Exploring Key Factors Required for Hybrid Systems: Analysis of a Focus Group

Abstract

Background: There is a continued focus in healthcare that NHS Trusts must make cost savings while ensuring quality and productivity is not adversely affected. It is essential that health care professionals have access to pressure reduction/redistributing equipment that is evidence based and can promote skin integrity via adequate reduction of excessive pressures and/or shearing forces. This paper presents the results of a focus group exploring perceptions of a new hybrid mattress and its application to clinical practice. Hybrid systems are increasingly being used in clinical practice to assist in the prevention and management of pressure ulcers (PUs). Innova Care Concepts have launched a new hybrid system, The Solment Serene.

Methods: A focus group design was used involving 5 Tissue Viability Key Opinion Leaders including an academic, infection control and tissue viability specialists. All data was recorded and transcribed verbatim, data generated was analyzed thematically. Confidentiality and anonymity was assured.

Results: Four key themes were identified; (1) patient suitability, (2) Ease of Use and Effectiveness, (3) the importance of inter-professional working and (4) Loss of Equipment - Promotion of cost effectiveness

Conclusions: The consensus was that there is a growing place for hybrid systems in preventing and managing pressure damage effectively. Health and social care should work inter-professionally to improve patient outcomes. The development of a flowchart based on scientific evidence was recommended to assist in the decision making of appropriate equipment.

Key words: Hybrid systems, pressure ulcers, support surfaces, quality

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Background

There is a continued focus in health care that NHS Trusts must make cost savings while ensuring quality and productivity is not adversely affected. Plans for a sustainable NHS in England were published by the Government in 2015 (Department of Health [DH], 2015) highlighting the NHS would receive £10b more in real terms by 2020-21, increasing the health budget from £101bn in 2015–16 to £120bn by 2020–21. However, the NHS is still expected to deliver efficiencies of 2–3% per year effectively placing a 10–15% real terms cost reduction expectation on trusts to achieve by April 2021 (Carter, 2016). In Scotland the Government has promised to prioritise investment in transforming healthcare services to meet the needs of the future, to protect resources, support creativity and transformation and will invest £30 million specifically to support the transformational change agenda. Furthermore, they will be investing an additional £250 million per year through Health and Social Care partnerships to support the delivery of improved outcomes in social care (Scottish Government, 2015). One area where cost savings and efficiencies can be achieved is prevention and management of pressure ulcers (PUs). The Safety Thermometer (HSCIC, 2016) reports a slight increase in pressure ulcer development; In June 2016, 4.4% of reported patients had pressure ulcers, compared with 4.3% in June 2015. Table 1 presents data of reported pressure ulcers - June 2015 - June 2016 (HSCIC, 2016).

Table 1 - Prevalence of Pressure Ulcers (adapted from HSCIC, Safety Thermometer Data, 2016)

	Jun15	Jul 15	Aug 15	Sep 15	Oct 15	Nov 15	Dec 15	Feb 16	Mar 16	Apr 16	May 16	Jun16	Total
Pressure Ulcers - All	9,012	9,043	8,591	8,371	8,307	8,535	8,380	8,730	8,721	9,026	8,949	7,886	112,397
Pressure Ulcers - New	1,945	2,021	1,869	1,754	1,769	1,845	1,785	1,837	1,871	1,959	1,893	1,631	24,077
Patient Assessments	210,087	206,159	201,926	200,967	200,508	203,415	196,543	201,503	198,643	198,931	199,908	181,214	2,603,150
Organisations	821	812	791	782	796	790	713	735	729	709	696	639	

Although there is a small decrease in reported pressure ulceration with a continued increase in the ageing population there is potential that this patient group remains vulnerable to skin damage. It is essential that health care professionals have access to pressure reduction/redistributing equipment that is evidence based and can promote skin integrity via adequate reduction of excessive pressures and/or shearing forces present at 'at risk' areas of the body (e.g. bony prominences, heels, sacrum, back of the head). This is paramount to enable sufficient tissue perfusion for the successful prevention and/or management of PUs. The use of support systems, including high quality foams, hybrids and alternating pressure air mattresses (APAMs), are one strategy for reducing or redistributing pressure. Hybrid systems are a more recent technology in comparison to foams and APAMs that are becoming increasingly accepted as an alternative treatment option. Hybrid systems combine foam and air to maximize the benefits offered by both static and alternating surfaces (Fletcher et al, 2015), there are two types of hybrid systems: non-powered and powered, suitable for a range of pressure ulcer risk levels and categories of pressure damage.

