OPAT delivery – are nurse filled pumps at home the way forward?

Yasmin Elmasry (Advanced Specialist Pharmacist, University Hospitals Plymouth)

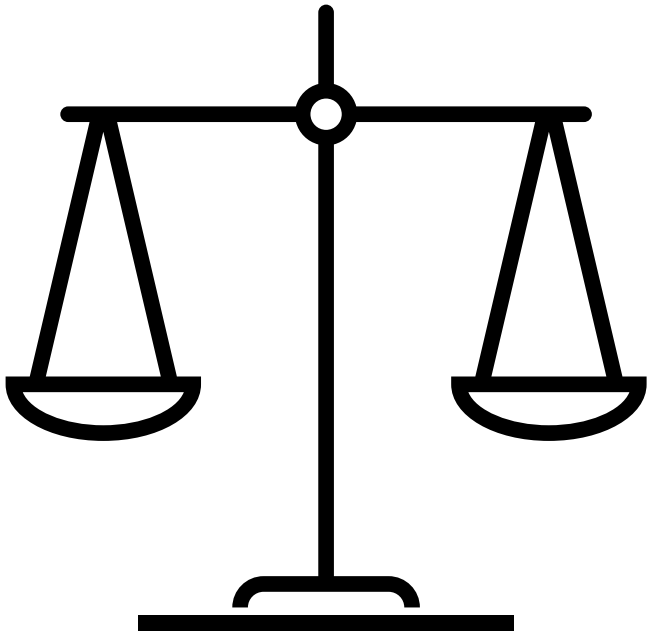
Anthony Orchard (Senior Staff Nurse, Cornwall Foundation Trust)

NHS
University Hospitals Plymouth
NHS Trust

NHS
Cornwall Partnership
NHS Foundation Trust

Content

- The science
- The practice



At UHP

Historically compounded pumps from homecare company

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2021 - Business case explored different options

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2022 - Implementation of nurse filled pumps

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Initially piperacillin-tazobactam

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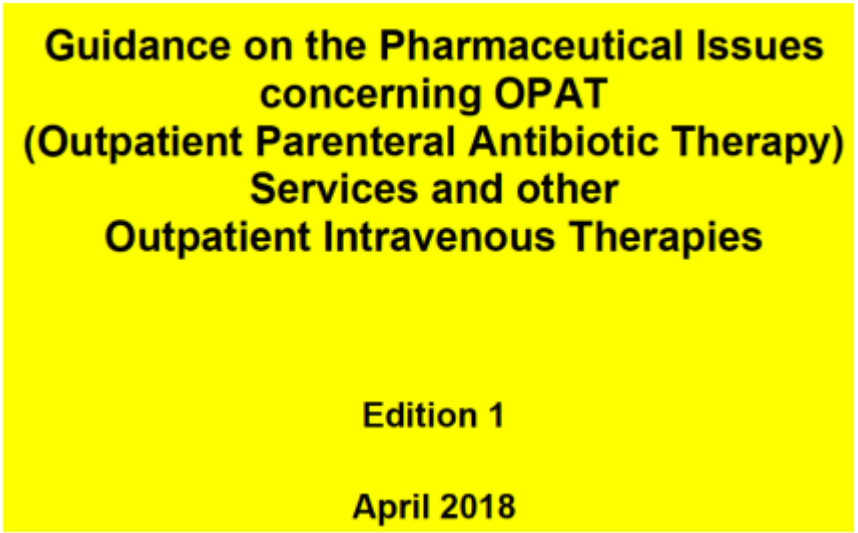
Then addition of flucloxacillin

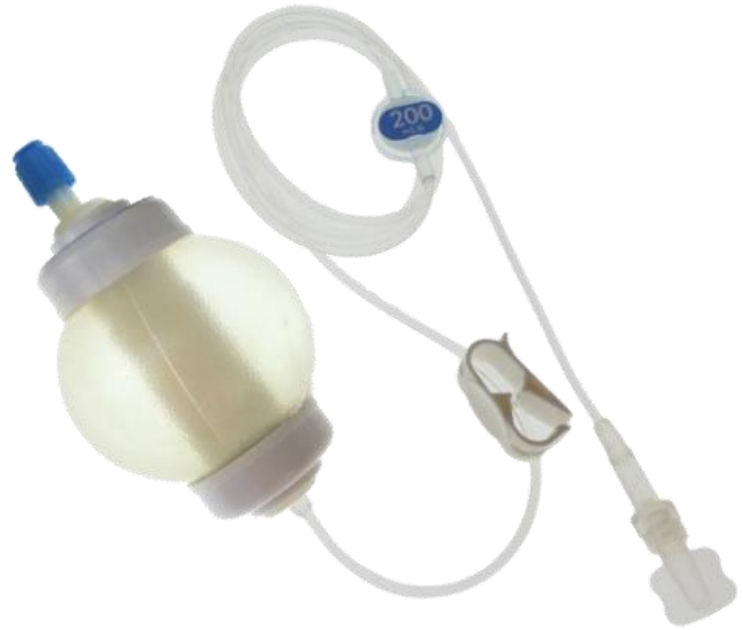
Stability data requirements – Yellow cover document

- Dug stability
- Buffers
- Compounding, procurement and storage
- Administration



What did we look for?

