



## Intrafix® SafeSet Flush

Flush the Line for  
Total Prescribed Dose Delivery



## Underdosing – the forgotten residue

40%

of the active prescribed drug may not be administered due to residual volume<sup>1</sup>

### How underdosing occurs

When an infusion ends, the line of the administration set remains part-filled with air and residual volume of prescribed drug<sup>2,3</sup>.

Failure to flush the line post infusion, can result in up to **40%** of the prescribed drug being discarded, reducing the likelihood of delivering the expected therapeutic effect to the patient<sup>1</sup>.

### Why is underdosing a problem



Patient's condition may worsen leading to therapy failure as the volume of drug in the patient's blood stream may not be sufficient to be therapeutic<sup>4</sup>.



Underdosing is accumulative with more than one total dose being disposed of over a course of IV antibiotics<sup>2</sup>.



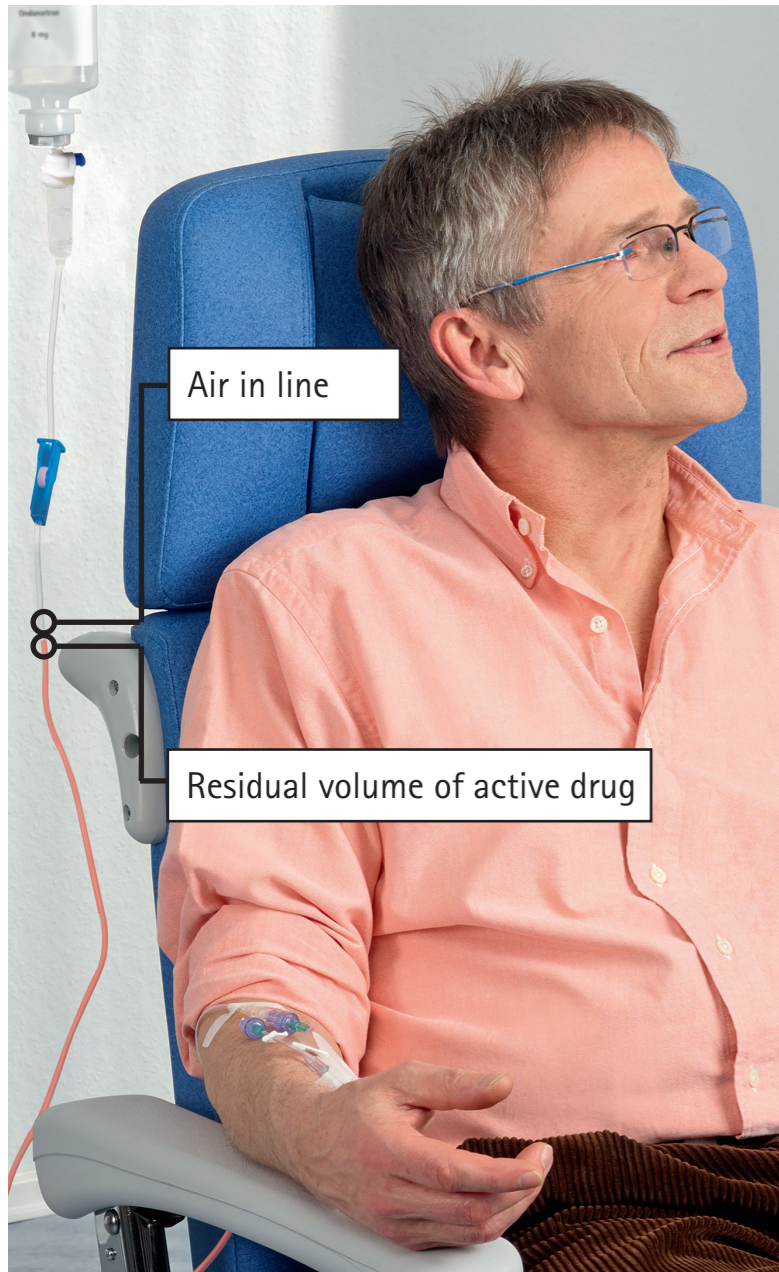
Risk of patients requiring a longer stay in hospital.



