

Sustainability in Hospital Transfusion Laboratories

2018

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Summary

- Background
- Model used
- 2015 survey highlights
- 2018 survey highlights
- Next steps ?

Background



Medical literature first identified an increased death rate for admissions over the weekend period in 2013

Emergency medical admissions, deaths at weekends and the public holiday effect. Cohort study Emerg Med J 2014;31:1 30-34 Published Online First: 23 January 2013





Slide provided by Dr Rachel Green

Background



- In 2013 the Scottish Government set out a vision for seven day services.
- A taskforce was set up and met in April 2014
- They agreed that the delivery of appropriate seven day services would improve patient care and clinical outcomes by ensuring the right people were available to deliver the right care, in the right place at the right time.



Vision for Seven Day Services



All diagnostic specialties received a questionnaire which focussed on:

- Major Trauma
- Critical Care
- Acute Surgery Acute medicine
- Coronary care
- Maternity and Neonates
- Diagnostics and Investigations
- Primary Care.



- Define what is meant by 7 day services
- Define the requirement for 7 day service in those areas
- Gap analysis
- Identify the steps needed to ensure sustainable 7 day services across NHSScotland

Unfortunately:



It did not identify Blood Transfusion separately from other Laboratory disciplines.

Risk Assessment



• SNBTS asked to perform a risk assessment of Scottish blood banks and their ability to sustain a 24/7 service.





External Environment



Within Transfusion Medicine there has been a steady increase in regulatory /accreditation burden on laboratory services.

Regulations and standards such as

- European Blood Directive/The Blood Safety and Quality Regulations (BSQR)
- British Society for Haematology (BSH) Guidelines
- ISO-15189(2012) Medical Laboratory Requirement for Quality and Competence
- UK Transfusion Laboratory Collaborative 2014 – laboratory standards

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Other Challenges



- Shared workforces and multidisciplinary
- Ageing workforce loss of knowledge and expertise
- Pension changes early retirements
- AfC T&Cs loss of staff applying for more senior roles
- Financial Burdens







- Initial Questionnaire circulated to all Stock holding Hospital Transfusion laboratories across Scotland to assess them against the BSQR
- Risk Assessment Matrix was developed & Circulated(2015)
- Matrix focussed on areas such as
 - staffing
 - Activity
 - Training
 - Quality Support







The risk of 24/7 sustainability for hospital transfusion laboratories was defined as a loss of service provision due to being unable to maintain accreditation (BSQR/UKTLC/UKAS).

- Calculator spreadsheet
- A Likelihood Score Table
- An Impact Score Table



Likelihood Score Table – this table contains the relevant definitions to help you decide a score for each question in the likelihood section of the risk calculator



Likelihood Table 2018

	Factor	Score Ca	tegor	у													
Α	Activity																
		Score = 1	Sco	re = 2	Score	re = 3	Score = 4			Score = 5		Score = 6	Score	= 7			
1.	How many major haemorrhages do you approximately	Extremely rare, Approximately to per year	vo per ave	very often, 5 year on rage	5 Less 6 mo	than 5 in onths	less than	5 in 3 month	IS	5 or less in month	a	5 or less in a week	greate per we	r than 5 eek			
2	Level of Hospital Blood Banking Service	Score = 1		Score = 2			Score = 3				Score =	4	•				
		Blood Banking Se provided 24/7	rvice	Blood Bar provided f but from hours	nking Servi to the hos another si	vice spital 24/7 site out of	Blood Ba during ar service f site labo	nking Service n extended w rom the labo ratory during	provi orking ratory the n	ided only <mark>g day</mark> . No / or an off night.	Blood B provide from an working	anking Service for t d out of hours. No other blood bank g day either.	he hospi off site s outside t	ta <mark>l not</mark> support he			
3	Manual v Automated Techniques	Score = 1		Score = 2		Sco	ore = 3		Scor	re = 4		Score = 5		Score = 6		Score = 7	
		The techniques f screening and cr matching blood (testing) are all automated (ba is also automate and Electronic issue used routinely	or oss ck up ed) e is	The techniq screening at matching bl are all autor (back up is automated. Electronic used.	ues for nd cross lood (testii mated. also issue is <u>n</u>	ing) The scruma are wit ma not Eler rou	e technique eening and ttching bloo e all automa th mual back u ctronic issu ttinely used	s for cross d (testing) ted but p. e is	The scree auto cros (test unde tech	techniques ening patier omated but ss matching sing of it) is ertaken usin niques	for nts are blood g <mark>manua</mark> l	The techniques screening patie automated bu cross matchin (testing) is automated but manual technio out of hours	for ents are t g blood uses ques	The techniques screening are matching ble (testing) are automated the day Screening are crossmatch out of hours	ues for nd cross ood during nd manual	The techniqu screening an matching blo (testing) are manual all th	es for d cross od all ne time
4	Testing Inter-phases to the Laboratory information System	Score = 1		2	Score = 2	•		Score = 3									
		Bi directional		l	Unidirectic	onal		none									
5	Level of Investigation for antibody screens	Score = 1(a)	Score = 1	(b)	Sc	core = 1(c)	Sco	ore = 2(a)		Score = 2	b) So	core = 3(a)	s	core = 3(b)	Sco	ore = 4(a)	Score = 4(b)
		Antibody screen positives are investigated and resolved fully on site	Antibody are inves resolved only the i cases are another l your Hea	screen posit tigated and fully on site more comple referred to aboratory w lth Board	tives Ar pc and im ex an within ca re	ntibody scr ositives are nvestigated nd only the nore comple ases are eferred to	reen An po I fully inv e bu ex co an wit	tibody screer sitives are restigated ful t referred for offirmation to other Laborat thin your Hea	ly tory	Antibody screen positives a investigat fully but referred f confirmat	are in are br la for H ion co	ntibody screen ositives are vestigated partiall ut referred to anot boratory within yo ealth Board if not oncluded from two ise nanole	y in her pa ur re or fro	ntibody screer ositives are vestigated artially but ferred to SNB not concluded om two or less onels	n All sci ard an STS lab d wit s He	I antibody reen positives re referred to hother boratory ithin your ealth Board	All antibody screen positives are referred to SNBTS- no investigatio



