

## BloodTrack helps the John Radcliffe hospital to improve transfusion safety and efficiency - at reduced cost

### CASE STUDY: The BloodTrack® Suite

#### Transfusion Safety Issues

Blood transfusion errors are a significant and increasing source of injury to patients, with sometimes fatal consequences. Serious Hazards of Transfusion (SHOT) is a scheme set up in 1996 to record blood transfusion errors occurring in hospitals around the UK. Its objective is to identify the main causes of blood transfusion errors, and to use the lessons learned to allow clinicians and hospital management to eliminate such risks in the future. During the 2000 to 2001 reporting period, SHOT received reports from 379 hospitals accounting for 92% of the blood used in the UK. A total of 344 errors were identified; 15% resulted from errors during requesting, prescription or sample collection; 29% occurred in the blood bank and 50% were due to errors when collecting and/or administering blood (Turner, Casbard & Murphy, 2003). However, the results showed that the single most important factor in transfusion errors is misidentification of the patient. As a result, SHOT recommended the evaluation of computerised aids and barcode technology to confirm that the correct unit of blood is administered.

#### Case Study – Evaluation Of An Electronic Blood Safety Solution

John Radcliffe Hospital in Oxford (UK) has 790 beds and is part of the Oxford Radcliffe NHS Trust. In the trust last year 400,000 people attended as outpatients, over 110,000 patients were admitted, 115,000 people attended accident and emergency and more than 7,400 babies were delivered. Turnover for the year was in excess of \$645 million (US) and over 10,000 people work on the various sites. Approximately 30,000 blood transfusions are conducted annually at the John Radcliffe Hospital.

In the year 2000, in partnership with the National Blood Service, the John Radcliffe Hospital decided to trial the Neoteric BloodTrack system to evaluate the potential role that barcode technology could have in increasing transfusion safety.

#### The Modular BloodTrack Suite

BloodTrack SafeTx uses handheld computers to correctly identify the patient by reading the barcode on their wristband, and to deliver a simple to use transfusion protocol right to the point of care at the patient's bedside. The system ensures that the blood sample taken for cross-matching is correctly labelled at the patient's bedside and that the right blood unit is given to the right patient, virtually eliminating the risk of mistakes due to human error.



BloodTrack Courier provides a system for managing blood stock by controlling staff access rights and managing the transportation of blood products around the clinical environment. Blood products can be traced from arrival in the blood bank through to retrieval and delivery to the patient.



The BloodTrack Suite, therefore, offers a complete electronic audit trail with full traceability of blood from arrival in the blood bank to safe transfusion to the right patient.