Risk of increased antimicrobial resistance.



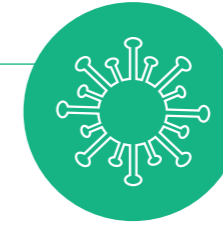
It is a medication error.



## Underdosing case studies



Calculations performed at Hull University Teaching Hospitals showed that an antibiotic regime prescribed for 12 weeks, and underdosage of 16 ml per infusion set, resulted in the equivalent of **12 missed doses<sup>5</sup>**.



Studies at Salisbury NHS Foundation Trust highlighted that **60%** of all fluids underdosed were IV antibiotics<sup>6</sup>.



The total cost of wasted drug being discarded at Salisbury NHS Foundation Trust equated to **£25,517<sup>6</sup>**.

### Line flushing guidance

In 2021 the National Infusion and Vascular Access Society issued line flushing guidance highlighting that administration methods must be improved to minimise the risk of underdosing and **'to ensure that all of the prescribed medicine is administered'<sup>7</sup>**.

Scan the QR codes to find out more about the issue of underdosing and how organisations have implemented line flushing solutions;



**Advancements in IV Administration**  
The issue of underdosing

**The issue of underdosing**  
Mark Santillo, Pharmaceutical Consultant and Former Chair of NHS Pharmaceutical Quality Assurance Committee



**Implementing IV administration line flushing guidance in Critical Care**  
Kate Holland, Critical Care Sister, Royal Bournemouth Hospital



**Line flushing guidance changing the way we do things**  
Andrew Barton, Nurse Consultant, IV Therapy and Vascular Access, Frimley Health NHS Foundation Trust

Line Flushing Solutions



# Intrafix® SafeSet Flush

Solutions for total dose delivery

Gravity and volumetric pump administration - ward use



Accessing the Caresite needlefree valve using a small volume syringe, enables the residual volume of drug to be infused without the risk of overloading the patient with fluid.

AirStop technology helps prevent air entering the line enabling flushing of the residual volume of drug.

For ward-based patients, the administration set line can be flushed via the Caresite® needlefree injection port above the drip chamber, using a small volume flush syringe.

The unique combination of AirStop technology at the bottom of the drip chamber and the Caresite® needlefree injection port above the drip chamber, permits the residual volume of active drug only to be administered to the patient, reducing the risk of air embolism and fluid overload which could occur if using a flushing bag.

*‘ It was a very seamless transition, training involved in using these sets is very minimal, they are very easy to use’*

Andrew Barton, Nurse Consultant, IV Therapy & Vascular Access, Frimley Park Hospital

## Benefits



Patient receives the full prescribed dose



Flushing the line prevents antimicrobials being discarded which could exacerbate antimicrobial resistance<sup>1</sup>



Flushing the line helps to prevent costly drug wastage<sup>6</sup>

# Intrafix® SafeSet Flush

Solutions for total dose delivery

Volumetric pump administration for Critical Care/ITU



Compatible diluent primary line, enabling ease of priming and administration of a post drug flush

AirStop technology helps prevent air entering the line, enabling flushing of the residual volume of drug

Intermittent drug infusion line

For patients that are non-mobile, attach your primary line to a large volume compatible diluent and infuse your intermittent drug via the secondary line. This enables flushing of the line in between intermittent infusions, to ensure that the patient receives the total prescribed dose.

This line flushing solution also reduces plastic wastage as the primary line can remain in use for **96 hours\***, with only the secondary intermittent drug infusion line requiring changing as and when the infusion has finished.

