



Connected Care

**Wireless Monitoring –
A Clinical Project**
17th November 2022

Sensium[®]

Wireless Vitals Monitoring

Acute Care, Anywhere.



Agenda – 17th November 2022

1. Sensium Overview
2. Challenges
3. The story so far...
4. What's new for 2022

Vision and mission

Vision:

No patient shall deteriorate unnoticed during the acute phase of their treatment

Mission:

- To give clinicians the data they need to act on deteriorating patients in any setting, hospital or home.
- To work in partnership to deliver the training and support necessary to enable new models of care delivery.
- To continue to develop the best in class solutions to provide clinically actionable insights on patient condition.

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How does Sensium work?

- Clinically validated Gold Standard Measurements (ICU equivalents)
- Unrivalled evidence base
- System robustness
- Proven deployment experience



Heart rate

Single lead ECG, superior to cuff-based/SPO2 sensor pulse rate



Respiratory rate

Impedance pneumography, superior to ECG derived respiration



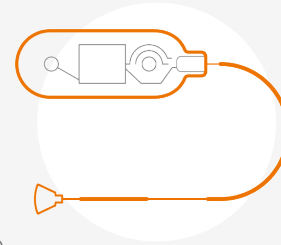
Axilla temperature

Superior to skin temperature, surrogate for core body temperature



Seamless roaming

Patch seamlessly connects to any Sensium® Bridge within range, patients can ambulate freely without the need for bulky equipment



Replaceable standard electrodes

Maintain signal quality over 5-day battery life, remove and replace the same patch with new electrodes if required



Long range connection

100-meter range to Sensium® Bridge, each Sensium Bridge can simultaneously connect to 16 patches



Hospital@Home

ICU grade monitoring in any setting, utilising cell network



Activity & Posture

6 predefined states**

Flexible User interface

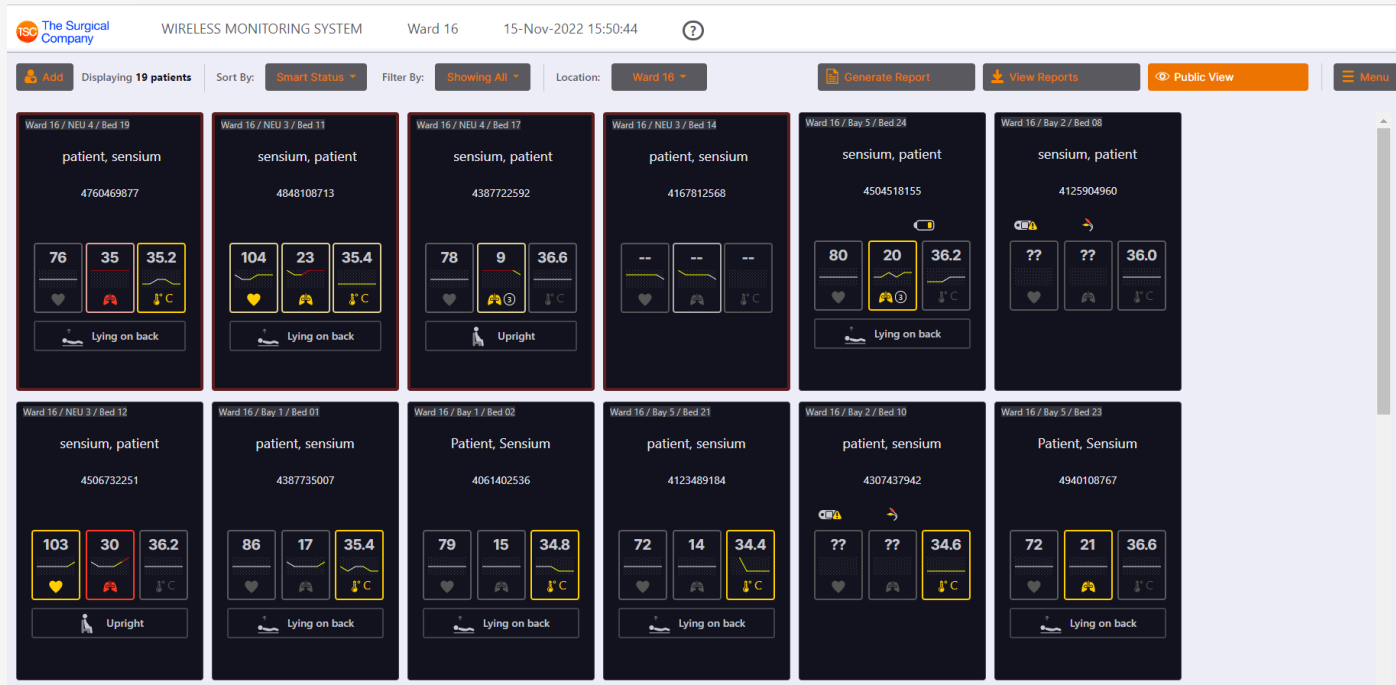
View and interact with patient data on a platform that suits you and your clinical practice

- Configure Virtual Wards and treatment pathways
- View patient summaries in real time
- View trends to get a detailed picture of your patient's progress
- View and respond to any deterioration
- View and respond to any deterioration of any patients under your care
- Add additional information to calculate an early warning score



Sensium System

Clinician (sensium.co.uk)



What stands in our way?