Service Delivery Impact Guide

The guide is to help assess what the impact might be of not achieving compliance with the Blood Safety and Quality Regulations (BSQR), the UK Transfusion Laboratory Standards Collaborative (UKTLC) and the other accreditation requirements(CPA/UKAS) on providing a Blood bank service

Impa	ct Guide	
Scor	Description	Service Delivery
1	Negligible	There may be some interruption to a Blood Bank Service which does not directly impact on the delivery of services to the patient/donor or the ability to continue to provide a clinical service. No obvious harm to the patient/donor/public.
		Very low impact - no blood bank service disruption including out of hours provision.
		Competent/trained staff are easily resourced and there is sufficient leadership and funding to manage the situation of any non compliance
2	Minor	There may be some interruption to a Blood Bank service and could impact on the delivery of services to the patient/donor. No obvious harm to the patient/donor/public.
		low impact – some blood bank service disruption including out of hours provision but it can be easily remedied. Short term solutions required.
		Competent/trained staff are easily resourced and there is sufficient leadership and funding to manage the situation of any non compliance
3	Moderate	There is an impact on the delivery of Blood bank services to the patient/donor or the ability to continue to provide a clinical service. Services may need to be reviewed and reduced accordingly. Interim solutions will need to be put in place
		Medium impact – considerable amount of blood bank service disruption including out of hours provision. Additional support and planning may be required within the hospital trust to reorganise workload between sites etc. Longer term solutions required.
		Maintaining competency is challenging to the expected standards but staff are still able to carry out the relevant tasks. Additional resources will be required but can be found within existing budgets.
4	Major	There is a major impact on the delivery of blood bank services to the patient/donor or the ability to continue to provide a clinical service. Services may need to be stopped or greatly reduced.
		Major impact – major blood bank service disruption. Out of hours service stopped and may not be sustainable in the long term.
		A major service provision review would be required to deliver a blood bank service to the patient.
		Staff competency cannot be maintained to the expected standards and therefore cannot be allowed to undertake their blood bank duties. Additional resources will definitely be required.
5	Catastrophic	There is a severe impact on the delivery of blood bank services to the patient/donor. The blood Bank service will need to be stopped.
		The workforce does not have the necessary knowledge and skills needed to operate a blood bank service.

Service Delivery Impact Guide



Risk Calculator

	Blood Bank regulatory requirements and accreditation 2018
	whilst trying to deliver a 24/7 service to patients
Hospital Name:	

	General Information		
	Now many staff provide the Hospital Dlood Banking service?	Total Number by grade	Total number by grade who cover out of hours BB if different from total staff during the day
_	AfC Band 2		
-	AfC Band 3		
	AfC Band 4		
-	AfC Band 5		
	AfC Band 7		
-	AfC Band 8a		
	AfC Band 8b		
	Other		
		Total in 24 hour period	Total out of hours (after 5 pm)
	How many Blood Bank samples are tested per day (on average)?		

descriptions on the "Likelihood chart" and select a score that best describes years with your current knowledge

