

## Using VitalPAC® to improve patient safety

Published research shows that patients face significant risks in the way that acute care is delivered:

- An estimated 23,000 avoidable in-hospital cardiac arrests in the UK (*Smith GB et al, 2006*)
- An estimated minimum of 20,000 avoidable ICU admissions in England, Wales and Northern Ireland (*Smith GB et al, 2006*)
- 54% of patients admitted to ICU receiving sub-optimal care pre-ICU admission (*McQuillan et al, 1998*)

The NPSA's November 2007 report *Safer care for the acutely ill patient: learning from serious incidents* found that early identification of the deteriorating patient significantly improves patient outcome. The report recommended the following key actions:

- Better recognition of patients at risk of deterioration, or who have clinically deteriorated
- Appropriate monitoring of vital signs

VitalPAC has been developed in response to these issues and extended to improve the management of infection control and VTE prophylaxis treatment.

### What is VitalPAC?

VitalPAC allows nurses to enter patient vital signs at the bedside, using wireless PDAs (Personal Digital Assistants). Once a full set of vital signs is entered, VitalPAC automatically calculates the patient risk score (EWS). The system then indicates the level of escalation required and the observation frequency for a patient according to hospital protocol. In addition, VitalPAC indicates when the next observation is due.

Critical Care Outreach teams are automatically notified of any patients at high risk via their personal PDAs. Immediate access to real-time information allows the Outreach Team to prioritise patients from anywhere in the hospital. Clinical staff are also able to view their patients' charts in real-time over the hospital intranet.

- VitalPAC makes it easier for nurses to take observations, thus saving nursing time.
- VitalPAC improves both the accuracy of data capture and the quality of risk assessment.
- The NPSA cites Portsmouth's implementation of VitalPAC as a "safer practice" example.

### An intelligent and validated risk model

VitalPAC has been in operation for four years. In that time, a database of over 1.5 million sets of full nursing observations has been assembled. Research which combines this data with patient outcome has generated validated mathematical models which discriminate the relative risk of a patient's deterioration with high accuracy and reliability.

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### **Extending VitalPAC**

**VitalPAC DOCTOR** keeps doctors informed of their patients' vital signs, location and test results. Doctors can set alerts indicating when a patient's blood test results or radiology reports are published. Alerts can also be set to trigger when a patient's vital signs exceed or drop below the doctor's pre-set values. The alert facility works on a patient by patient basis and can be set for several observation types. VitalPAC DOCTOR runs on personal devices such as mobile phones and PDAs.

*VitalPAC DOCTOR allows real-time access to patient information and ensures clinicians are constantly aware of any change in the condition of their patients.*

**VitalPAC INFECTION CONTROL** ensures that each patient is quickly screened for both MRSA and Clostridium difficile. It tracks the progress of microbiology testing, showing when swabs or samples were sent, when they were received by the lab, and when analysis is due. It provides care staff with appropriate treatment plans for patients who test positive or are high risk.

*VitalPAC INFECTION CONTROL reporting tools show that compliance with MRSA screening of emergency medical inpatients is **sustained at an average of 97%***

**VitalPAC CANNULA MANAGEMENT** tracks a patient's cannulae insertions and records the condition of each insertion site. Nurses are prompted to make regular inspections of each cannula site and record any signs of infection or deterioration. VitalPAC then automatically calculates the Visual Infusion Phlebitis (VIP) score. VitalPAC alerts show when cannulae are overdue for checking or removal. The system instructs nurses to remove a cannula if the VIP score exceeds the safe value identified in Trust protocol.

*VitalPAC CANNULA MANAGEMENT ensures all patients receive regular assessment of cannulae sites as part of routine nursing observations.*

**VitalPAC VTE MANAGEMENT:** Appropriate treatment for managing the risk of VTE (venous thromboembolism) can significantly reduce avoidable deaths in hospital. VitalPAC VTE MANAGEMENT allows nursing staff to record each patient's treatment plan for the management of VTE risk. Doctors can indicate any contra-indications to warfarin or heparin or if prophylaxis is deemed inappropriate (for example if the patient is fully mobile).

*VitalPAC VTE MANAGEMENT ensures patients are quickly assessed and treated appropriately to reduce the risk of VTE.*