EARLY DETECTION OF PATIENT DETERIORATION

Clinical early warning system
Notifications of deterioration and Early Warning Scores

Earlier intervention
Treat sepsis 6 hours quicker

Improved outcomes
Reduced length of stay & re-admit rate
Clinical early warning system

If a patient deteriorates between routine nurse observation rounds, the warning signs can go undetected for hours, leading to serious and costly consequences.

Sensium® is a discreet, wearable, wireless system to support nursing staff to monitor patient vital signs outside of high acuity areas. The disposable Sensium® patch accurately and reliably monitors and reports heart rate, respiration rate and axillary temperature, the leading indicators of deterioration, providing data every two minutes. Smart algorithms continuously process and analyse all patient data, generating targeted notifications of patient deterioration, efficiently bringing the nurse to the deteriorating patient.

“The fact that I know that this patch is monitoring me day and night makes me feel safe and secure. Even when a nurse isn’t with me I know that if I start to become unwell one will be notified.”

Sensium patient

Compliance with NICE Guidance

The use of the Sensium® system supports your hospitals compliance with CG50 ‘Recognition of and response to acute illness in adults in hospital’.

Sensium® allows the continuous monitoring of patients who meet high risk criteria as defined by NG51 ‘Sepsis: recognition, diagnosis and early management’.
SEPSIS CLAIMS MORE LIVES THAN LUNG CANCER, AND MORE THAN BOWEL, BREAST AND PROSTATE CANCER COMBINED\(^3\)

**SEPSIS**\(^3\)
- 250,000 UK sepsis cases/year
- 46,000 UK sepsis deaths/year
- £22,000 UK cost per sepsis case

**Hospital acquired SEPSIS**\(^3,4\)
- accounts for 11% of sepsis cases
- X 2 mortality*
- 9900 preventable deaths UK/year
- 100% Preventable
- X 2 cost to treat
- £1.2B cost UK/year

*compared to community acquired sepsis

**Treat SEPSIS quicker**

Early detection of sepsis is critical. Research\(^1\) has shown that patients presenting evidence of sepsis and receiving continuous monitoring with the Sensium® Patch were administered antibiotics on average *six hours* faster than the standard of care.

“SENSIUM®’s recent trial has demonstrated the potential of such early warning systems, with patients in the Sensium® group being treated on average 6 hours quicker in the presence of sepsis. Anything that can be done to more quickly identify and treat sepsis has to be a good thing and will lead to lives saved.”

Dr Ron Daniels, BEM
CEO of the UK Sepsis Trust and Global Sepsis Alliance
Clinical advisory to the World Health Organization

SEPSIS claims more lives than lung cancer, and more than bowel, breast and prostate cancer combined. The numbers speak for themselves:

- **250,000** UK sepsis cases per year
- **46,000** UK sepsis deaths per year
- **£22,000** UK cost per sepsis case

When it comes to hospital-acquired sepsis:

- It accounts for **11%** of sepsis cases
- It results in **9900** preventable deaths per year in the UK
- It costs **£1.2B** per year in the UK

Dr Ron Daniels, BEM, CEO of the UK Sepsis Trust and Global Sepsis Alliance, underscores the urgent need for faster identification and treatment of sepsis: “SENSIUM®’s recent trial has demonstrated the potential of such early warning systems, with patients in the Sensium® group being treated on average 6 hours quicker in the presence of sepsis. Anything that can be done to more quickly identify and treat sepsis has to be a good thing and will lead to lives saved.”

