



HEALTH AND SAFETY
AUTHORITY

Ergonomics Good Practice Case Study

Health Sector

National Rehabilitation Hospital (NRH)

Organisation:

National Rehabilitation
Hospital (NRH)

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**The Project
Team Involved in this
case study**

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Occupational Therapist /
Access Officer, David
Donoghue, Technical
Services, Tara Lyons,
Therapy Planner*

This case study demonstrates how the National Rehabilitation Hospital (NRH) managed ergonomic risks through the introduction of a range of engineering and organisational improvements in the way work was carried out to avoid or reduce the risk of musculoskeletal injury.



The Organisation

The National Rehabilitation Hospital (NRH) provides a comprehensive range of specialised rehabilitation services to adult and paediatric patients who, as a result of an accident, illness or injury, have acquired a physical or cognitive disability and require specialist rehabilitation. The NRH is the only service of its type in the country, providing treatment for patients from throughout Ireland.

At NRH, treatment and care to patients is delivered by consultant led, inter-disciplinary teams in the following areas of speciality:

- Brain Injury (including traumatic and non-traumatic brain injury, stroke, and other neurological conditions)
- Spinal Cord System of Care (including traumatic and non-traumatic spinal cord injury)
- Prosthetic, Orthotic and Limb Absence Rehabilitation (POLAR)
- Paediatric-Family Centred Rehabilitation

01 | Stage 1: Problem Identification

Description of Task

The National Rehabilitation Hospital, in partnership with the Health Service Executive (HSE), required the construction of a new 120-bed rehabilitation hospital. Understanding and considering the access requirements of the end users of the building was essential. Designing spaces for people with the most complex disabilities is a challenge, particularly the design of patient en-suite toilet and showers. The hygiene care needs of individuals with complex rehabilitation requirements can change from needing the assistance of two staff to becoming fully independent in meeting their own hygiene needs.

The principles which had to be met in the room design of patient en-suites were to ensure that there was sufficient space for all activities to be performed, namely:

- sufficient space for transfers from shower chair, and
- use of shower trolley and space for carers' activities while assisting the patient.

The setting of sanitaryware heights were to be reviewed as some patients with spinal cord injuries require the use of specific types of equipment to facilitate their independence. This case study relates to the design of the en-suite space taking account of user requirements (carers and patients).

Evidence of Risk Factors

During the delivery of intimate care such as bathing or toileting, there is the likelihood of significant manual handling risk factors (such as awkward bending and twisting postures) if spatial planning is not considered in the en-suite design process. Effective spatial planning gives carers comfortable space to assist patients in meeting their hygiene requirements. This was a key design priority for the NRH project manager. Poor design and layout of spaces can unintentionally create barriers for patients in maximising their fullest potential for independence in self-care.

The risk factors for staff were:

- Lack of space to maintain good posture
- Use of force in an awkward kneeling position
- Static kneeling posture

02

Stage 2: Problem Solving Process

What Was Done?

In 2012, the NRH was given approval to progress the construction of a new hospital facility in a phased approach to replace the outdated existing infrastructure.

Phase 1 was to replace all existing patient accommodation with 120 single rooms with en-suites, some integrated therapy spaces and ancillary ward support areas. This project gave the NRH an opportunity to again test and improve the spaces provided for patients and staff. It has also allowed the NRH ensure that both the area allocation and layout would enhance patient's independence levels and provide a comfortable workspace for staff as carers when giving assistance.

At the initial stage of this project the NRH health planning team, who were the client's representative on the new hospital project, took the opportunity to get input from staff and patients around their preference for how the en-suite space and layout best suit their needs.

The NRH technical services team built a mock up 20sqm bedroom with 9sqm and 6sqm en-suite in a disused building on the campus in order to provide a real life testing facility. The team brought in samples of all sanitaryware and put them onto mobile plinths so they could be easily relocated around the en-suites.

Equipment that was no longer fit for use was repurposed and used in the bedroom and en-suites, such as beds, chairs, shower trolley, shower chair and overbed tables, which allowed the team to test the space with everyday hospital equipment.

