PHILIPS

IntelliVue

GuardianSoftware solution

Keep watch and intervene early

The earlier, **the better**

Intervene early, by recognizing subtle signs

Clinical realities on the general floor and in the emergency department are far from ideal. One in every six patients in the medical surgical areas of the hospital will face an unexpected complication[1]. How can you know in advance which of your patients are at risk of adverse events?

High throughput and reduced staffing in these areas can make it very difficult to predict which patients to watch more closely. This could explain why up to 40% of unexpected deaths in hospitals occur on the general floor[2].

Clinical instability is present and measurable before patient deterioration. Often these signs appear six to eight hours prior to an event. In fact, one study suggests that most patients show evidence of respiratory deterioration within eight hours of cardiac arrest[3]. In up to 66% of cases, patients show abnormal signs and symptoms within six hours of arrest[4].

What if there was a system that could help you recognize these subtle signs, so you could intervene early and possibly avoid further decline?

The warning signs are there!

Subtle signs of patient deterioration are present **6 to 8 hours before a critical event**[5].

Respiratory rate changes in 70% of patients 24 - 48 hours before the cardiac arrest[6].

40% of unanticipated deaths in a hospital occur in the **general ward**[2].

Less than 20% of patients who had a cardiac arrest in hospital **survive to discharge**[3].

On the general floor as well as in the waiting areas of the Emergency Department, directing caregiver attention to early signs of potential deterioration can help reduce costly resuscitation efforts or possible transfers to the ICU. IntelliVue GuardianSoftware can be customized to most institution's track-and-trigger, early warning scoring and escalation protocols, facilitating early intervention to help enhance patient care, financial outcomes, and clinician workflow.

IntelliVue GuardianSoftware
IntelliVue GuardianSoftware allows caregivers to automatically acquire vital signs, automate early warning scoring (EWS) calculations, aid in identifying early signs of deterioration, and can inform responsible clinicians for early, effective intervention.

Spot check patient monitors
Multi-patient, spot-check with clinical decision support.

Wearable biosensor
Single patient use, wireless sensor worn discreetly on the patient's chest for frequent and automatic measurement of respiratory rate, heart rate, body posture, and to detect falls.

IntelliVue Cableless Measurements
Measure vital signs without restricting patient mobility.

IntelliBridge Enterprise
Connects IntelliVue GuardianSoftware with hospital enterprise systems, such as EMR and ADT.

CareEvent event management system
Manage critical communications with actionable information sent to the caregiver's mobile device.

Clinical Transformation Services
Integration and implementation services for exceptional operation, plus clinical expertise to help you transform your institution's clinical practices.

Turn vital signs into vital action

Early intervention puts time on your side
The IntelliVue GuardianSoftware solution gives caregivers the tools to anticipate and address signs of deterioration quickly, aiding appropriate action for the appropriate patient at the appropriate time. The solution automates your hospital's EWS protocol, and provides automated scoring of deterioration with Philips spot-check monitors, the wearable biosensor, and IntelliVue Cableless Measurements.

Pediatric early warning score
The complex reaction of pediatric patients to treatment can make it harder for caregivers to detect deterioration – it often takes an experienced eye to recognize the signs in advance. IntelliVue GuardianSoftware, along with the IntelliVue MP5SC or XG50, helps bring configurable, body-systems based pediatric early warning scoring (PEWS) to the bedside, with customizable instructions and escalation workflows.

Awareness when and where it counts
Spot patient deterioration through the use of EWS and proper clinician notifications. EWS more reliably identifies patients at risk than individual vital signs alone. Proper risk identification gives caregivers the opportunity to trigger an appropriate and early response from the medical emergency team or rapid response team (MET or RRT). GuardianSoftware even allows you to trigger the team directly from the monitor. Earlier intervention by these teams helps reduce unexpected ICU transfers[7], thus avoiding higher costs to the hospital.

Your existing SureSigns VS3 or VS4 monitors can be upgraded to communicate with IntelliVue GuardianSoftware, providing early warning scoring according to your institution's protocols at the bedside.

The Philips wearable biosensor is a medical-grade, self-adhesive, single-patient-use wireless device that measures HR and RR, detects body posture and falls, and transmits the data through the hospital WLAN to IntelliVue GuardianSoftware.

The flexible IntelliVue XG50 patient monitor can be used in spot-check as well as continuous monitoring mode.

Please check with your Philips representative for product availability.

Customized to fit with your workflow and protocol – a possible scenario

12:00 AM
EWS 2 – No action needed
Patient vital signs taken with the IntelliVue MP5SC, which shows an EWS score of 2, displayed on the monitor with a recommendation (per hospital protocol) on the 'Action List' to contact the nurse in charge. EWS score captured by IntelliVue GuardianSoftware.

2:00 AM
EWS 4 – Caregiver notified and action taken according to protocol
With an EWS score of 4, the 'customized Action List' calls for the nurse in charge to be contacted and vital signs taken more frequently, at intervals identified in the hospital protocol.
EWS score is captured by IntelliVue GuardianSoftware, which uses CareEvent to notify the nurse in charge, who receives a notification via mobile device and responds to the notification.