**Challenges and Costs**

- **9900** preventable deaths per year
- **£1.2B** cost per year

**Severity and Risk**

- 1 in 5 sepsis cases is hospital-acquired
- **£22,000** per case in UK costs

**Prognosis**

- **11%** of sepsis cases are hospital-acquired
- **100%** of sepsis cases can be prevented with early detection

**Recommendations**

- Implement early warning systems like Sensium®
- Increase public awareness of sepsis symptoms
- Invest in research and development of sepsis treatments

**Key Takeaways**

- Early detection is crucial for survival
- Sensium® offers a life-saving solution
- Collaboration across healthcare sectors is essential

**Sources**

1. Research on early detection and treatment effectiveness
2. Data on sepsis cases and costs
3. Sensium® trial results
4. Dr Ron Daniels, BEM, comments
Gold standard vital sign measurement

- **Heart rate**: Single lead ECG, superior to cuff-based/SP02 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.
- **Long range connection**: 20 meter range to Sensium® Bridge, reduced installation costs as each Sensium Bridge can simultaneously connect to 16 patches.
- **Replaceable standard electrodes**: Maintain signal quality over 5 day battery life, remove and replace the same patch with new electrodes if required.

Clinically validated key benefits

14 years of peer reviewed published literature has proven the following clinically validated benefits:

**For the Patient**

- **Comfortable**, lightweight, unobtrusive patch
- Reassurance of continuous monitoring
- Enhanced sense of safety

**For the Hospital**

Detecting deterioration early can lead to:

- Treatment of SEPSIS 6 hours quicker than the standard of care
- 10% Reduction of length of stay
- 45% Reduction of re-admit rate
Patient data when and where it is needed

Notifications of patient deterioration, patient vital history and current vital signs can be viewed at nursing stations or on the move using the Sensium® mobile app†. If required, patients can be manually or automatically escalated for review by senior clinicians.

Sensium® uses industry standard HL7 protocols to easily integrate with the hospital admission, discharge & transfer systems and electronic medical records.

Calculate Early Warning Scores

Sensium® allows the ability to enter additional patient data, in conjunction with pre-populated heart rate, respiratory rate and temperature values from the Sensium® patch in order to calculate an Early Warning Score (EWS) and clinical response.

The time until the next observation round is due is clearly displayed. The Sensium EWS and clinical responses are configurable to match your observation policy.

Configuration of the Sensium® EWS supports NEWS2 and the ‘Think Sepsis’ campaign.
Comprehensive deployment

**Patch Features**
- Transmits HR, RR & axilla temperature every 2 minutes
- Seamless roaming - complete freedom of movement throughout bridged area
- Disposable – no cross-infection risk
- 5 day battery life
- 3 hours of data storage
- Light and comfortable for patients
- Uses standard ECG electrodes
- Shower-proof (IP54)

**Bridge Features**
- Connection to hospital network:
  - Wi-Fi 802.11 b/g
  - Ethernet
- Connection to patch via ultra-low power wireless communication protocol
- Longest range connection
- Power supply: Power over Ethernet
- Maximum Patches per Bridge: 16
- Maximum Bridges per network: 250

**Link Features**
- User interface for hospital clinicians
- Links patient data to Sensium® Patch
- Notifications managed to fit existing work flow
- Configure smart notification algorithms
- Reporting data analytic options

**Regulatory Approvals /Clearances:**
- FDA 510(k) cleared
- CE marked (class IIA)

**App & Desktop Features**
- iOS® and Android™ app
- Simple intuitive interface
- View & respond to notifications
- Summary of patient vitals
- Calculate Early Warning Score
- Manage patients (including escalation)
- View vital/ EWS history

**Sensium® Patch**
- Connects to ADT & EMR Systems via HL7
- Desktop application at the nurses station
- Notifications and full functionality on apps

**Sensium® Bridge**
- User interface for hospital clinicians
- Links patient data to Sensium® Patch
- Notifications managed to fit existing work flow
- Configure smart notification algorithms
- Reporting data analytic options

**Sensium® Link (Server Software)**
- User interface for hospital clinicians
- Links patient data to Sensium® Patch
- Notifications managed to fit existing work flow
- Configure smart notification algorithms
- Reporting data analytic options

**For further information please contact:**
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† Android® demo app available, full app available soon.