

Can pressure monitoring facilitate patients and carers in their decision making with regards to repositioning and pressure ulcer prevention?

Purpose/Background

Pressure ulcers are a significant concern to the National Health Service. XSENSOR® has developed technology that automates pressure ulcer risk management.

The ForeSite PT System continually monitors interface pressures and gives clinicians visual, easy-to-understand, pressure information to achieve the highest level of pressure redistribution when repositioning a patient. An evaluation study was undertaken to determine if the use of this new technology would lead to a reduction in the number of acquired pressure ulcers in one community hospital ward.

Objectives

- To reduce Community Hospital Acquired Pressure Ulcers
- To understand pressure changes that occur when a patient remains in one position before being turned
- To identify positions which are less compatible with healing
- To assess the ease of use and user acceptance of the technology from the carer and nurse perspectives
- To assess the comfort – from the patient’s perspective
- To determine, for the first time, the length of time that patients are out of bed, sitting in a chair and not having the pressure monitored

Methods

Patients identified as being at high risk of developing pressure ulcers in a community hospital setting using an adapted Braden Scale were placed on the ForeSite PT System for a period of 2-3 days. Care was provided in accordance with local pressure ulcer prevention policy.

Data were downloaded on a weekly basis and information provided to the ward team on a weekly basis.

A final presentation of all the results was given to the Multidisciplinary Team (MDT) following completion of the evaluation.

Results

NO pressure ulcers have developed on the ward following the feedback of information obtained from the data - Figure 1a

