SUSQI PROJECT REPORT

Optimising wheelchair returns in a PAN Hospital Wheelchair Service

Start date of Project: September 2023

Team Members:
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Background:

The Great Ormond Street Hospital (GOSH) PAN Hospital Wheelchair Service (PHWS) was established in 2004 following a 2-year pilot project. The aim of the service is to support patients to optimise their recovery and to facilitate discharge from hospital. For some children, this may be through the loan of a buggy or wheelchair to facilitate their post operative management, while others may require additional supportive seating after illness or injury.

Referrals to the wheelchair service can be made by clinical staff from across the hospital. An occupational therapist (OT) will assess the child's functional needs, mobility and postural control and then provide a loan wheelchair or buggy as appropriate, along with a referral to the child's local wheelchair service to arrange long term provision, if assessed as necessary.

The service started with 12 wheelchairs and has expanded to 121 wheelchairs and buggies that are loaned to inpatients and outpatients to enable discharge home / recovery. At the end of the return, the wheelchair or buggy should be returned to GOSH for re-use as the child will either no longer need one or has been provided with a wheelchair locally.

The annual report for April 2022 to March 2023 for the PHWS shows the service loaned wheelchairs and buggies to a total of 438 patients. 72% (315.5) were inpatient loans and 28% (122.5) were for home loans (to support discharge). The average loan period for an inpatient stay was 32 days and for home loans 56 days however there is variation in the loan period from 1 week to 1 year.

The return of wheelchairs from home loans is increasingly becoming an issue as wheelchairs are often out for longer than the agreed loan period. This then leads to a shortage of chairs and has resulted in the past in the need to purchase more wheelchairs. Currently wheelchairs over their expected date of return are only followed up on when a specific wheelchair is needed or availability is extremely low, which may delay access for another patient. As a team, we saw an opportunity to evaluate and improve this process, bringing sustainable value to our service.

Specific Aims:

To improve the timely return of wheelchairs to PAN Hospital Wheelchair Service (PHWS) located at GOSH, optimising repair and re-use, increasing availability of current stock in the service. This will improve availability of wheelchairs for patient use while reducing financial and environmental costs associated with purchasing additional chairs.

Methods:

Studying the system:
We examined the effectiveness of the current standard return operating procedure of wheelchairs and buggies for the PAN Hospital Wheelchair Service (PHWS) to understand why chairs are not being returned and the scale of the problem.

We found 24 wheelchairs / buggies were currently past their due return date. This equates to approximately 20% of the wheelchairs loaned for home use in a year, demonstrating there is room for improvement.

To understand how the OT team managed following up the return of wheelchairs a staff survey was carried out to explore issues such as whether all staff understood the standard returning wheelchair procedure. We also wanted to hear ideas from the team on how the returning wheelchair procedure can be improved. We found inconsistency within the OT team on perceptions, knowledge, and current practise of return of wheelchairs. Most therapist who loaned chairs home reported they only followed up when there were low numbers of wheelchairs, or they needed a chair. There were inconsistencies around recording information when chairs had been followed up on. Therapists reported challenges in return of chairs by families, these ranged from family had no transport to return the chair, waiting for the local wheelchair service to provide a chair, family did not know how to return the chair and family did not have an appointment coming up soon so not able to return. One therapist was unaware that there was a courier system that could be used. This indicated to us that staff agreed there was room for improvement in our current processes.

Data was also gathered on how wheelchairs were returned. Usually, this is via families returning them when they attend for follow up appointments or via the use of courier services.

Planned changes:
Using our findings, we plan to create a new standard operational procedure to facilitate improved stock flow of wheelchairs in the wheelchair store.

We will present our data and evaluation of the current process to the head OTs. This will support us to confirm and implement suitable changes to optimise the returns service pathway.

Our proposed changes include:

- Updating our loan form with clear and simple wording regarding the loan process, highlighting the key points, such as ways of return and loan timing with aim to draw attention of the family.

