



# Nephrostomy Exchange Intervals – Silver QI Project

By Amy Spalding – Senior Radiographer

## Background and Reason for Project:

- A Percutaneous Nephrostomy creates an artificial opening in the kidney to allow urine to be drained by a different route.
- Long term nephrostomy tubes will require exchanging around every 8-12 weeks to maintain renal function, urine flow and stent patency.
- This is because the urine that is being excreted contains gritty sediment which can slow down or block the urine from draining out.
- If this happened the kidney can become infected and possibly damaged, which can result in AKI and/or sepsis.
- In 2023 24 patients were admitted as emergency patients due to nephrostomy complications.

## SMART aim:

To reduce the interval between nephrostomy exchanges to 84 days within 6 months using advance practice.

## Measures:

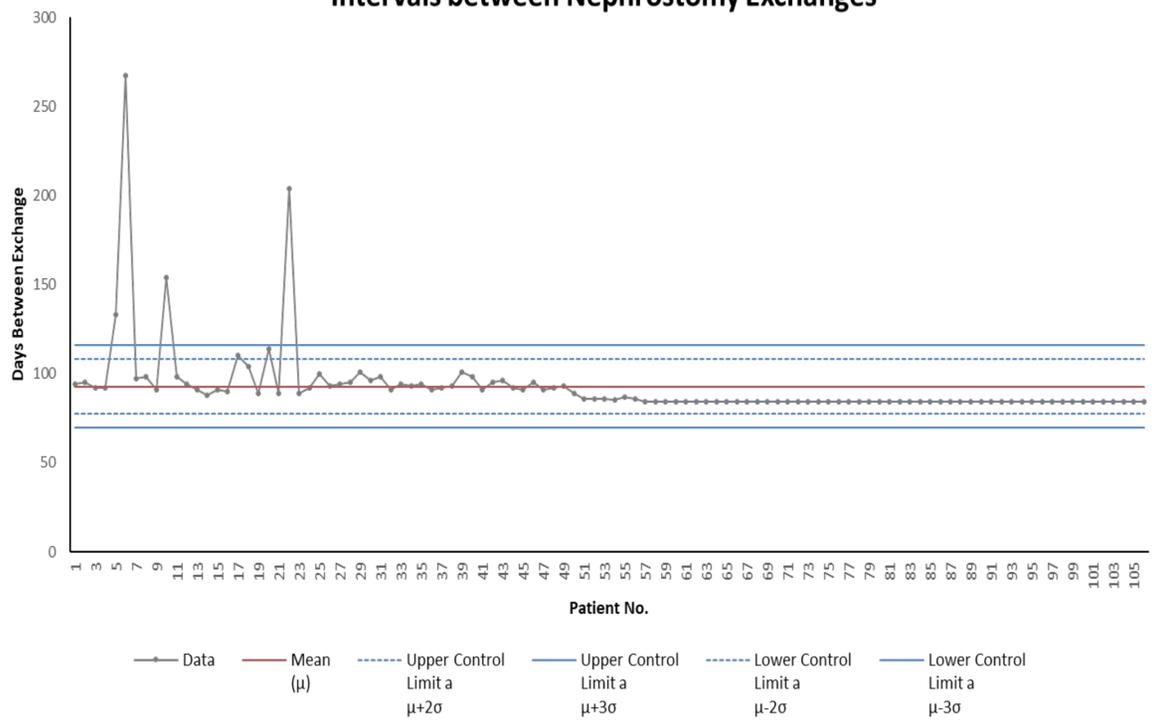
- **Outcome measure:**
  - Performed within 84 days (12 weeks).
- **Balancing measures:**
  - Radiation dose (Mean).
  - Fluoroscopy screening time (Mean).
  - Technical success (%).
  - Patient satisfaction questionnaire.

## Baseline Data:

- Average interval before change: 95 days.
- Patients booked onto next available appointment slot:
  - Not always available within 84 days.
- Referral difficulties:
  - Urology not always aware patient requires referral.
- No dedicated list.
- Patients cancelled due to emergency patients.
- Patient cancelled due to time constraints.
- Growing service:
  - 130 events in 2022
  - 164 events in 2023
  - 205 events in 2024
- Currently performed by consultant radiologists.