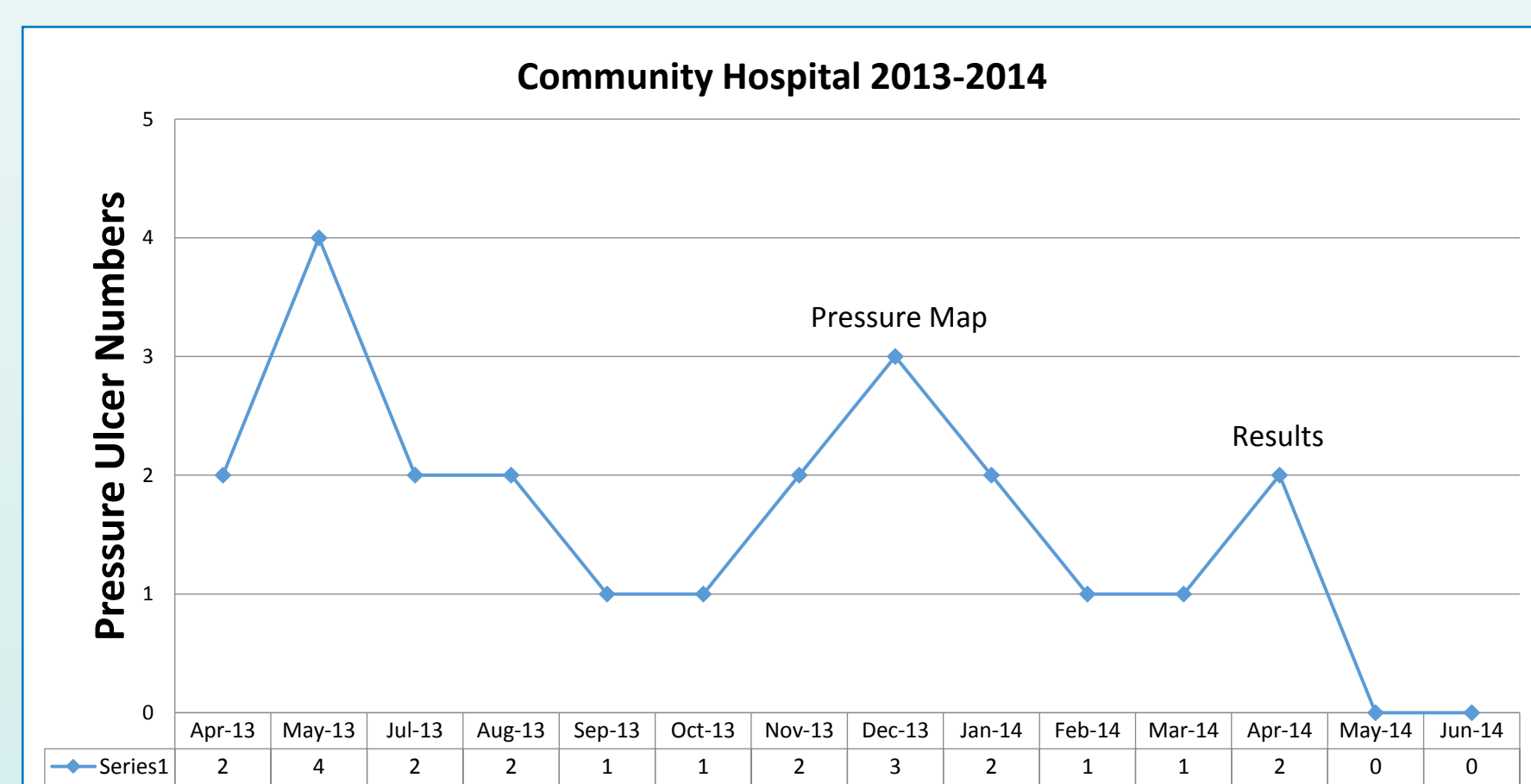


Figure 1a

Previously undetected pressure points were revealed:

Figure 2 shows mapping following a bedpan placed under a patient for a period of 55 mins with pressures of 256mmHg in the contact area and the heels - Figure 2 Bedpan map

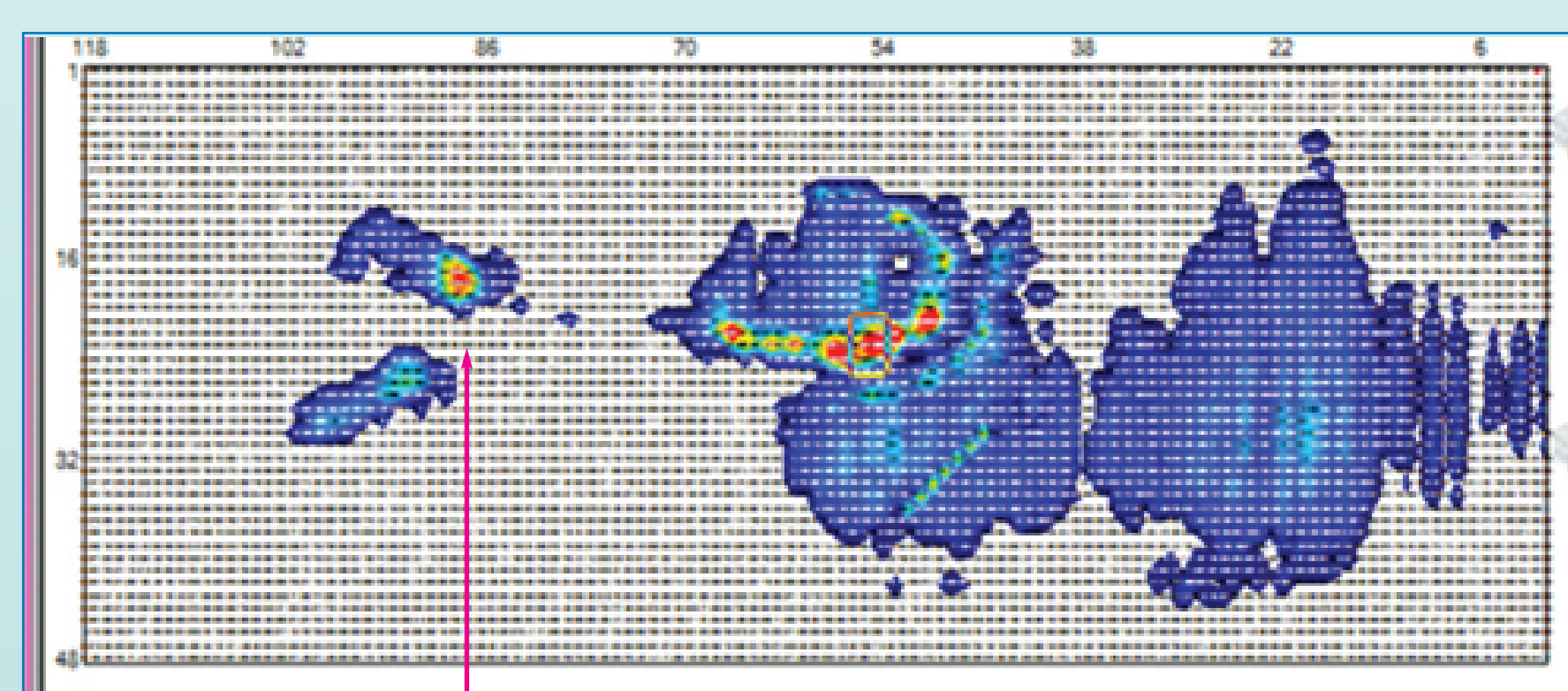


Figure 2

High pressures in the heel and buttock area indicates patient is using heels to support self on bedpan increasing the risk of pressure damage