Change weary
Not all IT savvy
Loud voices
Too busy
Not interested
Non-compliance

Control Factors

In our direct control:

- Clinical Training
- Interpretation of trend screens/reports
- Clinical and Technical Support

Out of our control:

- Number of patients patched
- Good skin prep
- Ward pressures
- Acting on notifications
- Readiness for change
- Technical support from hospital IT
- Interaction between nursing staff and IT department of hospital
- Hospital regulations



Sensium pre-2022

- 8 UK hospital deployments
- 10+ European hospital deployments
- Over 400 nurses trained
- Hospital led deployments
- Whole wards trained
- Research teams
- Collate off-duties
- Pull together/sign off training program for all staff
- 2 – 3 weeks training delivered to all staff including night staff
- Patching
- Devices
- Notifications
- Trends
- Identify Key Users (Train the Trainer)
- Complete online documentation records
- Ongoing support on wards to ensure competency and compliance

‘I often had different values with the patient that did not match when I started to do manual measurements. This meant that I didn’t get so much faith in the device.’

‘I really don’t understand it. Also, I can’t see the true outcome of its effectiveness.’

‘Receiving all alarms from all patients in the nursing ward. This is annoying due to continuous alarms but also for patients.’

Timely identification of ward-based deterioration is challenging

Early identification, and intervention, in the presence of deterioration, leads to better patient outcomes, improved patient and staff experiences and overall, more efficient care delivery.



Patient Outcome¹

Numerous peer reviewed publications showing the benefits of Sensium monitoring.
(Identifying deterioration between obs rounds allows extra “eyes” on patients at all times)

6h

Quicker treatment of potential sepsis

80%

Reduction in Unplanned Critical Care transfers

45%

Reduction in readmissions



Patient & staff experiences^{2,3,4,5}

4 peer reviewed and published studies showing positive patient and staff experiences of Sensium.
(including largest global patient experience publication)

93%

Patch was comfortable

67%

Felt safer

89%

Happy to wear it again



Efficient care delivery^{5,7}

2 peer reviewed and published studies showing significant operation gains from Sensium monitoring.
(Only patch-based monitoring product with HE publications)

£1,470

Net saving for per patient patched

10-30%

Overall reduction in LoS

“ Use of Sensium.... is a cost-saving and cost-effective strategy... ”

Nursing Program

Higher throughput in the designated wards. We have shown throughout our peer reviewed studies we can increase capacity by 10-30%. We can show very high levels of patient and staff satisfaction with our solution.

The pilot will be staffed with registered nurses that Sensium will supply. Their responsibilities will be to:

- Patch patients
- Respond to notifications
- Escalate to ward-based team if required
- Collect data for case study generation

The Sensium Digital Specialists will not be involved in day-to-day care delivery.

5. Value?

1. What?

A fully staffed and supported pilot of Sensium across 2 wards for 3 months (1000+ patients). All software, consumables and clinical expertise will be supplied at no cost to the trust.



Pilot Program

Show value and operational gain over 3 months with 1000+ patients.

4. Pilot staffing?

2. Why?

To show the value that Sensium monitoring can deliver to your patients, clinicians and hospital. Sensium will highlight any deteriorating patients but also patients' wellness to discharge.

3. KPI Metrics?

1. Reduction in overall LoS
2. Reduction in transfers to HDU/ICU
3. Reduction in LoS in HDU/ICU, if transferred
4. 50-200 case studies & staff feedback.

Sensium 2022 and beyond

- Nursing program
- 1 UK hospital - York Hospital
- 2 wards (vascular & colorectal)
- 3-month initial project
- Connected Care/Nurse Led



- Nurses sourced through Pulse
- Sensium Digital Specialists
- 2 days of training
- 8 nurses trained to cover 24/7
- Case Studies identified
- Gradual introduction to the system for ward staff and bedside training

Sustained High Temp & RR - Covid & Sepsis

About the Patient:

A 76-year-old male who was initially admitted with abdo pain, coffee ground vomit, Benign duodenal stricture, oesophageal perforation.