- **Pump** — Appearance; Sizes available; Flow rate
- **Antibiotics used** — Stability data; Worksheets for mixing
- **Yellow cover document** — Diluents used
- **Lead time** — Compounded; Pumps only
- **Training** — Guide; Nurses; Patients?
- **Cost**



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Appendix 5 (continued)

Administration of **Flucloxacillin 12g in 240ml** over 24 hours via Elastomeric Pump

Patient Name:				**D.O.B**	
Hospital Number:		**Patient Weight:**	**Kg**	**DRUG ALLERGIES (*plus* reaction)**	
NHS Number:		**Patient Height:**	**cm**	**Type of Line (circle):** Midline / PICC	**Date Line Inserted:**

Date	Drug	Preparation	Troubleshooting (Incomplete administration)
	Flucloxacillin 12 g in 240mL 0.3% citrate buffered saline IV OD via Accufuser Equipment required: 12 x flucloxacillin 1g vials; 1 x 0.3% citrate buffered saline 250mL bag 12 x 20mL syringes; Sufficient blunt fill needles; 1x Accufusor device; Sufficient labels	5. Reconstitute a vial of flucloxacillin 1g with **19.4mL 0.3% citrate buffered saline**. Withdraw the solution into a 20mL syringe. Label the syringe and keep the syringe in the wrapper. Repeat this process for the other 11 vials. (Displacement 0.6mL so withdrawn volume will be 20mL) 6. You will now have 12 syringes of 20 mL flucloxacillin reconstituted in **0.3% citrate buffered saline**. 7. Each syringe can then be added to the Accufuser to make flucloxacillin 12 g in 240 mL.	8. Assess line and pump for any obvious anomalies including: - Clamp released (check PICC line and Accufuser line) - Line not kinked or significant migration - Assess skin around line for any redness/tenderness or firmness - Balloon not damaged - Ensure line flushes as expected 9. If <180mL has been administered, give a STAT dose of 2g flucloxacillin, then connect next pump as normal. 10. Complete a DATIX or email plh-tr.antimicrobialstewardship@nhs.net and return pump for assessment by AMS pharmacist.
	The stability of flucloxacillin diluted and reconstituted in 0.3% citrate buffered saline is between 10-50mg/mL (maximum 12g in 240mL)		

Flush Type	Volume	Frequency
Sodium Chloride 0.9%	**5 - 10 ml**	**Pre and post infusion**

Where can we find information?