During the evaluation period, 3 out of 6 patients with pressure ulcers healed with the remaining 3 improving over the 3 day period and continued to improve. No patients developed pressure ulcers whilst on the PT system - Figure 1b

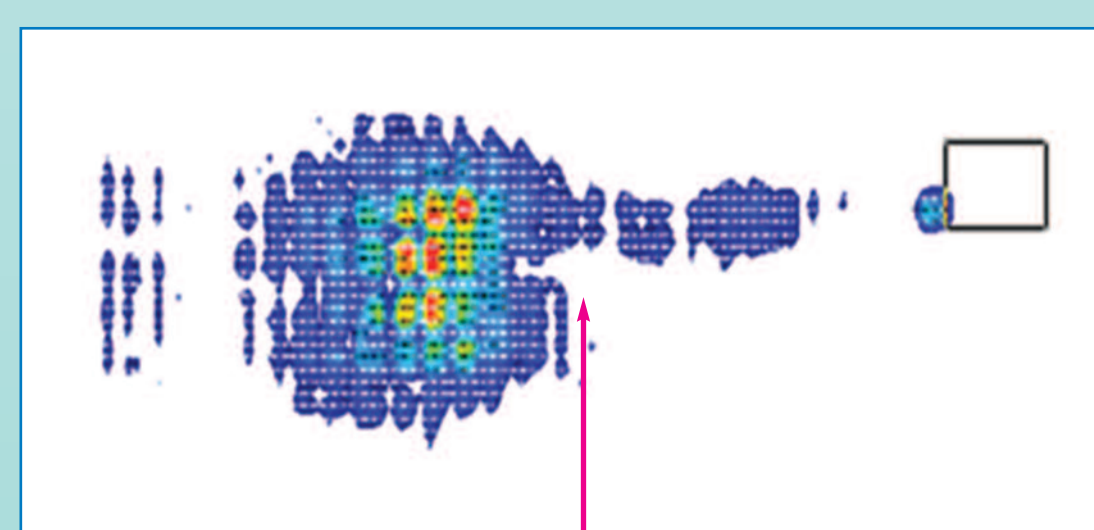
Patient	1	2	3	4	5	6	7	8	9	10	11
Mattress	Visco	Dynamic	Dynamic	Dynamic	Foam	Foam	Dynamic	Hybrid	Dynamic Overlay	Dynamic	Hybrid
Frailty	7	6	5	8	7	6	5	7	7	5	7
Risk Score	High	High	High	High	High	High	High	High	High	High	High
Pressure Ulcer Grade	0	2	1	0	0	2	3	2	0	1	0
Age	90	83	84	59	79	89	80	67	88	84	67
Gender	F	F	F	F	F	F	M	F	F	F	F
BMI	25.28	18.95	21.56	Overweight	20.37	25	37.18	16	Not done	24.84	33.66
Healed/Improving	No damage developed	Healed	Healed	No damage developed	No damage developed	Lost to follow up	Improved	Improved	Lost to follow up	Healed	No damage developed

Figure 1b

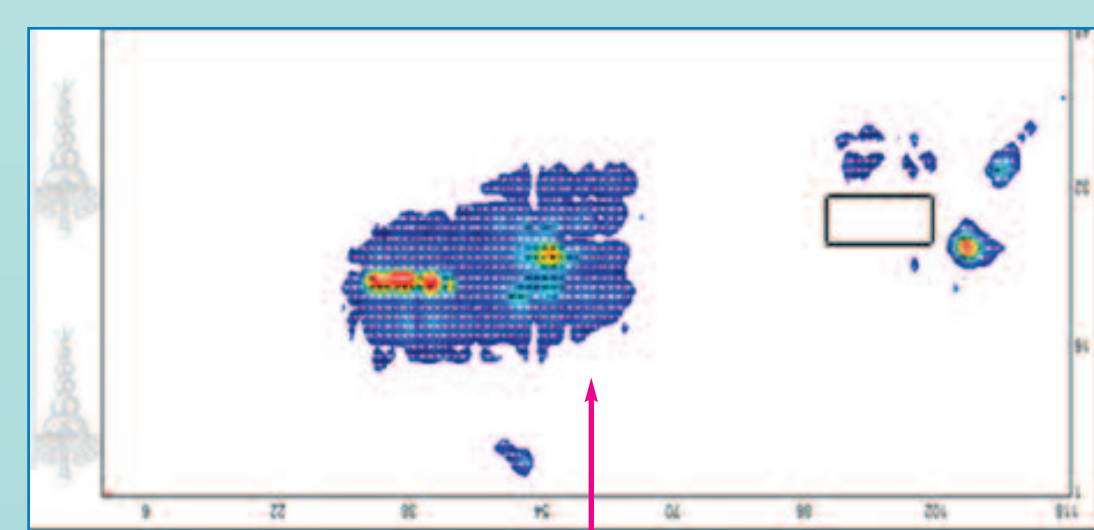
Nurses Comments: All were extremely favourable. Use of the technology resulted in changing attitudes towards pressure ulcer prevention