Innova Care Concepts have launched their new Hybrid system, the Somlent Serene, see figures 1 and 2. This paper presents analysis of one area of a tripartite study (a focus group) consisting of; laboratory testing; focus group and clinical case series investigating the use and effectiveness of the Somlent Serene Hybrid system. The focus group aimed to explore and investigate perceptions of the mattress and its application in the clinical setting.

Figure 1: Innova Care Concepts hybrid system, The Solment Serene

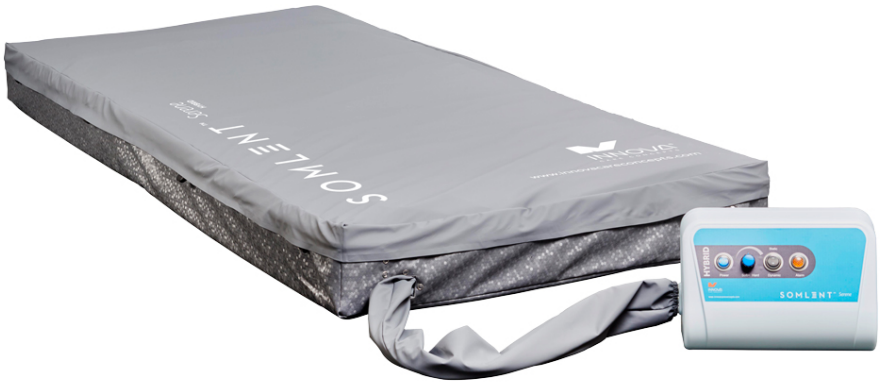
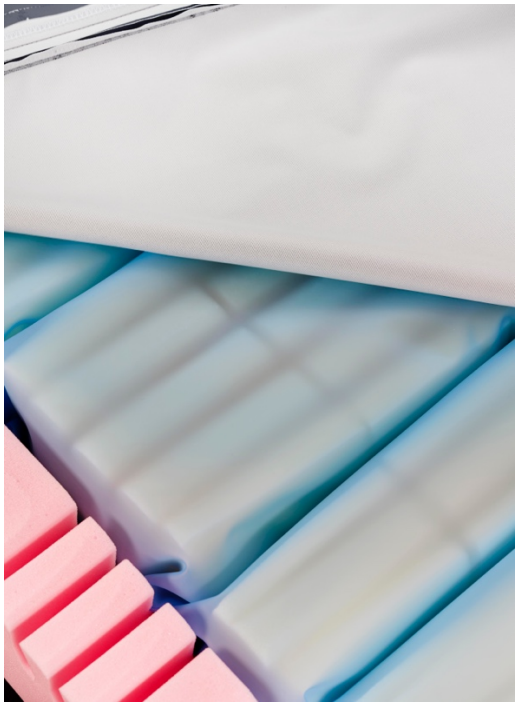


Figure 2: The foam and air cells of The Solment Serene



Methods

A qualitative approach using a focus group design. Ethical approval to undertake and publish the results was successfully received from The University of Huddersfield School of Human and Health Sciences Research Ethics Panel (SREP/2016/053). Tissue Viability key opinion leaders, with expertise in the field of prevention and management of PUs were invited to participate. The inclusion criteria were that they currently work in this area on a daily basis and had more than 2 years' clinical

experience. In total 5, key opinion leaders participated in the focus group including one academic, an infection control and 3 tissue viability specialists. Participants had between 10 - 25 years' experience working in the field of tissue viability in both acute and community settings. Information was provided to participants informing them of the purpose of the study prior to commencement of the focus group. Anonymity and confidentiality were assured. All participants provided written informed consent prior to participation. The focus group was recorded and transcribed verbatim by a qualified transcriber, thematic analysis was undertaken by the research team using the framework developed by Braun and Clarke (2006). All collected data was stored securely on the University's secure server.

Following demonstration of the Solment Serene Hybrid mattress, participants were asked to discuss their initial thoughts regarding the new hybrid mattress, how it compared with other similar systems currently in use and how practitioners would select a hybrid mattress as opposed to other systems. The focus group discussions were allowed to naturally emerge following these initial prompts.