- Monthly loan monitoring data, on the number of wheelchairs available for loan and number of chairs still on loan pass due return date.
- Change to loan process and communication: OT will always inform the family of the loan length and the need to return the wheelchair within a week of the date and the need to contact the therapist if there is a significant reason why the wheelchair cannot be returned.
- Identify one member of staff to contact and remind patients / parents the date of the return.
- A member of staff to contact parents 2 weeks past return loan date if the wheelchair has not been returned or the parent has not been in contact.
- Team engagement and education to ensure staff understand the criteria and process of loaning and returning loaned wheelchairs.

Current progress/next steps:

- meet with the head of OT service to outline the project needs.
- Set up means for collection of new data required.
- Identify the staff member who will follow up wheelchairs out on loan due /overdue return.
- Re wheelchair loan - discuss with OT's + OTA's how to make recording information easier and more accurate to improve data collection.

Patient outcomes:

Our service has not reliably/consistently kept a record of how long patients wait to receive chairs and when a) there has not been a suitable chair available and b) when a suboptimal chair has been given to a patient while waiting for a more suitable chair. We have started to collect this data now to have a baseline for comparison following our change implementation. Anticipated patient benefits are summarised in the results section.

Safety and infection control: As we already re-use wheelchairs, we have a system in place for servicing, repairs, cleaning and quality checking before equipment would be loaned to a patient. The wheelchairs are serviced annually as advised by manufacturers. On return they are taken to MEDU (Medical equipment decontamination unit) to be cleaned under the Trust policy, and then returned to the wheelchair store where the OT Dept wheelchair safety returns check (Appendix 1) is carried out. Any concerns as we increase our rates of returns would be reported within our current processes.

Environmental sustainability:

The carbon footprint of wheelchairs, wheelchair disinfection (assuming 6 chemical wipes equivalent) and replacement wheels were provided by Greener NHS (NHS Walking Aid return tracking spreadsheet, derived from ICE v3.0 2019, available on the NHS Futures platform). The NHS Walking Aid return tracking spreadsheet assumes that a steel wheelchair weighs 20kg and an aluminium wheelchair 14.55kg. We adjusted the carbon footprint of wheelchairs provided by the NHS Walking Aid return tracking spreadsheet considering the average weight of a wheelchair at GOSH, which is 40kg per chair. For other parts and accessories, we will use an emission factor per £ spend for medical equipment from Greener NHS (GNHS Supply Chain Hot spotting spend carbon Factors Eclass III mapped onto SIC Codes).

The emission factor for a courier journey was calculated using the same approach as the Greener NHS database but assuming that the wheelchair will be transported by a van not a lorry (emission factor of 0.71022 per tonne.km in a van). We took an average weight of 40kg per wheelchair and an average distance of 70.6 miles return based on a sample of 6 wheelchair collections and postcodes.

Carbon footprint of a wheelchair return:

- Courier journey: 3.22 kgCO2e
- Wheelchair disinfection: 0.48 kgCO2e
- Parts and accessories:
    - Replacement wheels (steel and rubber): 9.48 kgCO2e
    - Other parts and accessories: 0.672kgCO2e per £ spent.

The carbon footprint of each chair return will vary depending on the distance travelled, replacement parts and accessories required. We will collect specific data to accurately carbon footprint our returns moving forward. As we do not have this data available at present, we have based our carbon footprint estimation on average travel, cleaning, and wheel replacement (to represent parts/accessories) which is 13.18kgCO2e.

Carbon footprint of a new wheelchair:

- Wheelchair steel (40kg) = 64.24 kgCO2e
- Wheelchair aluminium (40kg) = 277.6 kgCO2e

As we do not have data available at present for a specific breakdown of which chairs we have ordered, we have taken an average emission factor of 170.9 kgCO2e per wheelchair.

Saving: This equates to a saving of 157.72 kgCO2e for each returned chair.

Our projected CO2e reduction was translated into miles driven using emission factor 0.3386 kgCO2e/ mile driven in an average car with unknown fuel, from the UK Government Greenhouse gas reporting: conversion factors 2023.