- Useful piece of equipment, patients got involved with turning regime,
- Patients were more aware of the high pressure sites
- Useful to teach positioning to both patients and other nurses.

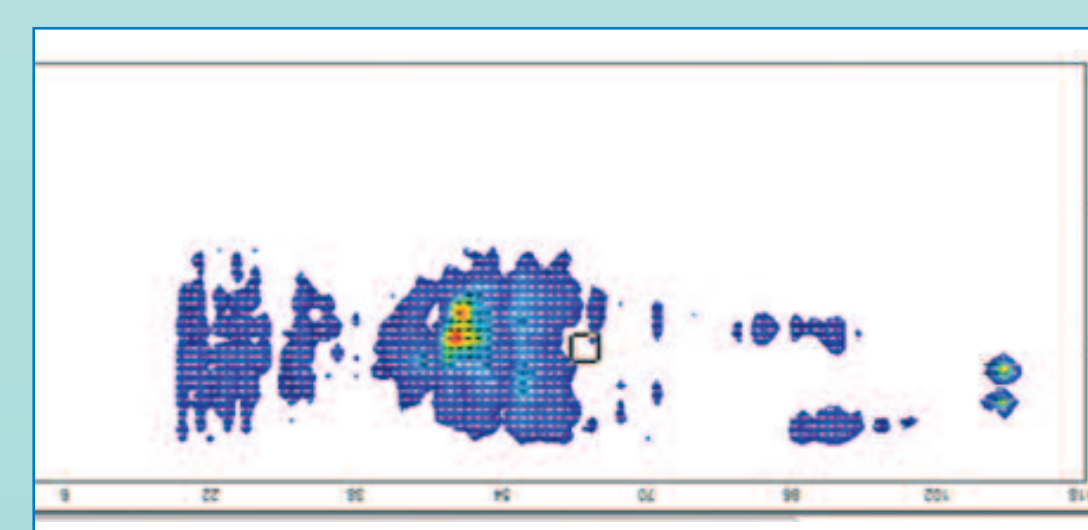
Pressure points were identified with each of the mattresses in use:



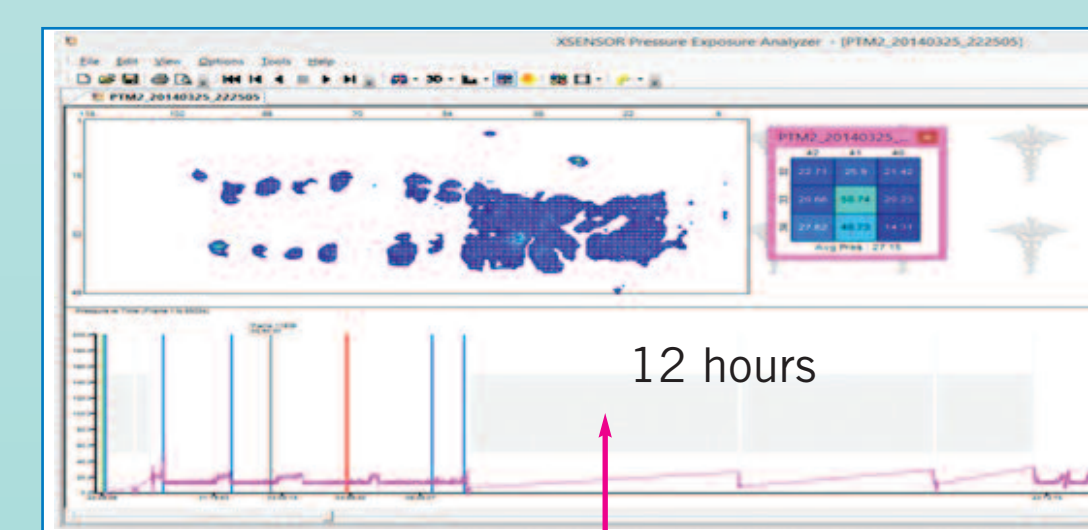
3a. Visco Mattress
All weight over sacrum when sat up, ?due to shape of patient