## Cycle 1 Results:

### Intervals between Nephrostomy Exchanges



## Supporting Evidence:

### Average cost of an unplanned admission:

- £90: call to 999.
- £367: ambulance to emergency department.
- £297: treatment within the emergency department.
- £483: per night as an inpatient.
- £273: Nephrostomy procedure.
- **Total: £1,510** (this figure only includes one night stay in hospital)

### Average cost of planned nephrostomy exchange:

- Contrast Fluoroscopy procedure with duration of up to 20 minutes: **£63.07\***.
  - Day case stay: **£132.02\*\*** (No pain IV pain relief).
  - Day case stay: **£331.02\*\*** (with IV fentanyl).
  - **Total: £195.09-£394.09.** (HRG code for Percutaneous, Attention to or Removal of Nephrostomy: **£443**)
- (The Kings Fund 2023)  
(\*Contrast Fluoroscopy procedure costing Provided by National Schedule of NHS costs)  
(\*\*Day case costings provided by GHFT costing team)

## Cycle 1:

- Train a radiographer to perform nephrostomy exchanges.
- Create radiographer led list.
- Audit interval times after six months.

## Cycle 2:

- Collect patient feedback and audit fluoroscopy screening times, radiation doses and technical success.
- Minor complication audit.
- Allow radiographer to request and vet next exchange.



## Pre-Change Staffing:

- Consultant Radiologist
- Radiographer
- Staff Nurse (scrub)
- Staff Nurse (circulating)
- +/- RCA
- Day case staff

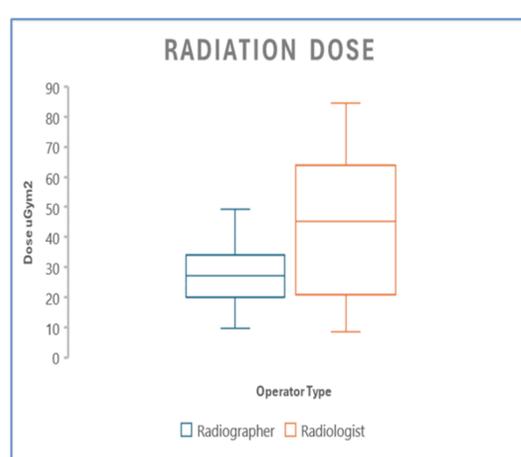
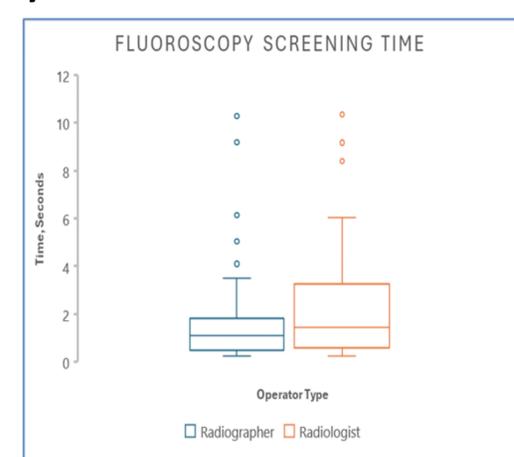
## Post Change Staffing:

- Radiographer
- Staff Nurse (circulating)
- Day case staff

## Staffing Change Benefits:

- Radiologist:**
- Additional reporting time
  - Complex procedure planning
  - Additional slots on list
- Nurse:**
- Additional support for complex procedures
  - Pre-procedure paperwork

## Cycle 1 Results:



## Cycle 2 Results:

**Technical Success: 100%**

Question	Average Score out of 10
Introduced themselves to you.	10
Listened to you and to your questions.	10
Clearly explained your procedure today.	10
Clearly discussed the consent form with you today including risks.	10
Discussed pain relief options with you.	10
Were treated with dignity and respect throughout.	10
Do you prefer seeing the same person for this procedure.	10
How confident you felt with the Radiographer	10

Year	Total number of events	Total Number of Nephrostomies minor complications	Nephrostomy Complication rate
2022	130	19	15%
2023	164	24	15%
2024	205	20	9.7%

(British Society of Interventional Radiologist recommend a complication rate of <15%)

## Changes:

- Radiographer led nephrostomy exchange service.
- Radiographer to perform nephrostomy exchanges.
- Radiographer to consent.
- Radiographer to write formal report post procedure.
- Radiographer to request new procedure referral and vet requests.
- Smaller team

## Summary:

- All patients now seen within recommend 84 days (12 weeks).
  - Protected/dedicated list.
  - Requests for further exchanges requested at time of exchange.
- Complication rate lower than last year.
- Radiographer led service is comparable to radiologist led service.
- Positive patient feedback:
- Total 135 IR radiologist slots created over the year.

## Next Steps:

- Create service protocol
- Create SOP
- Create business plan to create IR advance practice role within radiology department.
- Scale up service:
  - Increase number of slots
  - Research other procedures for radiographer led service