Results

Four key themes were identified during the analysis of the focus group: (1) patient suitability, (2) Ease of Use and Effectiveness, (3) the importance of inter-professional working and (4) Loss of Equipment - Promotion of cost effectiveness. These will be discussed in further detail:

Theme 1: Patient Suitability

The importance of choosing the correct equipment in a timely fashion was discussed. Participants stated that it was essential for clinical staff to be able to access appropriate equipment 24 hours a day with no delay to maintain skin integrity for the patients. Jones and Fletcher (2014) previously discussed this, arguing the increased requirement for higher specification pressure redistribution systems in patients at high risk of pressure ulceration can lead to delays in provision of equipment, with the additional requirement to transfer the patient to a replacement system. All participants

discussed that there was some confusion amongst clinicians when making an informed decision regarding when a hybrid should be chosen over other systems. Fletcher et al., (2015) identified that there is a lack of clarity about what these products are, how they work and which patients they are suitable for. Participant 4 revealed, *"……..we have had some patients where they should be on the full dynamic system and have been put on a hybrid and they haven't been upgraded when we've needed to."* However, Jones (2014) reported findings of an audit in one UK hospital that revealed hybrid systems afforded rapid intervention, reducing the time taken to get a patient onto a powered system from over 7 hours (typical alternating system) to zero as the nurse simply attached and switched on the pump at the end of the bed.

The participants suggested that one of the reasons contributing to the confusion was the vast variations across hybrids, such as powered and non-powered. They were concerned that companies advise and promote the use of the mattresses for certain categories of patients with little research and evidence to support these claims. Participant 4 explained, *"It is imperative the companies support their recommendations with high quality evidence to ensure health care workers are delivering research based practice and maintaining quality of care".* All participants agreed that companies should provide a 'suitability flowchart' for health care professionals to refer to when choosing a hybrid system. However, they also stated that clinicians must be aware that regular reassessment of patients' needs must be undertaken and documented to ensure that patients are appropriately 'stepped up' or down in a timely manner.

Theme 2: Ease of Use and Effectiveness

Daily hospital in-patient pressure ulcer treatment costs are estimated to range from £43 to £374; for ulcers without complications the daily cost ranges from between £43 to £57 (Dealey et al, 2012). These costs include standard care, nurse time, dressings, antibiotics, diagnostic tests and pressure redistributing devices. Not included in this is the additional time a patient with a PU will have to

remain as an in-patient estimated as between an extra 5-8 days per patient with a pressure ulcer (Dealey et al, 2012). Participants stated that reduced budgets meant they had to be aware of the unit cost of each system and that they were "*constantly pressured to reduce the cost of equipment*". The National Institute for Health and Care Excellence [NICE] (2014) suggested that health care areas need to consider the local cost impact of providing high specification foam systems and other pressure redistributing equipment; high-specification foam systems for adults cost the NHS around £120 to £200 each; for children under 18 years they will cost around £50 to £200. Constant low pressure and alternating pressure system replacements cost around £3,500 to £3,600, or they can be hired for around £13–£14 per day (minimum 10-day hire) (NICE, 2014). The equipment can be used over a number of years, so the cost per patient is expected to be low (NICE, 2014; p 6). Focus group participants agreed that the hybrid system would be of benefit to patients and that it possessed a range of features not always available on other systems; for example, the Solment Serene Hybrid has a cut out section in the outer foam to accommodate profiling beds. Participant 2 commented: *That's great, that makes the profile better for the bed…."* - However it was imperative that the company provided evidence to support the profiling feature further benefits the patient, for instance reduction in shear forces and/or pressure relief, as this would help in providing an argument to procurement to purchase a more expensive system.

Effective infection prevention was identified by all participants. Participant 3 highlighted the importance of easy cleaning regimens for the systems, she identified that staff should be able to view the foam and the cells easily for any signs of fluid ingress. The Somlent Serene system was scrutinized by participants who all agreed that the foam and cells were easy to view and as such any signs of fluid ingress could be easily identified. Additionally, the fact that individual cells could be replaced was seen to be positive. Participant 3 stated, *"If things aren't easy to do, people tend to take shortcuts and don't do it right, which can then lead to all kinds of problems, in this current climate preventing anti-microbial resistance is really important."* Participants raised awareness that

there may be some grey areas regarding cleaning requirements of hybrid systems because of its mixed features i.e. foam and air cells. System categories for audits may overlook hybrids due to the dual properties participant 4 explained, *"You probably wouldn't think of these (hybrids) to check as a foam, you probably think of those as a dynamic system."* It is therefore important for the company to provide instructions on how the system can be decontaminated and identify the cleaning products that can be used.