After acknowledging the notification at the monitor, and assessing the patient, the nurse in charge recommends more vigilant monitoring with IntelliVue Cableless SpO_2 and Cableless Respiration pods.

6:00 AM

EWS 5 – Further action to reduce deterioration

IntelliVue Cableless Measurements periodically measure and transmit patient vital signs to IntelliVue GuardianSoftware, which aids in identifying early signs of deterioration, and sends a deterioration notification via CareEvent, notifying the caregiver. An attended spot-check is performed and EWS is updated, showing an increase to 5.

6:22 AM

Caregiver notifies the rapid response team

The “Action List” instructs the caregiver to notify the rapid response team. The caregiver does this without leaving the bedside, by pressing the “Call RRT” button on the MP5SC. This sends a message to the RRT via CareEvent.

6:27 AM

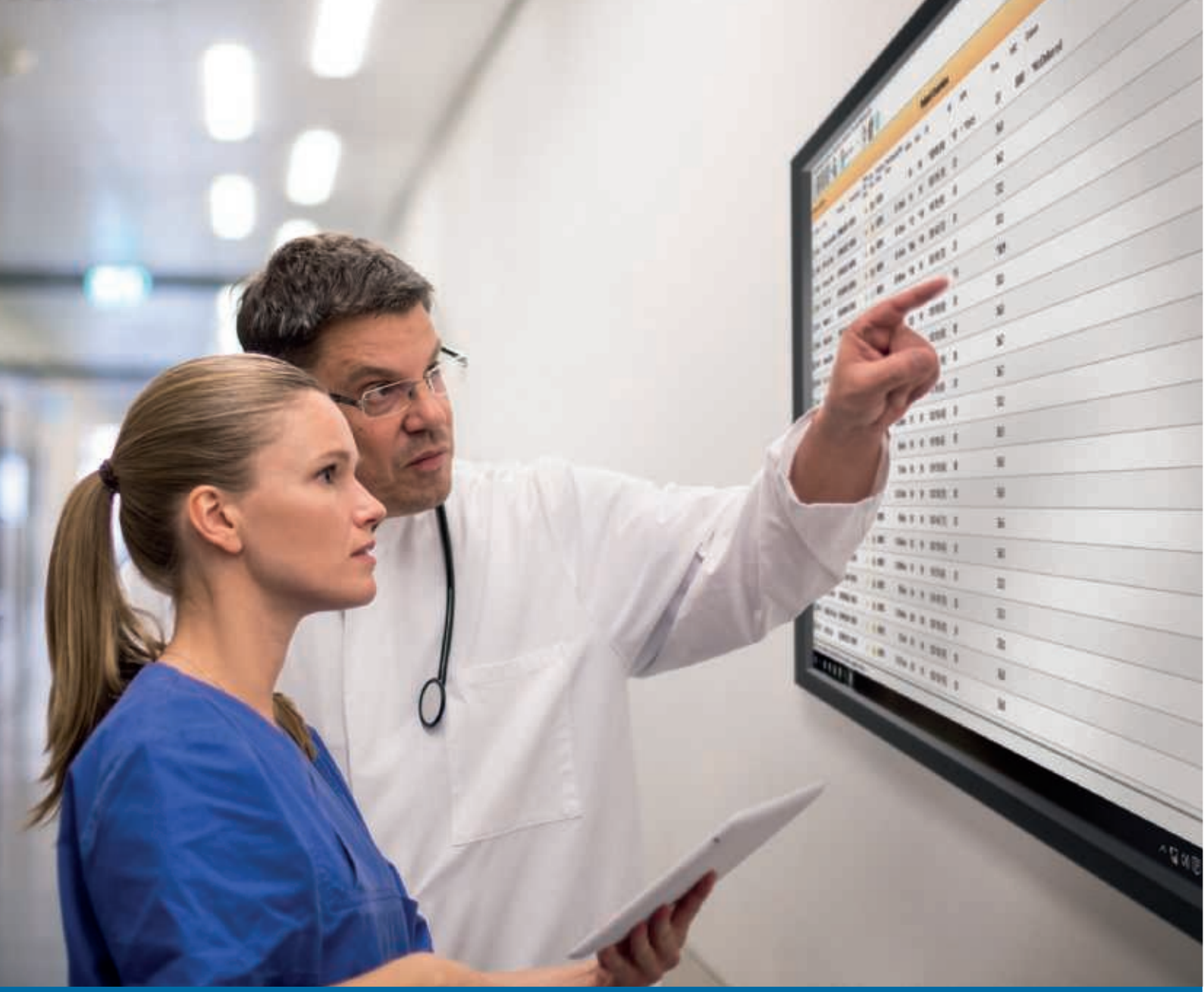
RRT arrives

The RRT arrives 5 minutes later. They log their arrival time by pressing “RRT Arrived” button on the MP5SC. After evaluating the patient, the RRT takes additional action – such as prescribing medication – to prevent the patient from further deterioration and a potential unexpected ICU readmission or transfer.