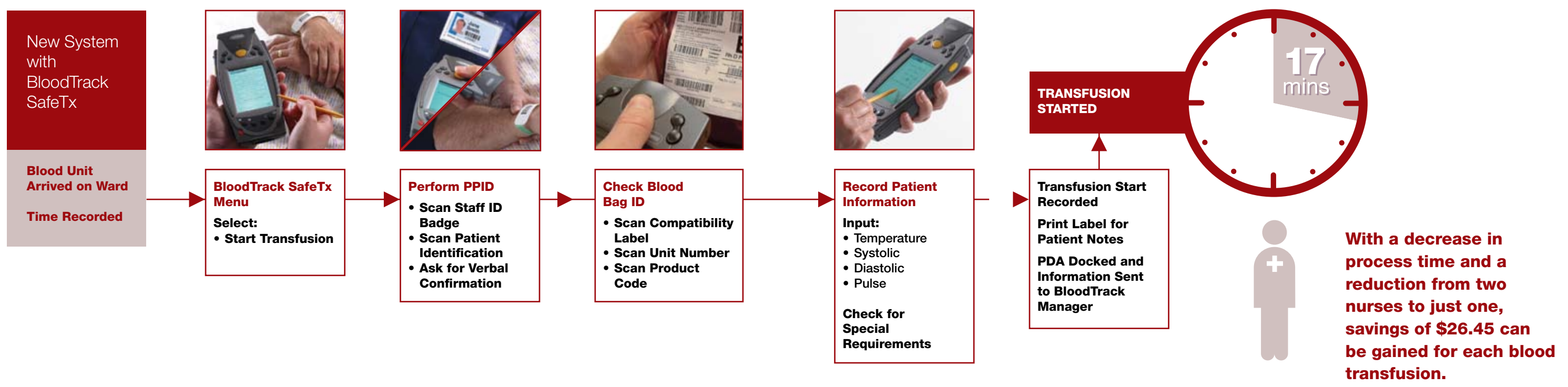
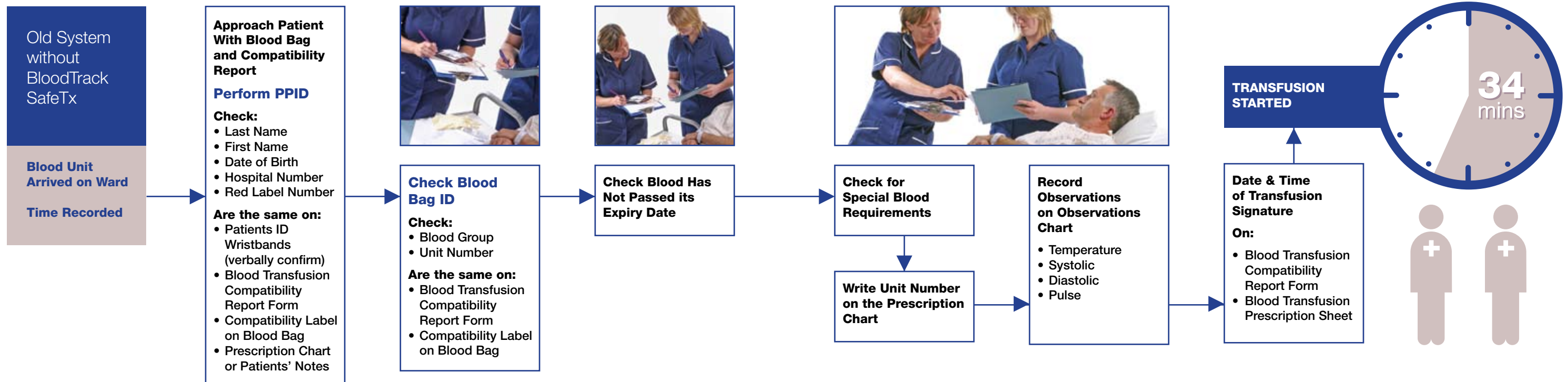
#### Reported Improvements After Installation

Immediately after installation of the BloodTrack system, the hospital realized significant improvements in compliance with standard operating procedures for the administration of blood products. These are summarized overleaf:

Audit Measures of Blood Administration Process. John Radcliffe Hospital, Oxford	Standard System	BloodTrack SafeTx
Patient wearing an ID wristband	88%	98%
Patient asked to state:		
First Name	14%	100%
Last Name	14%	100%
Date of Birth	88%	100%
Blood bag checked for:		
Patient Name	100%	100%
Date of Birth	100%	100%
Patient Hospital Number	100%	100%
Expiration Date	96%	100%
Blood group on bag checked against blood group on compatibility label	100%	100%
Unit number on bag checked against unit number on compatibility label	100%	100%
All checks carried out at the bedside	100%	100%

Adapted from Turner, Casbard & Murphy, 2003

# Process Comparison: Start Transfusion



## Financial And Resource Benefits

After extensive evaluation of the Blood Transfusion process before and after implementation of the BloodTrack system, the team at the John Radcliffe Hospital identified financial, time and resource savings. The number of steps required was reduced from 27 steps to 16, but more importantly, the hospital was able to change its policy on transfusion administration from