Ward rounds and NEWS:

01/10 22:03 HR 90 RR 18 T 36.9 NEWS 0
01/10 23:24 HR 107 RR 19 T 37.9 NEWS 1
02/10 02:16 HR 120 RR 29 T 38.3 NEWS 8

Notifications:

01/10 21:50 High RR 27 02/10 01:52 High T 38.3
01/10 22:32 High T 38.2 02/10 02:05 High T 38.6
01/10 23:02 High T 38.4 02/10 02:22 High T 38.9
02/10 00:08 High RR 24

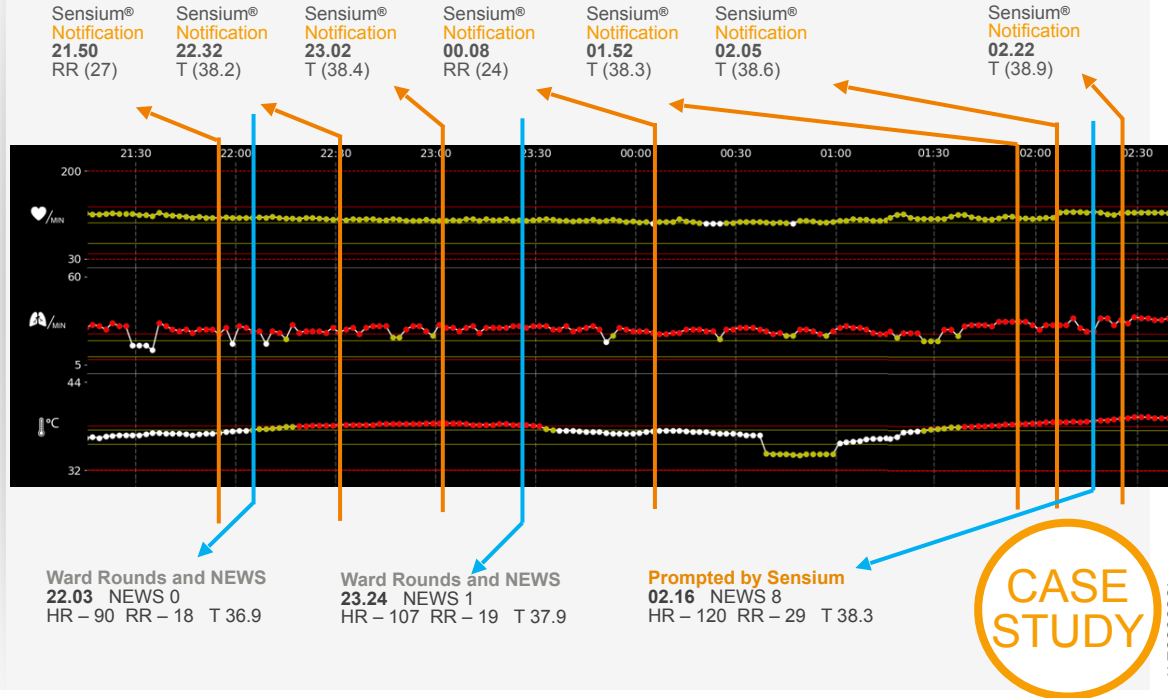
Clinical Response:

Nurse In Charge notified of deterioration. Critical outreach and doctor attended patient. Sepsis screen requested, fluid balance and IVI fluids commenced. IVAbx prescribed. Central line insitu for 9 days, removed by ward staff.

Outcome:

Staphylococcus confirmed in central line and peripheral blood cultures. Covid swab returned positive.

Sensium® notifications and trends identified significant and rapid deterioration, NEWS 1 – NEWS 8 in less than 3 hours, resulting in sepsis & covid diagnosis 4-6 hours before the next observation round.



Feedback

“When you go in with anything new there is always resistance, but with this there was a sense of relief from the nurses because they don’t have to get involved straight away, they’re able to see it in practice and when they start to see it, they will start to use it too. Nurses are now coming to ask questions and look at the trends of their patients”

“It’s an element of, probably giving people, I suppose empowerment is quite a good word, but it gives them more confidence to make decisions.”

“It’s not just about offering and providing superb training and support on the product, it is about getting them to understand and see the benefits of Sensium, but when you are introducing new practices over and above their current workload, these can cloud the great things that Sensium can offer.”

“It’s proved it can save lives as well as money, it should be rolled out everywhere”

“Sensium® notifications and trends are a fantastic adjunct in providing a well-rounded picture in early detection of sepsis.”

Clinical Review

Training delivered end of August

24/7 support

First patient patched on 14th September

Approximately patched 440 patients and used 675 patches.

We have identified 50+ case studies, including new onset AF, Sepsis, Covid and respiratory depression, slow AF.

The Sensium Digital Specialists have established themselves extremely well on the wards over the past 8 weeks and as time has gone on, staff have become more accepting of the reliability of Sensium and more trusting of what the data is telling us about their patients.

We have established a good escalation process, utilising the CCOT, Matron and HOOH when the SDSs have concerns regarding patients.

We have also had some fantastic feedback from other staff including CCOT, cardiac outreach, Peri-Operative Practitioners and doctors.

The expectation by the end of the pilot is that we should have patched approximately 600 patients, gathering a total of around 60 case studies.

And finally...

Please welcome the newest member of NAMDET... my grandson Bobby Wroe!





Connected Care

Thank you for listening

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