Theme 3: The importance of inter-professional working

Participants raised the necessity of working with different disciplines to improve and develop hybrids and other systems. Participants recommended that infection control and tissue viability should both be involved in assessing the appropriateness of new systems for use in clinical areas. Participant 5 discussed decontamination processes and how this process should be clearly included in any contracts. Similarly, both the infection prevention and tissue viability participants highlighted that with hybrid systems, it was essential that the pipes used for the pump must be covered when not in use to avoid any potential for possible ports of entry for bacteria.

The changing demographics of patients was discussed at length. Participants spoke about the ageing population and the increase in obese and bariatric patients that were presenting with skin damage. Participants 1,3,4 and 5 asked for laboratory research and evidence that would approximate the life span of hybrids for heavier patients. There were concerns that many of the pressure reducing/redistributing systems had a shorter life span when used for this patient type. Damage to covers was identified as an additional cost that was often incurred; *"I have had to order new covers for patients due to damage caused by pets……patients let dogs and cats sleep on their beds and their claws rip the cover…"* (P2). All participants agreed and added that some patients would cause intentional damage to covers with razor blades and scissors. It was suggested that companies attempt to develop hard wearing covers that could sustain this type of damage.

Theme 4: Loss of Equipment - Promotion of cost effectiveness

Promoting cost effectiveness emerged as the fourth theme. There was a consensus that many mattresses and cushions were often lost or 'mislaid' due to patients moving wards, moving hospitals or being discharged to the community. This created a cost implication as lost equipment required replacement. Participant 2 explained that medical physics managed all the equipment within the Trust and tracked each piece via bar codes. The remaining participants did not use medical physics and as such were reliant on clinical areas tracking the equipment: "*Sometimes, a patient moves different services, different establishments and you lose your equipment…*" (P3). It was suggested that manufacturers of equipment should incorporate a unique bar-coding system into the hybrid mattress and cushions which could assist in the tracking of its use. The tracking system could link in with patient records making it easier for clinicians to perform audits; identify whether the hybrid mattress has been selected appropriately for the patient; beneficial categories for use and suitable time intervals for stepping up and stepping down the patient. This would provide health care areas with exact data that presents how often mattresses/cushions are being used, the ability to link mattresses type/cushions with prevalence of skin damage and would be able to provide alerts for staff when services are due by the company. The capability to be able to link information to electronic patient records was perceived to be the most efficient way to track equipment especially in community areas where participant 5 stated, *"District nurses are losing their bases and will need an efficient way of being able to track equipment that is not paper based."*

Discussion

The study unveiled 4 key themes as presented earlier. General comments for the Solment Serene Hybrid system included simplicity of use quietness and design of the system with the foam being integrated rather than placed on top of the cells; all participants agreed that this had the potential

to reduce pressure and/or shearing forces. There was a general consensus that hybrid systems have established their identity in the prevention and management of skin damage.

Inter-professional working is vital to prevent skin damage, reduce pressure ulceration and improve patient outcomes, including awareness and knowledge of appropriate and new equipment, especially as health and social care are expected to work collaboratively in maintaining and improving patient outcomes (NHS England, 2014). The five year forward plan clearly set out the need for care to be provided between family doctors and hospitals, between physical and mental health and between health and social care. Reducing pressure ulceration will release beds and nurse time, reduce costs associated with pressure ulcers and ultimately lead to cost savings (NICE, 2014).

There was a concern expressed that some clinicians did not fully understand when a hybrid system should be chosen. As such the need for further research in this field to provide high quality clinical evidence to support and assist the formulation of a suitability flow chart was recommended.

Conclusions

There are a range of pressure reducing/redistributing systems available for clinicians to choose from. Every clinician who cares for a patient at risk of skin damage should be aware of the various systems and understand how to choose an appropriate system. Patients should be assessed regularly for their clinical need and should be 'stepped up' or 'stepped down' as appropriate to prevent misuse of the system. Hybrid systems are becoming more popular and as such there is need for companies to provide research and evidence to support their use in clinical practice. This can be achieved through inter-professional collaboration between health and social care and industry. The Five Year Forward Plan (DH, 2014:34) stated that they would work with NICE to expand work on devices and equipment and to support the best approach to rolling out high value innovations. Pressure ulcer prevention can be expensive but is more cost effective than pressure ulcer treatment, as such using

new devices for prevention needs to evaluated and measured against clear patient outcomes - for example, prevalence of pressure ulceration, days in hospital and nurse visits.

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