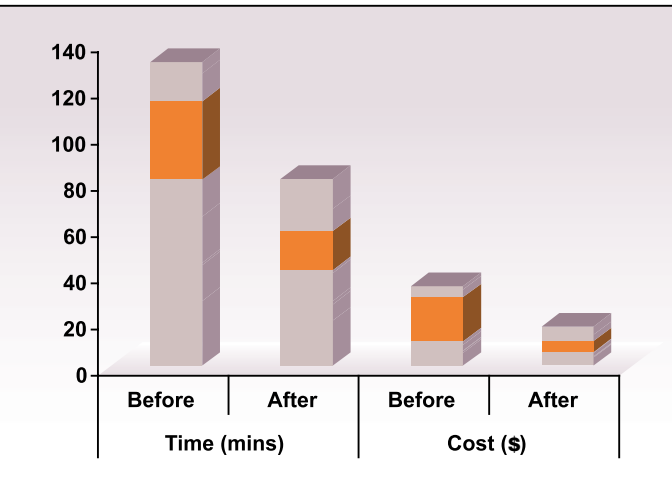
requiring two qualified nurses to be present at all times, to only requiring one nurse with a PDA (hand held computer). These significant impacts on the efficiency of the process halved both the time and staff resources required to carry out a transfusion, resulting in substantial cost efficiencies and freeing up nursing staff time for other care giving activities.

	Time (mins)	Cost (\$)
<b>Without BloodTrack SafeTx</b>	34	35.25
<b>With BloodTrack SafeTx</b>	17	8.80
<b>Total Savings</b>	17	26.45

**Cost efficiency benefits can be seen throughout the transfusion process.**

*(NB: These analyses are based on estimated activity timings)*

Process	Before BloodTrack		After BloodTrack	
	Time (mins)	Cost (\$)	Time (mins)	Cost (\$)
Obtain a Sample for Cross-matching	28.00	10.18	19.50	6.29
Sample Reception	15.50	1.40	7.00	0.52
Compatibility Labelling & Input to Issue Fridge	1.00	0.33	1.50	0.50
Remove Blood from Issue Fridge	20.00	4.72	12.20	2.88
Record Unit Arrival	16.00	2.77	1.10	0.57
<b>Begin Transfusion</b>	<b>34.00</b>	<b>35.24</b>	<b>17.00</b>	<b>8.80</b>
Take Clinical Observations	12.00	6.22	9.60	4.98
End Transfusion	5.00	2.58	13.00	6.73
<b>Total</b>	<b>131.50</b>	<b>63.44</b>	<b>80.90</b>	<b>31.27</b>



**Summary Of Cost Savings**

The BloodTrack Suite reduces the blood transfusion process by around 50 minutes. This equates to personnel savings of \$32.20 for each transfusion. The Oxford Radcliffe Hospital trust conducts approximately 30,000 transfusions per year, with trust wide BloodTrack SafeTx implementation they would save around \$965,300 on personnel efficiencies. This would have significant impact on the time pressures of caregivers, particularly the nursing staff who will be freed up for more patient care activities.

**Areas Of Development**

In addition to ensuring that patients and blood are correctly identified and matched, Neoteric continue to explore further potential improvements in the efficiency of blood services. Work is being carried out to reduce blood expenditure by reducing blood usage. One method is to install a system for electronic remote release of blood in conjunction with electronic cross-matching. Electronic prescribing of blood products in line with hospital protocols on usage policies should also significantly reduce inappropriate use of limited blood stocks.

**BloodTrack Suite Benefits**

- Eliminates the sources of human error
- Ensures positive patient identification
- Ensures full compliance with SOP (Standard Operating Procedures)
- Ensures full traceability of every unit of blood
- Provides a full electronic audit trail with details of caregiver interactions
- Allows monitoring and recording of training needs for compliance with regulatory audits
- Reduces the time pressures on nursing staff
- Virtually eliminates paperwork
- Reduces blood wastage
- Printed tube labels ensures legibility of sample information, eliminating the need to re-bleed patients
- Control over system access rights eliminates the need for staff signatures



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