Innovation Brief

Peripheral Intravenous (PIV) site monitoring system

Summary

Disruptive innovation

This briefing introduces a disruptive innovation newly available via NHS Supply Chain: The ivWatch Model 400 and Smart Touch Sensor.

Reviewed by clinical specialists and supported by key stakeholders, this device offers a novel approach designed to continuously monitor tissue adjacent to an IV catheter insertion site. It aids in the early detection of infiltrations and extravasations of optically clear infusates, including Iron infusions during peripheral IV therapy in paediatric and adult patients

Introduction

This document is intended to inform clinical stakeholders and procurement teams about innovative products that have undergone a clinical review and are now accessible through NHS Supply Chain.

Products featured in this brief may be classified as:
- Disruptive Innovations
  - A disruptive innovation is novel.
  - It should offer improvements compared to the existing provision of care.
  - The proposed format should not exist elsewhere (either within or beyond the health and care sector).

Note: While robust evidence or validated savings may not yet be available, early data and clinical insights support the potential for patient and system-level improvements.

Departments / stakeholders for engagement

- NHS procurement teams
- Acute NHS hospitals
- Paediatrics
- Intensive Care Units (ICUs)
- Theatres
- Oncology / Haematology
- Infusion Units
- Emergency Departments

Opportunity

The IivWatch Model 400 and Smart Touch Sensor is a proven technology designed to continuously monitor an PIV Site. Clinical impact to patient safety includes:

- Significant prevention / reduction of adverse events
- Prevention / reduction of unnecessary need for further treatment and drug administration
- Increases workflow efficiency
- Better patient outcomes
- Strong return of investment
- Risk and liability reduction

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Product overview

ivWatch Model 400 and Smart Touch Sensor tackles underreported patient harm events with a non-invasive sensor and predictive algorithm that help clinicians detect IV infiltrations and extravasations earlier, improving patient outcomes.

It is intended to aid in the detection of infiltrations and extravasations of optically clear infusate, including iron infusions, during peripheral IV infusion therapy in paediatric and adult patients.

It uses visible and near infrared light to track optical changes in tissue around the IV site.
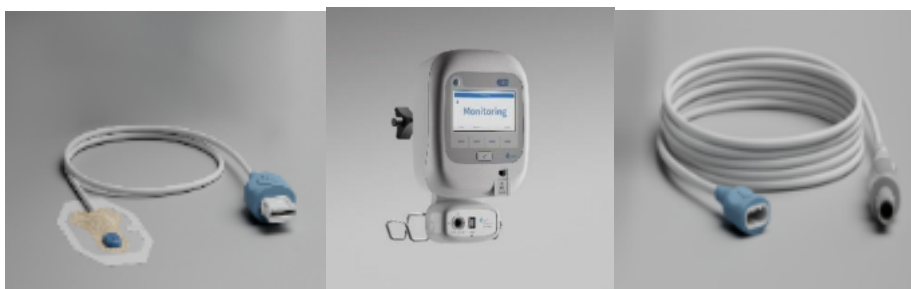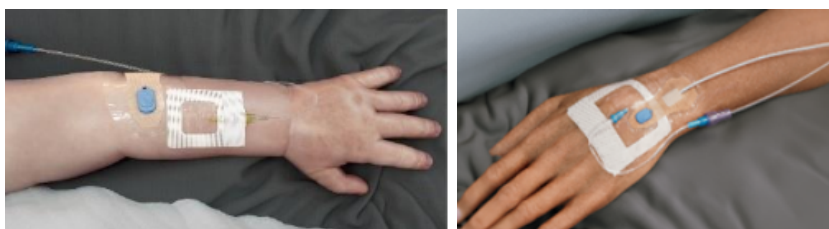
A small sensor placed next to the PIV performs 18,000+ checks per hour.

Light enters the tissue and signals are captured by a photodiode.

Proprietary algorithms analyse the signals for patterns consistent with infiltration.

If detected, the device issues audible and visual alerts so clinicians can intervene early and prevent severe complications.

How it works - ivWatch Model 400 - https://www.youtube.com/watch?v=TRbrSedt8GM

Clinical relevance:

- 60 - 90% of patients requiring an IV during their stay.
- IV therapy carries significant risks: infiltration and extravasation can cause permanent staining (for example iron infusions), pain, erythema, drug delivery errors, oedema, and severe tissue injury.
- Infiltration / extravasation is the leading cause of PIV failure, occurring in 13.8% to 23.9% of patients, and up to 80% in NICU populations.
- Continuous monitoring is critical for early detection and harm prevention.
- Strong clinical efficacy: 93% reduction in severe injuries, supported by 40+ clinical studies, 99% sensitivity for ≤10 mL, and detection as early as 0.2 mL (average 2.02 mL).

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Pathway change

Based on recent NHS focussed evidence and clinical publications, this delivers measurable impact across the following pathways:

- Systemic Anticancer Therapy (SACT) - rapid detection of vesicant extravasation.
- Nonchemotherapy Infusion Pathways (for example antibiotics, iron, biologics)
- Acute and Emergency Care - Enhances safety where IVs are frequently placed under pressure.
- Critical Care and Paediatric ICU - Provides early, continuous detection for vulnerable, nonverbal, or sedated patients receiving long duration infusions who cannot reliably report pain or discomfort.
- Vascular Access and Medication Safety Pathways - reduces cannula failures, unnecessary clinical procedures, treatment delays, and medication delivery errors.

Supply details

NPC	MPC	Product
FVR85349	AC-1002000	Smart touch sensor
FVR85350	AC-1001002	Patient cable
FVR85351	AE-1002009	Power supply
FVR85352	AE-1001027	Patient Monitor International Model 400
FVR85353	AE-1001003	Extension module

Route - eDirect
Supplier - Healthcare 21 Ltd UK   Brand - ivWatch® Model 400
Unit of Issue - Each

Class IIa Medical Device
Class I for the ST sensor and PC
Shelf Life: Sensors are Single Use

Supporting evidence / notes

- https://pubmed.ncbi.nlm.nih.gov/38578942/
  Extravasation and infiltration: under-recognised complications of intravenous therapy.

- https://www.ivwatch.com/2024/11/26/british-journal-of-nursing-study-ivwatch-technology-demonstrates-dramatic-reduction-of-iv-injuries-resulting-in-improved-patient-safety-and-positive-financial-impact/
  British Journal of Nursing Study: ivWatch Technology Demonstrates Dramatic Reduction of IV Injuries, Resulting in Improved Patient Safety and Positive Financial Impact.

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Supporting evidence / notes (continued)

- https://www.britishjournalofnursing.com/content/product-focus/addressing-and-mitigating-the-high-costs-of-extravasation-and-infiltration-to-patients-and-healthcare-organisations
  Addressing and mitigating the high costs of extravasation and infiltration to patients and healthcare organisations.

- https://bmjopen.bmj.com/content/12/2/e047765
  Comparing ivWatch biosensor to standard care to identify extravasation injuries in the paediatric intensive care: a protocol for a randomised controlled trial.

- https://pubmed.ncbi.nlm.nih.gov/18935841/
  IV therapy: recognizing the differences between infiltration and extravasation.

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