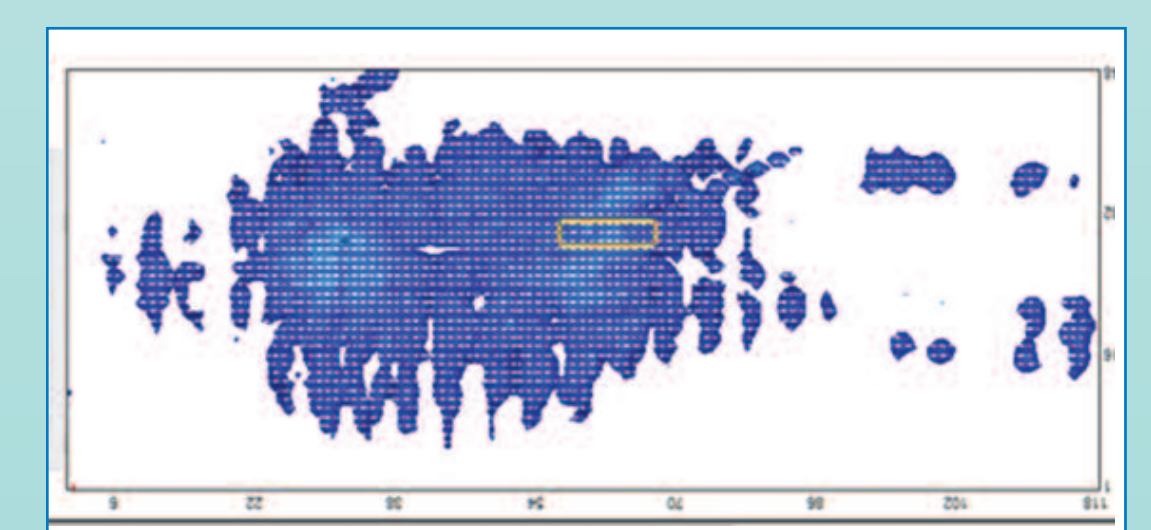
3b. Foam Mattress
Knees bent without support increasing pressure on spinal area



3c. Hybrid Mattress
Figure 3c: Hybrid Mattress, BMI Low, interface pressures 120mmHg base of spine. High pressures of 204mmHg, patient moved themselves frequently in response to images on the monitor



3d. Dynamic Overlay
Figure 3d: Dynamic Overlay, BMI Normal, 12 hours of bed, 13.94mmHg. Grey area indicates patient was sat out for 12 hours on a foam cushion



3e. Dynamic Replacement
Figure 3e: Dynamic Replacement, BMI Low, interface pressures of. Average pressures of 16.9mmHg

Discussion

Although disappointing that a patient was on a bedpan for 55 minutes, this length of time and the pressures incurred would not have been revealed without the pressure monitor. It enabled the team to ensure that, particularly during busy times, this does not happen again. The monitor also highlighted the impact of rehabilitation for patients in a community hospital setting, who sit out of bed for increased lengths of time, increasing the risk of sacral damage.

This reinforces the need for an MDT approach to Pressure Ulcer Prevention. Furthermore, the monitor demonstrated that patients with normal and low BMIs, when placed on foam mattresses, produce high interface pressures in certain positions.

This could be the result of patients not being enveloped by the foam due to insufficient weight pressing down on the mattress; manufacturers do not provide a minimum weight for foam mattresses. Equally the dynamic overlay produced the same interface pressures as a dynamic replacement, indicating that high cost equipment does not necessarily provide the most effective level of pressure ulcer prevention.



ForeSite PT System

Conclusion

Continuous pressure monitoring, rather than mapping, is new and unique. When used in conjunction with the turn clock, it enables clinicians to check that the length of the turn cycle is appropriate and the positions adopted at turns are effective. The use of the ForeSite PT System, with care provided in accordance with local pressure ulcer prevention policy, enabled valuable new information to be gained about hidden pressure areas.

Patients are very responsive to the images on the pressure monitor; requesting to be turned in line with the turn clock and, in some cases, were more concordant with repositioning regimes and shifting position in line with the pressure indicators.