*‘ Whereby for 3 types of antibiotics we would have had 3 infusion sets, we now had 1, with a small piggyback set for each drug’*

Kate Holland, Critical Care Sister, Royal Bournemouth Hospital

## Benefits



A closed system can be maintained reducing the risk of infection



Condensing patient access points into one intermittent line creates nursing time efficiencies\*\*



Significant plastic reduction<sup>8</sup>

\*or in accordance with your local policy guidelines

\*\*Applicable to non-mobile patients e.g. those in Critical Care/ITU



# Clinical Support



When you choose to introduce SafeSet Flush into your organisation, our dedicated team of Clinical Therapy Specialists will provide you with complimentary ongoing clinical education support, tailored to your requirements.

## E-Learning

Access is provided to our SafeSet Flush E-Learning module which covers:

- Overview of Aseptic Non Touch Technique
- Introduction to SafeSet Flush Administration Set
- Why Underdosing Occurs
- Clinical Demonstration
- Knowledge Check
- Frequently Asked Questions



## Clinical demonstration video





Access is provided to clinical demonstration videos, highlighting how to flush the residual volume of drug from the line, using a volumetric pump or gravity administration set within different clinical settings.




Scan the QR code and scroll through to watch the SafeSet Flush demonstration videos



# Product Codes

Product	Specification	Latex free	BCV*	Tubing length (cm)	Units per box	Product Code	NHSSC
 Intrafix® SafeSet Flush Back Check Valve	Gravity IV administration set with Caresite® needlefree valve, AirStop, PrimeStop and Back Check Valve	■	■	180	25	4110010	FKA796
 Intrafix® SafeSet Flush	Gravity IV administration set with Caresite® needlefree valve, AirStop and PrimeStop	■	-	180	25	4110000	FSB2389
 Intrafix® Primeline Flush	Secondary administration line	■	-	35	100	4110001	FSB2183
 Infusomat® Space Line SafeSet Flush	Administration Set for Infusomat® Space Volumetric Pump	■	-	300	25	8250720SP	FKA093

\*BCV = Back check valve

Product	Specification	Units per box	Product Code	NHSSC
 Omniflush® 10 ml	10 ml pre-filled syringe containing 10 ml NaCl for use in a General Aseptic Field	100	EM-3513576	FWC594

## References

1. Santillo, M (2022) IV Forum; Advancements in IV Administration, <https://www.youtube.com/watch?v=0WAupmxRDTY>
2. Cooper, DM and Rassam, T and Mellor, A (2018) Non-flushing of IV administration sets: an under-recognised under-dosing risk. *British Journal of Nursing, (IV Therapy Supplement) Vol 27, No 14*
3. Harding, Mariann PhD, RN, CNE, FAADN; Stefka, Shelly MSN, RN; Bailey, Mistey MSN, RN, Morgan, Donna BSN, RN; Anderson, Aric SCN, RN. *Journal of Infusion Nursing; January/February 2020 – Volume 43 – Issue 1 – p 47 – 52*
4. Roseau, J., Pradines, B, Paleiron, N., Vedy, S, Madamet, M, Simon, F. and Javelle, E. (2016). Failure of dihydroartemisinin plus piperazine treatment of falciparum malaria by under-dosing in an overweight patient, *Malaria Journal, 15(1)*.
5. Maclachlan, L (2021) Antimicrobial Resistance – Importance of Flushing the Line to Ensure Total Dose Delivery, <https://www.bbraun.co.uk/en/products/b50/intrafix-safesetflush.html#>
6. Goodyear, C (2022) Poster Presentation at the National Infusion and Vascular Access Society Conference, Antimicrobial Stewardship & Patient Safety Improvements: Introducing the NIVAS Line Flushing Guidance
7. National Infusion & vascular Access Society, *Intravenous Administration of Medicines to Adults: Guidance on 'Line flushing', version 3, 2021*
8. Barton, A (2022) Line Flushing Changing the way we do things, presented at Infection Prevention Society IV Forum Conference, <https://www.youtube.com/watch?v=eEOeYVjru00>
9. Holland, K (2022) IV Forum; Advancements in IV Administration , Implementing IV Administration Line Flushing Guidance in Critical Care, [https://www.youtube.com/watch?v=\\_aRVS\\_1oqMQ](https://www.youtube.com/watch?v=_aRVS_1oqMQ)