Complications

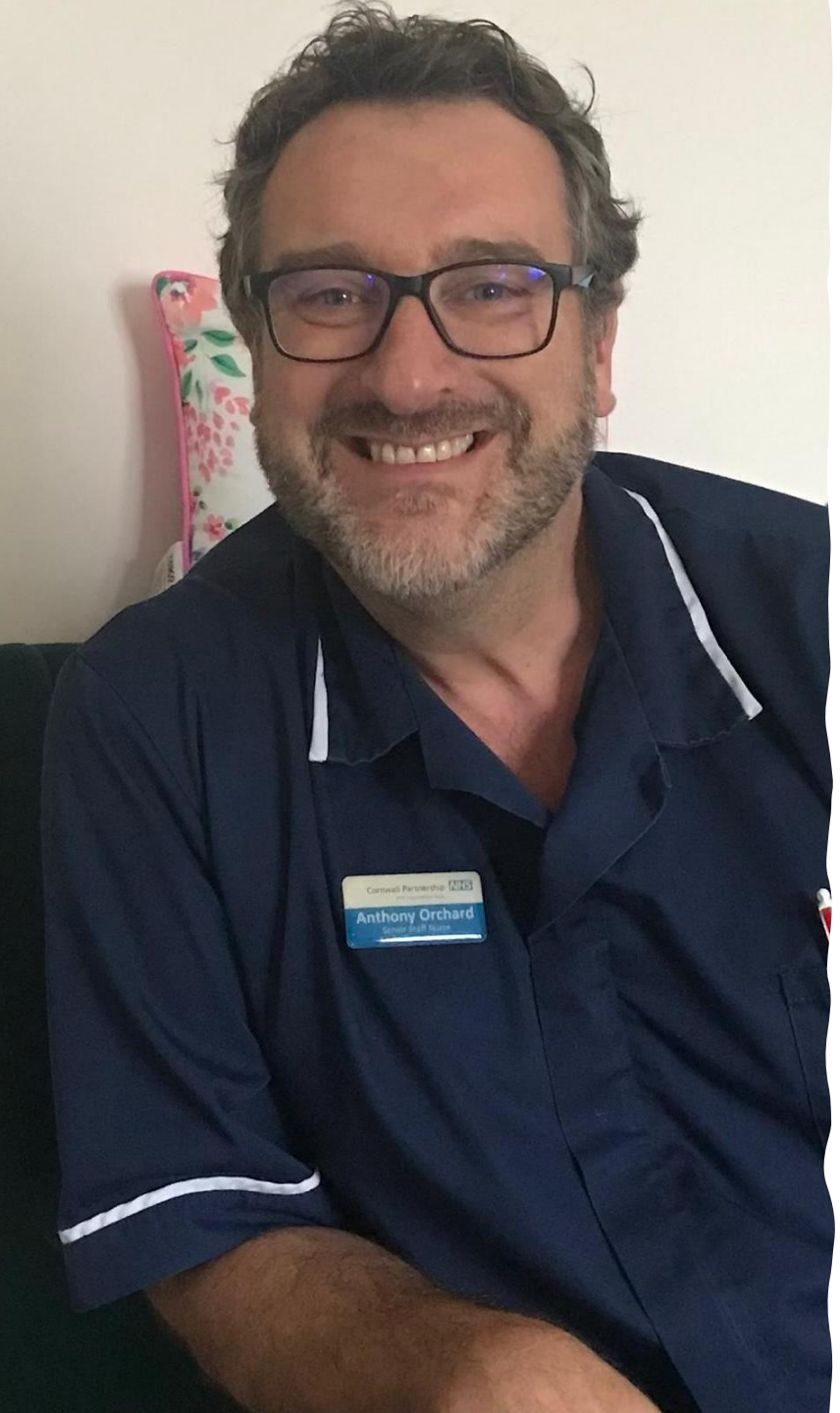
Line infections

- Incidence of catheter related complications and infection
- **0.2 to 2 per 1000 OPAT days** in the literature
- In practice – none reported within 3 years of practice

Device failure

- Incomplete emptying

Nursing perspective



A bit about me

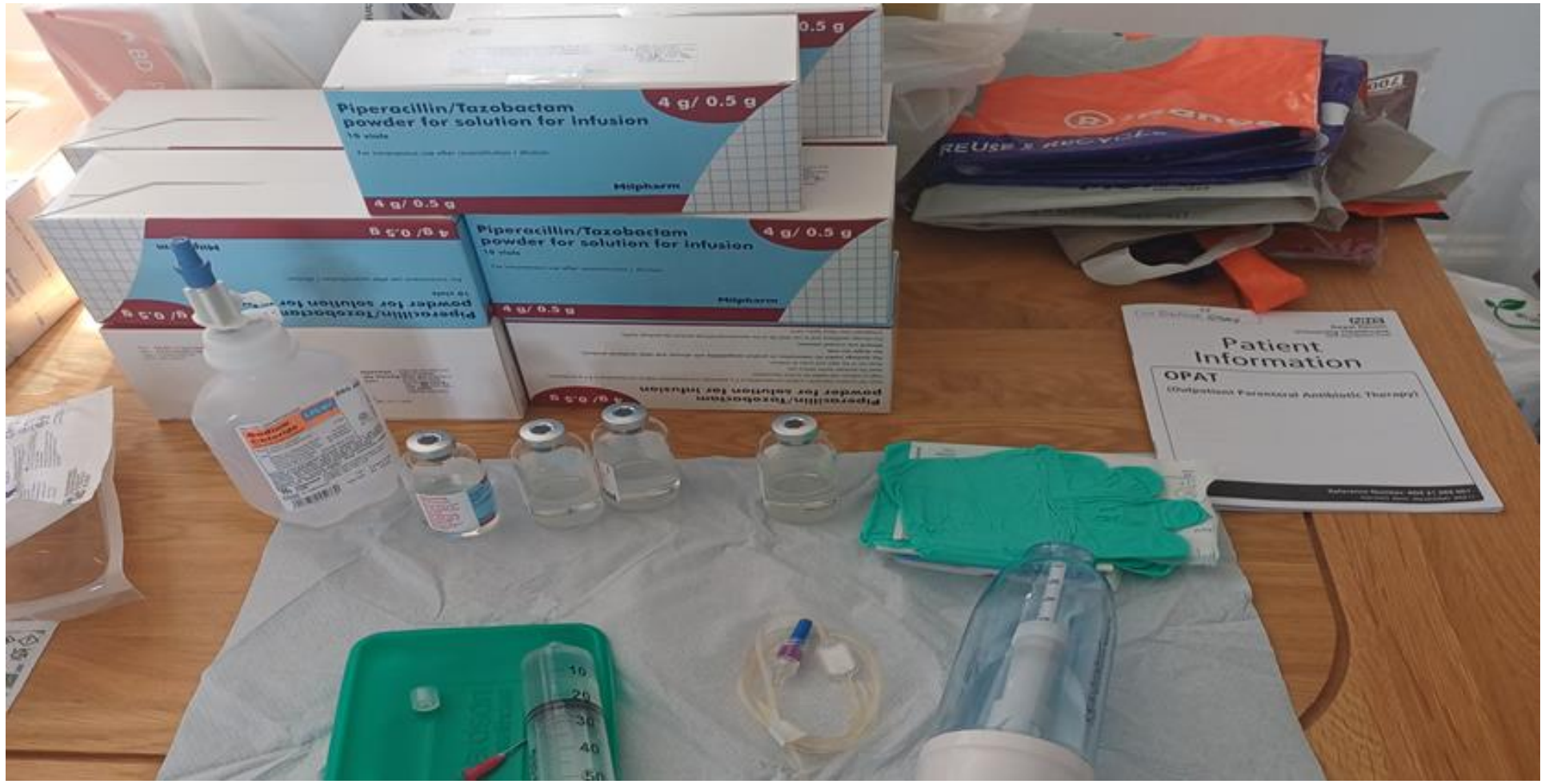
- Qualified nurse for 20 years
- Worked for Acute care at home for 17 years. Prior to that I was ED based
- Worked over two bases West, Central and North and East Cornwall.
- Worked with Elastomeric pumps for 6 years, different makes.
- Vascular access trained to place midlines.
- Used Ceftriaxone, Piperacillin Tazobactam, Flucloxacillin, Cefepime and Ceftazidime.
- Introduction of pumps increased caseload, freed hospital beds and prevented admission.