8:00 AM

EWS 4 – Patient more stable, transfer to ICU unnecessary

The caregiver takes patient vital signs, which show the EWS score has moved from 5 to 4, and instructs the caregiver that vitals and EWS should continue to be taken every 2 hours. Patient is more stable now, and an unexpected and costly transfer to ICU has been avoided.



Facilitates communication

IntelliVue GuardianSoftware enhances workflow on the general floor through automated messaging to caregivers using the hospital-paging infrastructure. CareEvent can manage notifications and deliver them to the caregiver's mobile device of choice to improve communication and response at the point of need – regardless of caregiver location.

Smoothes workflows, helps reduce errors

The IntelliVue GuardianSoftware solution reduces many of the manual tasks of documentation and calculation, possibly leading to reduced human error and saving clinician time. This starts by helping automate the transfer of patient demographics directly to the monitor. It is also achieved by supporting caregiver log in, use of barcodes or contactless ID cards, and validation of vital signs at the bedside –which enable charting to solutions like IntelliSpace Critical Care and Anesthesia (ICCA), an Electronic Medical Record or a patient data management system.

Documentation and compliance review

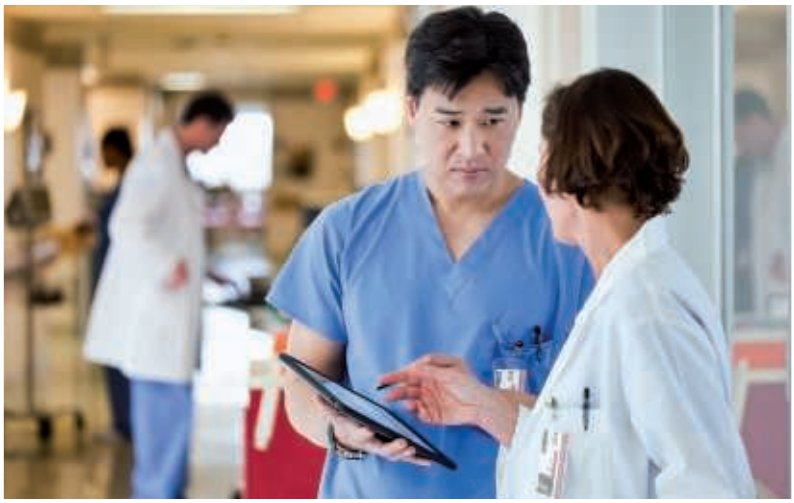
IntelliVue GuardianSoftware may help boost – as well as document – compliance with established hospital standard operating procedures, by making it easy for caregivers to follow instructions to notify a physician or a rapid response team, as required by the hospital protocol.

Helps standardize care and meet the Joint Commission goals

Deploying an EWS can help standardize care across your institution's facilities. Depending on how it is deployed, the IntelliVue GuardianSoftware solution also helps you meet goals for standards of care, such as the initiative of the Joint Commission in the United States[8]:

- Enhance recognition and response to changes in a patient's condition
- Enhance accuracy of patient identification
- Enhance effectiveness of communication among caregivers[9]

Your system, **your way**



Highly configurable

IntelliVue GuardianSoftware features a highly-configurable EWS scoring engine that is adaptable to commonly-used early warning score calculations. It can be customized to support various deterioration identification and early warning protocols, as preferred by most hospitals, ranging from single parameter track-and-trigger systems to modified early warning scores, and even advanced protocols like cardiac arrest risk triage scoring. Deploy the solution on your institution's hardware or virtualized environment using your LAN/WLAN infrastructure to easily manage:

- Admission and unit census
- Caregivers, patient assignments, and care groups
- EWS protocols, synchronization with monitors
- Paging workflow, escalation
- Patients and data
- Devices and sensors
- HL7 export to EMR, HL7 import (ADT) from EMR
- Interfacing to the hospital lab data system
  - to provide white blood cell count and lactate, for SIRS/sepsis protocols
  - to supply blood electrolyte and other data, for advanced algorithms such as Cardiac Arrest Risk Triage (CART) score (as published by the University of Chicago)
  - to review the latest lab data on the spot-check monitor at the bedside
  - to calculate EWS as part of a deterioration detection algorithm
- Pediatric EWS
  - to care for all pediatric age ranges
  - to support body systems approach, as suggested by Tucker et al[10]
  - to automatically choose pre-configured parameter thresholds depending on the age of the patient
  - to calculate a PEWS score for sending to the EMR, with validation at the bedside spot-check monitor

Support as you fine tune your workflow

Philips clinical specialists will conduct an assessment of your current workflow and practices related to gathering data and identifying the trend of clinical deterioration. We will work with your clinical team to identify process changes that will have positive impact on the activation of your rapid response teams, make recommendations, and develop customized configurations based on your specific EWS protocols. Philips clinical experts will plan, validate, and test the solution to facilitate a successful workflow transition.

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3. Schein RM, Hazday N, Pena M, et al. Clinical antecedents to in-hospital cardiopulmonary arrest. Chest. 1990; 98: 1388-1392.
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5. Rutherford P, Lee B, Greiner A. Transforming Care at the Bedside. IHI Innovation Series white paper. Boston: Institute for Healthcare Improvement; 2004. (Available on www.IHI.org)
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8. http://www.jointcommission.org
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