Economic sustainability:

The wheelchair service does not currently have a dedicated budget for new equipment, parts and maintenance the cost come out of the OT service budget or bids for capital funding. When equipment or parts are needed costs are requested from the manufacture (NHS rates) and the list handed to the Head OT's.

New wheelchairs

The cost of new wheelchairs and parts/accessories varies considerably. For example, we are currently awaiting outcomes of funding bids for:

- 7 supportive wheelchairs total (cost in March 2023 £27,268.40) – a cost of £3,895.49 each
- 2 specialist cushions £934.00

Repairs/ Accessories

- Repair parts / accessories: There is a huge range in parts and accessories that we may order depending on the wheelchair condition and specific patient needs. In January 2023 the total cost was £222.93 for 28 items (average of £7.96 per item).

Returns

- Average cost of courier journey: £47.49 (costs ranged from £80.09 to £10.20)

We will be able to review financial data year-year to confirm if our changes have reduced spend on new wheelchairs, parts and accessories and have led to savings for the department.

Social sustainability:
We plan to survey the OT staff following implementation of a new process to ascertain if there has been a reduction in time and frustration spent finding and loaning wheelchairs due to increased availability.

No patient survey has been completed on the positive impact that being loaned a wheelchair has had on a child or their family. The department needs to complete to ascertain the impact being loaned a wheelchair has made to the family and child during the acute episode of care.

We have outlines anticipated social impacts in the results section.

Results:

Patient outcomes:
As per the measurement section, our service has not reliably/consistently kept a record of how long patients wait to receive chairs and when a) there has not been a suitable chair available and b) when a suboptimal chair has been given to patient while awaiting a more suitable chair. We have started to collect this data now to have a baseline for comparison following our change implementation. We hope to see a reduction in these issues.

Faster access to the most appropriate seating may be beneficial to patients in several ways. It is known that sitting up helps reduce the chance of chest infections as well as prevent musculoskeletal contractures if spending long period in bed without support and thus the loan of a supportive wheelchair to patients who cannot sit up independently will benefit their recovery. This could potentially have an impact on length of hospital stay, though outside our scope to measure. It is also known a child who is unable to walk or walk the distances needed can more readily engage in their “normal” life when provided with a chair, allowing them to see friends, go to school, etc, which research shows that supportive seating has a significant impact in their quality of life.

Environmental and economic sustainability:
Across a year, 28% (122.5) of our loans were home loans. We estimate that approximately 20% of the home loans (24.5 chairs) are not returned on time. From the 80% already returned, we are saving over 15,600 kgCO2e per year.

Improving our processes aiming for an additional 10% (12 chairs) to be returned on time, we have the potential to save an additional **1,893 kgCO2e per year**, equivalent to driving 5,590 miles in an average car. This would increase to 3,864 kgCO2e if we achieved a 100% return rate.

Financial data
If an additional 10% of wheelchairs are returned, and these chairs are between 4 specialist and 8 standard wheelchairs, we could potentially save approximately **£12,376**.

As mentioned in our measurement section, these savings are based on several assumptions, and therefore we aim to provide data on our actual impact in 12 months' time following a period of more robust data collection. This data may however be compounded by increased patient demand to the service.

Social sustainability:
Patients and families
The OT team recently received requests for wheelchairs for children to attend the "Hospital Christmas party" and anecdotally learned from staff and families that children returned to their wards happier. The same has been reported to OTs working in orthopaedics, loaning wheelchairs to children who are non-weight bearing following surgery, allowing the child to go out and about and cope with the restrictions for weeks better than they might have. These examples demonstrate that the faster a patient can access the most appropriate wheelchair, the sooner they can return to their enjoyable activities.

Faster access to chairs and an improved return process can have a follow-on effect for families, reducing stress, frustration and bringing social value and enjoyment to the family. We have had families complain that wheelchairs take up space in their home when no longer needed, and so prompt collection would be appreciated. We are planning to conduct a patient and family survey following implantation of our change.

Impacts on staff
We anticipate that the above benefits to patients and families will support staff well-being and job satisfaction by reducing any delays to seeing patients happier and more able to engage in activities they enjoy. For the OT team, we expect a reduction in time and frustration spent finding and loaning wheelchairs due to increased availability.

