

# Syncrophi

Syncrophi Systems Ltd is an Irish company headquartered in Galway. The company develops informatics systems for deployment in healthcare settings. Their KEWS 300 product is a digital system that captures patient clinical data and presents it in a format that enables tracking, auditing and monitoring of patients. The KEWS 300 system has a specific application in the digital implementation and management of the National Early Warning Score clinical guideline. Syncrophi Systems Ltd has maintained a certified medical-grade Quality Management System (ISO13485) since 2008 and all of its product development work complies with the Medical Device Software Standard (EN62304). Its KEWS300 product is CE-marked in compliance with the EU's Medical Device Directive and is also FDA-cleared.

[www.syncrophi.com](http://www.syncrophi.com)



## About Health Innovation Hub Ireland

Health Innovation Hub Ireland (HIHI) was established by the Department of Business, Enterprise and Innovation and the Department of Health, supported by Enterprise Ireland (EI) and the Health Service Executive (HSE) to drive collaboration between the health service and enterprise.

We offer companies the opportunity for pilot and clinical validation studies and the health service access to innovative products, services and devices that they may not otherwise be exposed to.

HIHI is built on the recognition that collaboration with enterprise can benefit patient care, patient pathways and outcomes.

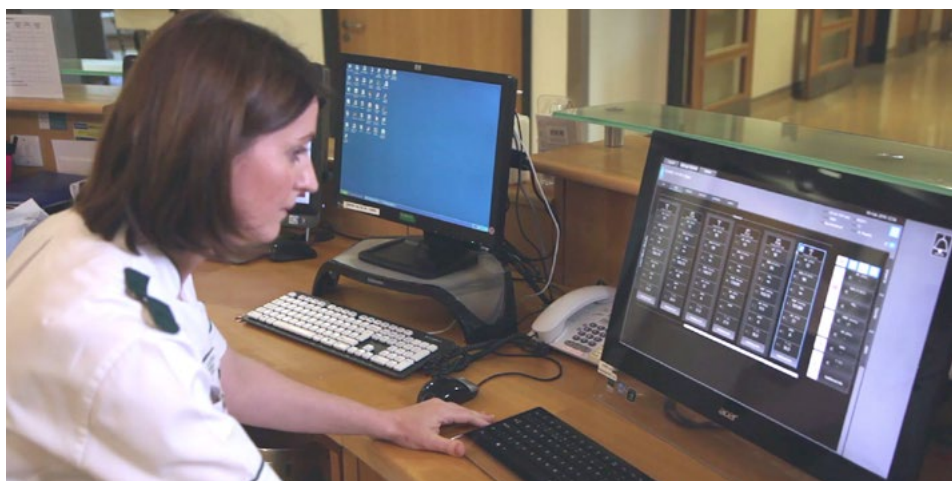


## The Healthcare Challenge

Rapid intervention at an early stage of health deterioration has been shown to positively impact patient outcomes. To enable tracking of patient deterioration and intervention, Ireland (and other countries) operates a National Early Warning Score Clinical Guideline.

Early Warning Scores facilitate the early detection of a patient's deterioration by classifying a patient's severity of illness - through the presentation of a 'score' which is calculated based on a number of clinical observations/measurements. For deteriorating patients, the NEWS 'score' triggers a specific care pathway and prompts nursing staff to request a

medical review at specific time points. The current NEWS protocol operational in the Irish public health system relies on the recording of a number of clinical parameters by nurses or other healthcare staff manually on a paper NEWS chart and a calculation of score is completed by the nurses. International studies have shown that **the paper based system is prone to errors, is time consuming and does not optimise the potential of early intervention.** Replacing a paper based system with a digital system should reduce errors in transcription, calculation and increase efficiencies and positive patient outcomes.



# The Healthcare Solution

**Syncrophi has developed a digital system to capture NEWS observations** and present them in a manner that allows easy tracking, auditing and monitoring of NEWS scores and subsequent escalation processes for all patients. The information for all patients is presented on a tablet and can be viewed at the bedside and also at the nurses' station to ensure overview of all patients. With the Syncrophi system (KEWS 300), the NEWS observations are recorded **on a digital chart**, the NEWS score is calculated automatically and the appropriate escalation/response is displayed.

The platform allows the clinical staff at the nurses station to have sight of all patient NEWS scores and



vital-signs on a single screen. The status of each patient (based on score) is presented in an easy to assess, colour coded format with time remaining until next NEWS recording clearly visible on screen.

## HIHI Role

To demonstrate the value and impact of a digital NEWS system, HIHI worked with a busy public hospital in Ireland to conduct a pilot study of the system. The KEWS 300 system was implemented in a single ward in the public hospital for a period of 6 weeks and all data was stored on a local database. The HIHI team conducted an analysis of error rates on the digital system and compared those error rates with a similar number of NEWS observations with the paper based system. Results of error analysis demonstrated that **errors were reduced from 49% to 0%** (\*time delay errors -where NEWS recordings were captured at a time later than the required time intervals, were not included in the analysis). A survey identified that 93% of the nursing staff involved in the trial found the KEWS300 system to be much better in terms of its impact on

patient care, 79% per cent of the sample size expressed a much better level of personal productivity using the digital system and reported that what they liked most about the KEWS300 system was that it prompted them to carry out observations when they were due. Other comments noted were that the system was more efficient, more patient-centred and that it was easier to identify when escalation of patient care was required.

A follow-on study was implemented by the HSE in a second hospital in Ireland. For this study, HIHI supported the HSE lead activity by conducting the error analysis process. This second HSE led study, identified that error rates were reduced from 59% to 0% with a digital system (again \*time delays were not assessed), verifying the results of the first HIHI led study.

## Outcome Report

Both HIHI studies demonstrated that the error rate in recording and calculating NEWS scores for patients is significantly reduced through the introduction of a digital system.

Results from both studies identified that error rates in recording NEWS on the current paper based system are excessively high **with more than 50% of observations having errors that could significantly impact patients**. By introducing a semi-automated digital version, the opportunities for human errors (relating to transcription, illegibility, miscalculations, omissions etc) are minimised so that overall error rate can be **reduced significantly** - when time delays are not included the error rate is reduced to close to zero.

Using a semi-automated digital system such as KEWS 300 for the implementation and management of NEWS has a positive impact on error rates, improves efficiencies, staff are supported in delivering their duties and can focus their time more on patients.

## Testimonial

*HIHI is an invaluable institution in Ireland today. It is a vital enabler from both a DOH/HSE perspective and an SME viewpoint. HIHI acts impartially, with scientific rigour, in the practical assessment of new technologies which have the potential to improve Ireland's health system and enhance patient outcomes. For Syncrophi Systems they have been the means through which our flagship medical software system, KEWS300, has been strenuously and independently appraised in real HSE hospital environments against current and emerging needs in the domain of digital health. Their work provides early proof-points, backed by hard evidence, which can empower key decision-makers within the health service to pursue early adoption of new technologies for the benefit of the patients, the staff and the health budget.*

David Toohey, CEO Syncrophi Systems Ltd.



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