Eligibility criteria

- Patient needs a working telephone
- Patient's home is deemed appropriate.
- Patient needs vascular access (midline or PICC)
- Patient needs to fully understand what having the treatment at home entails.
- Referral from Virtual ward (UHP), Consultant (RCHT) or GP

Preparing the medication

1. Once the home is assessed and deemed appropriate
2. An area is selected for mixing, usually a hard surface, cleared from clutter
3. We clean the area with our antibacterial wipes
4. We carry a tray which can hold everything we need for the drug prep.
5. We ask the patient if they can keep the area free of clutter and clean, as we will be using it daily.
6. The preparation does not need to be sterile but ANTT.
7. Depending on the drug, the prep can take up to 20mins.



Typical preparation area

Benefits

Patient

- Discharge the same day or admission avoidance (if midline in place)
- Able to continue acute treatment in their own environment, with loved ones, pets and home cooking.
- Able to continue with daily activities helping with rehabilitation
- Increased patient satisfaction

Health system

- Bed days saved (reduced admission or avoidance)
- Improved patient flow
- Daily financial savings (no medical team, nurses, cleaners, catering, heating, etc)

Pumps

- Range of doses available
- Flexible fill volume (if required)

Limitations

- Harder to get vascular access in community
- Controlling temperature, positioning and carrying pump all day can be a hindrance
- Nurses need to visit at a similar time each day
- Residual volume requiring bolus doses
- Nursing and medical staff are not constantly monitoring
- Buffer shortage

Patient comments

"It was so nice to be home, the nurses were all lovely and I even named my pump"

"With the pump I felt somehow more in control of my medication"

"Great to be home in my own chair, The pump was awkward at first, but I soon got used to it"

"I was well looked after, every concern I had was addressed quickly. Space age treatment at home"

References

- Literature
  - Assessment of the stability of citrate-buffered piperacillin/tazobactam for continuous infusion when stored in two commercially available elastomeric devices for outpatient parenteral antimicrobial chemotherapy: a study compliant with the NHS Yellow Cove... | European Journal of Hospital Pharmacy
  - Assessment of the stability of citrate-buffered flucloxacillin for injection when stored in two commercially available ambulatory elastomeric devices: INfusor LV (Baxter) and Accufuser (Woo Young Medical): a study compliant with the NHS Yellow Cover Document (YCD) requirements
  - Outpatient parenteral antimicrobial therapy (OPAT) in the UK: findings from the BSAC National Outcomes Registry (2015–19) | Journal of Antimicrobial Chemotherapy | Oxford Academic
  - Guidance on the Pharmaceutical Issues concerning OPAT
- BSAC
- Drug representatives