MEDU report it takes approximately 20 mins to clean a wheelchair. Based on an increase return rate of 12 chairs this will add 4 hours of time to MEDU workload across the year which we expect to have minimal impact on the service.

Discussion:

The key to increasing the availability of wheelchairs in the Pan Hospital Wheelchair service will be to ensure timely returns of loaned wheelchairs. To achieve this the process for loaning wheelchairs needs to be review and all staff to adhere to processes and for a robust follow up procedure to be written that will be a specific job allocated to one person. Once this is in place then data can be collected as discussed above to ascertain if the availability of wheelchairs has been increased thus reducing the need to increase the number of wheelchairs in the PHWS, which in turn would improve the carbon footprint of the service.

The limitation to this project is accurate data and engagement from staff in providing correct information. This is likely due to the lack of clarity in current processes and difference in staff understanding. It is also important to add that some staff might be resistant to change, and therefore discussions with them to understand their concerns will be needed for them to engage in the benefits of the project in the long term, however, comprehensive training can resolve misunderstanding.

If this project improves the returns of wheelchairs then the same process can be applied to the ADL (Activity of Daily Living) loan equipment e.g. commodes, slide boards etc. We can also link up with other paediatric acute hospitals to bench mark their wheelchair services.

Conclusions:

The aim of this project is to increase the flow and availability of loaned wheelchairs in the Pan Hospital Wheelchair Service by having a more robust returns system, in turn this will benefit patients while improving the carbon footprint of the wheelchair services and saving money, as fewer wheelchairs should need to be purchased to meet the wheelchair loan demand.

Appendix 1: Wheelchair return check list

CLEAN CHAIR SAFETY CHECK

Brakes	Can be applied and released easily
	Apply sufficient force to the wheel to prevent it from moving
	Mechanism is tightened appropriately to prevent brake from slipping
Wheels	Good working order
	Sufficient tread
Leg rests/Footplates	Good working order & footplate secure
	Correct number – **put wrong ones away in box & check box for correct ones**
	Release mechanism works appropriately
ELRs	Calf pads present
	Can be raised and lowered effectively
Lap strap	Present
	In good working order
	Appropriately attached
Frame	No obvious damage
	Folds and unfolds appropriately
	Push handle present (if appropriate)
Arm rests	Good working order
	Able to remove/Detach mechanism working & on correct side
Recline	Recline screws present and working
	Recline mechanism working
Tilt	Mechanism working
Headrest	Present (if appropriate) and in good condition
Anti tips	Present
	In good working order
Seat Canvas	In good condition
Backrest	In good condition
Cushion	Cover clean & intact
	Correct number – **put wrong one away on shelf & check shelf for correct one**

Critical success factors

Please select one or two of the below factors that you believe were most essential to ensure the success of your project changes.

People	Process	Resources	Context
☐ Patient involvement and/or appropriate information for patients - to raise awareness and understanding of intervention ☐ Staff engagement ☐ MDT / Cross-department communication ☐ Skills and capability of staff ☐ Team/service agreement that there is a problem and changes are suitable to trial (Knowledge and understanding of the issue) ☐ Support from senior organisational or system leaders	☐ clear guidance / evidence / policy to support the intervention. ☐ Incentivisation of the strategy – e.g., QOF in general practice X systematic and coordinated approach ☐ clear, measurable targets ☐ long-term strategy for sustaining and embedding change developed in planning phase ☐ integrating the intervention into the natural workflow, team functions, technology systems, and incentive structures of the team/service/organisation	☐ Dedicated time ☐ QI training / information resources and organisation process / support ☐ Infrastructure capable of providing teams with information, data and equipment needed ☐ Research / evidence of change successfully implemented elsewhere ☐ Financial investment	X aims aligned with wider service, organisational or system goals. ☐ Links to patient benefits / clinical outcomes ☐ Links to staff benefits ☐ 'Permission' given through the organisational context, capacity and positive change culture.