

The Role of Rehabilitation Engineering in Pressure Ulcer Care

Pearl Read, Dr Mark Bowtell and Dr Lorna Tasker, Swansea Bay University Health Board

Summary/Aims and Objectives

Pressure ulcer prevention is everyone's responsibility and requires collaboration from a range of healthcare professionals. This presentation explores the role of Rehabilitation Engineering in pressure ulcer care and how the routine collection of service metrics is essential in evaluating the changing needs of our population in relation to pressure ulcer prevention and intervention. A retrospective review of the data set from 10 years will be summarised with specific reference to the posture and mobility needs of the patients assessed during this period.

Background/ Method

The Pressure Ulcer Prevention and Intervention Service (PUPIS) hosted in the Rehabilitation Engineering Unit, Swansea, was established in 2005. Rehabilitation Engineers (Healthcare Scientist or Practitioner) work alongside Clinical Nurse Specialists to provide a unique, multi-disciplinary, holistic approach to pressure ulcer prevention, management and education. The service receives referrals from the local community where local management is not effective and specialist input is required.

The engineer's role within a PUPIS initial assessment is to assess the patient's postural support and pressure relief in existing equipment which could include; wheelchair, armchair, mattress and shower chair. Following this assessment, bespoke equipment may be designed, manufactured and prescribed to promote management or healing of pressure ulcers where off-the-shelf equipment is insufficient. It is well established that Rehabilitation Engineering has a role in education during clinical visits and to the wider healthcare profession. Bi-monthly in-house training sessions are open to local healthcare professionals, including nursing, therapies and residential and nursing care home staff. Since 2018, over 500 colleagues have attended PUPIS training. A range of educational materials have been developed over the last 10 years of patient assessment, including videos, leaflets as well as the All Wales Best Practice Guidelines in Seating and Pressure Ulcers (PUPIS & AWTVNF, 2019).

In 2015, a database was developed to capture initial assessment data and primary service metrics were devised to provide knowledge of service efficacy including; wound details, sitting times, frequency of care/nursing involvement and dressing information. Since the launch of the database (January 2015 – December 2024), data for approximately 1300 initial assessments have been captured and analysed.

Results

PUPIS provide intervention predominantly for those with Category 4 and unstageable pressure ulcers. Common wound sites include ischial tuberosities, sacrum/coccyx, spine and heels. Approximately 52% of the patients are nursed in bed. In contrast 7% of the patients sit out for 24 hours a day and do not go to bed.

Approximately 70% of the population seen by PUPIS are over the age of 70 years. 40% of the population are hoisted with 13% able to self-transfer.

2019 audit indicates that 15% of patients had spinal-related conditions/injuries and 22% had dementia noted on assessment. Further analysis of the populations' primary diagnoses is being carried out and will be presented.

The database identified that 58% of initial assessments had a Rehabilitation Engineer in attendance.

The review has highlighted the increasing demand to the service and in particular the complexity of the patients. This is evidenced by the increase in bespoke in-house manufactured medical devices issued to support the patient's goals in managing and preventing pressure ulcers. Since 2021, post-COVID, the increase in requests for in-house manufacturing input has doubled when compared to 2018-2020 data.

Discussion

Patients with pressure ulcers present a difficult challenge to health services and experts in posture and mobility are regularly challenged by how best to support people with existing pressure ulcers or those at high risk. The challenge is heightened by the fact that pressure risk goes beyond seating alone. Complexity of patients appears to have increased post COVID-19 due to deconditioning, paused care and reduced therapy input as well as decreased levels of activity and social isolation (Welsh Government, 2021).

This review has demonstrated the important role that the Rehabilitation Engineer has in working alongside Clinical Nurse Specialists, using a problem-solving approach to pressure ulcer care, as well as applying biomechanical knowledge in design and manufacture of bespoke devices and provision of education. The evaluation of the data from 10 years has highlighted the importance of this multidisciplinary working and suggests the diversity of the role of the Rehabilitation Engineer, considering the wider aspects of 24-hour pressure management in posture and mobility.

This review has allowed for further refinement in the service metrics collected for 2025 onwards. The service has transitioned from manual database entry to a Microsoft Forms platform, for both referrals and initial assessments. This will improve efficiency and accuracy of ongoing data collection and analysis.

References

Bowtell, M.; Flavin, S.; Hadley, Z.; Tasker, L. "Development of outcome measures and performance indicators for PUPIS - a specialist pressure ulcer service in the community" - Presentation, EPUAP, Ghent 2015

Bowtell, M et al. "Pressure management – innovation and service delivery in Wales" International Seating Symposium, Vancouver, 2020

PUPIS & AWTNMF (2019) All Wales Best Practice Guidelines: Seating and Pressure Ulcers.

Swansea Bay University Health Board (no date) Pressure Ulcer Prevention and Intervention Service (PUPIS). Available at: <https://sbuhb.nhs.wales/hospitals/a-z-services/rehabilitation-engineering-unit/reu/pressure-ulcer-prevention-and-intervention-service-pupis/> (Accessed: 10 January 2025).

Welsh Government (2021) Rehabilitation Needs of People Affected by the Impact of Covid-19. Available at https://www.gov.wales/sites/default/files/publications/2021-03/rehabilitation-needs-of-people-affected-by-the-impact-of-covid-19_0.pdf (Accessed: 10 January 2025).

Email: pearl.read@wales.nhs.uk