all IV fluids are in accordance with NSW Health Policy Directive *Infection Prevention and Control in Healthcare Settings* (PD2023_025).
- Do not increase hang time of IV fluid bags – no more than 24 hours is advised.
- IV fluids must not be left hanging to be reconnected or re-spiked.
- When administering medicines via the IV route, refer to the Australian Injectable Drugs Handbook to ensure compatibility of the medicine with the selected diluent and that the final concentration is within the acceptable range for administration/stability.
- Be aware that some medicines (for example ciclosporin, tacrolimus and diazepam) are incompatible with polyvinyl chloride (PVC) and some of the IV fluid bags may not be appropriate for administration of these medicines. Refer to the Australian Injectable Drugs Handbook for further information.
- Subcutaneous and intramuscular administration in children (> 1 month – 18 years) is traumatic and should **not** be used unless clinically required or standard procedure.
- Standard practice should not change for any existing oxytocin regimes for maternity patients in any care setting. Further statewide advice will be provided in the future if required.
- Consider the need for an alert within electronic medication management systems when prescribing IV fluids in the electronic management system to assist with alerting clinicians of the disruption to supply.
- The features of IV fluid bags (including overfill and maximum volume that can be added) and a comparison of constituents is available in the Australian Injectable Drugs Handbook.

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Table 1. Antimicrobials suitable for IV bolus injection (i.e. push) in adult patients*

Antimicrobial (hyperlinked to AIDH monograph)	Route of administration
amoxicillin	Suitable for IV injection
amoxicillin with clavulanic acid	Suitable for IV injection
benzylpenicillin	Suitable for IV injection for doses up to 1.2 g
cefEPIME	Suitable for IV injection
cefoTAXIME	Suitable for IV injection
cefTAZIDIME	Suitable for IV injection
cefTRIAXONE	Suitable for IV injection for doses up to 2 g
ceFAZOLIN	Suitable for IV injection for doses up to 2 g
flucloxacillin	Suitable for IV injection for doses up to 2 g
gentamicin	Suitable for IV injection
tobramycin	Suitable for IV injection

*Refer to the AIDH for the appropriate durations of IV bolus injections for each antibiotic in adult patients.

Table 2. Antimicrobials suitable for IV bolus injection (i.e. push) in paediatric patients*

Antimicrobial (hyperlinked to PMH monograph)	Route of administration
cefaZOLIN	Suitable for IV injection
cefEPIME	Suitable for IV injection
cefOTAXIME	Suitable for IV injection
cefTAZIDIME	Suitable for IV injection
cefTRIAXONE	Suitable for IV injection **for doses up to 50mg/kg (max dose 1 g)**
gentamicin	Suitable for IV injection

* The antibiotics listed above for IV bolus injection can be administered over 5 mins in paediatric patients.

Note 1: Administering antibiotics via IV injection increases the risk of thrombophlebitis and must be carefully monitored.

Note 2: Extra caution should be taken when administering via central venous access devices.

Note 3: Beta-lactam antibiotics exhibit time-dependent killing, and IV injections (over 5 mins) may NOT be appropriate in critically unwell patients.

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