The health planning team set up weekly visits over a period of six months to the mock up room. Input was sought from healthcare professionals across all disciplines and patients of the hospital on:

- the layout of the rooms,
- issues they had experienced in terms of space for transfers,
- carrying out personal care,
- other manual handling risks, and
- the types of sanitaryware and other equipment being proposed.



Team members discussing heights for WC



Image of 9sqm mock up en-suite

03

Stage 3: Outcome

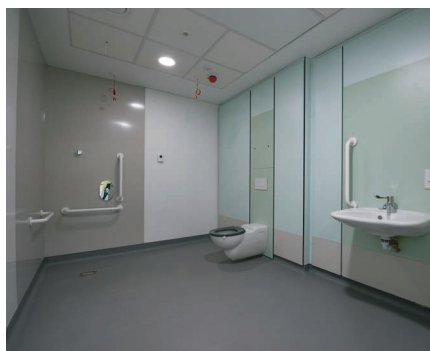
Main Interventions

The feedback was collated by the NRH health planning team and formed the brief for the appointed design team in how the layouts and setting out of fittings in these rooms should be addressed to maximise the user needs.

En-suites of 9sqm and 6sqm were included in the brief for phase 1 of the NRH development. The ratio of 9sqm to 6sqm en-suites was 3:1. Other recommendations in the feedback included the following:

- Centrally located toilet in 9sqm en-suite
- Agreed layout of sanitaryware
- Heights of toilet, for flexibility when using equipment (e.g. spinal toilets)
- Lengths of shower hose
- Height of shower chairs over toilet
- Bariatric toilets requirement

Below are some pictures of the new en-suite bathroom which meets the needs of both the client and clinical staff who work with the clients:



Images of 9sqm en-suite during construction stage prior to final installation of fittings

04 | Stage 4: Results

Poor design and layout of spaces can unintentionally create barriers for patients in maximising their fullest potential for independence in self-care. The results of the research and planning has meant that the new rehabilitation hospital features rooms which demonstrate an awareness of the individual needs of patients. Complex patient solutions dependent on the patient's individual needs are now in place. There is also future flexibility to particular needs and individualised configurations.

Health benefits (including risk factors like force, repetition, posture eliminated or reduced)

The new en-suite bathroom design will result in reduced awkward posture and improve comfort levels for both staff and patients in the delivery of patient's personal care.

Evidence of innovation or creative thinking

The construction of a mock up en-suite bathroom facilitated the health planning team in developing a rationale for the optimum design and specification.

Evidence of team work

The Health Planning Team included a project manager, nurse and therapy planner, equipment officer and administration support.

Evidence of consultation and communication

This team worked with other stakeholders including nursing staff and healthcare assistants, technical services and patients and their family members.

Evidence of management commitment and investment

Management provided the necessary resources and release of staff to participate in the design input process. Construction of mock up room.

Return on investment

Not applicable.

Evidence of increased knowledge and awareness of ergonomics

The consultation process created an increased awareness of space requirements and importance of good layout of equipment/sanitaryware in the en-suite specification which facilitated good ergonomic practice.

Client Testimonial

"The National Rehabilitation Hospital (NRH) in partnership with the HSE required the construction of a new 120-bed rehabilitation hospital. During the delivery of intimate care such as bathing or toileting a likelihood of significant manual handling risk factors like awkward bending and twisting postures can arise if spatial planning is not considered in the en-suite design process. Effective spatial planning gives carers comfortable space to assist patients in meeting their hygiene requirements. The NRH technical services team built a 20sqm bedroom with 9sqm and 6 sqm en-suite in MDF in a disused building on the campus and brought in samples of all sanitaryware and put them onto mobile plinths so they could be easily relocated around the en-suites. The feedback from stakeholders on their preferred configuration was collated and formed the brief for the appointed design team in how the layouts and setting out of fittings in these rooms should be designed to maximise the potential for patient independence in meeting their self care needs and provide a comfortable working environment for carers when providing assistance to patients."

Siobhán Bonham – Project Manager