Risk Calculator

_			
	Factor	Hospital Score	
А.	Activity	Current Situation	Projected Status in 5 years
1	How many major haemorrages do you have in a week approximately	0	0
2	Level of Service	0	0
3	Manual v automated techniques	0	0
4	Interphases to the Laboratory information System	0	0
6	Level of Investigation for antibody screens	0	0
В.	Staffing		
6	Staffing levels that can cover out of hours in the Blood Bank	0	0
7	Dedicated Blood Bank staff	0	0
8	Multidisciplinary team	0	0
9	Lone working	0	0
10	Recruitment / Supply of operational staff within the Blood Bank	0	0
11	Recruitment / Supply of Managerial staff within the Blood bank	0	0
12	Loss of Knowledge/expertise of Operational staff within the Blood bank(AfC Bands 2 - 6)	0	0
13	Loss of Knowledge/expertise Managerial staff within the Blood bank(AfC Bands 2 - 6)	0	0
С	Staff Training		
14	Proportion of staff with qualifications that satisfy the UK Transfusion Laboratory Standards	0	0
15	Transfusion Refresher Training – What % of staff undertake annual updates/competency re-evaluation	0	0
16	Do you think there is a risk to sustaining your blood bank services over the next 5 years	0	0
17	Do you think there is a risk to maintaining compliance with the BSQR?	0	0
18	Do you think there is a risk to achieving compliance with the UK Transfusion Laboratory Standards?	0	0
D	Quality and Training Support		
19	Quality manager	0	0
20	Training Support	0	0
	Likelihood Total (automatically calculated from scores inputed above)	0	0
	Impact if regulatory compliance not achieved (use impact chart to select score)	0	0



- To risk assess the current service
- Predictive risk in 5 years.







SNBTS Blood Bank Sustainability 2014-15 Map of Blood Banks in Southand Blood Bank Blood Bank Contract Blood Bank Rank

	Map of Blood Banks in Scotland	Blood Dashl	Bank board	Blood Bank Rank	Key Risk qu responses	estion	Analysis of Blo Banks request assistance	od ing		
National Chart Size = RBC Transfused Select to pinpoint your lo CTRL + Select to compa	Colour = Overall Risk status ocation, or are more than one)		Select You (CTRL + Select t	r Locations o compare more than one)						
		-	Hospital classification	ABERDEEN ROTAL INFIRMAR ROYAL INFIRMARY OF EDINBU WESTERN GENERAL HOSPITA GLASGOW ROYAL INFIRMARY NINEWELLS HOSPITAL QUEEN ELIZABETH UNIVERSIT RAIGMORE HOSPITAL	IRGH				•	•
25 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -			A2 - Large General Hospital classification	VICTORIA HOSPITAL UNIVERSITY HOSPITAL CROSS ROYAL ALEXANDRA HOSPITA MONKLANDS DISTRICT GENER INVERCLYDE ROYAL HOSPITA ST JOHN'S HOSPITAL	SHOU L RAL				•	•
A CARLER OF CONTRACT			A3-General Hospital classification	GARTNAVEL GENERAL HOSPI FORTH VALLEY ROYAL HOSPI DUMFRIES & GALLOWAY ROY BORDERS GENERAL HOSPITA PERTH ROYAL INFIRMARY DR GRAY'S HOSPITAL VALE OF LEVEN GENERAL HO LORN & ISLANDS HOSPITAL GILBERT BAIN HOSPITAL BALFOUR HOSPITAL	TAL ITAL AL IN L		-			•
	and a	1	Other	CAITHNESS GENERAL HOSPIT GOLDEN JUBILEE NATIONAL I WESTERN ISLES HOSPITAL	AL HOSP				•	•
No.	Farres				0 RBC Tra	10,000 0 100 nsfused DIST/	0 200 300 0 20	40 60 80 Survey Score) ₀ Impact	4 6

Hospital Blood Bank Sustainability Dashboard







SNBTS Blood Bank Sustainability 2014-15

Map of Blood Banks in Scotland	Blood Bank Dashboard	Blood Bank Rank	Key Risk question responses	Analysis of Blood Banks requesting assistance
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Key Areas of Concern

Risk List (highest to lowest risk)	Risk level by h	ospital						
Recruitment / Supply of Managerial staff within the Blood bank	ABERDEEN ROYAL	FORTH		GLASGOW	GO			
Staffing levels that can cover out of hours in the Blood Bank		ROYAL		INFIRMARY	NAT			
Recruitment / Supply of Operational staff within the Blood bank		nosinal				STITEL		
Risk to sustaining your blood bank services over the next 5 years	BELFORD							
Risk to achieving compliance with the UK Transfusion Laboratory Standards?	HOSPITAL							
Training Support		LORN & IS HOSPITAL	LANDS	ROYAL ALEXANDRA	ROYA		ST JOHN	
Dedicated Blood Bank staff	BORDERS			HOSPITAL	OF EDINI	BURGH		
Manual v automated techniques	GENERAL HOSPITAL	MONKLAN			AT LI			
Level of Investigation for antibody screens		GENERAL	HOSPITAL					
Multidisciplinary team	CAITHNESS							
Lone working	GENERAL HOSPITAL	NINEWELL	S HOSPITAL	HOSPITAL	-			
Proportion of staff with qualifications that satisfy the UK Transfusion Laborato								
Quality manager	DUMERIES &				EN			
Risk to maintaining compliance with the BSQR?	GALLOWAY ROYAL	PERTH RO	YAL	GENERAL				
Interfaces to the Laboratory information System				100111AL				
Loss of Knowledge/expertise of Operational BB Staff						VECTED		
Loss of Managerial Staff within the Blood Bank	DALFOOR HOSPITA	_	GILDERT DAI	NHOSPITAL	- i	SLES		
Level of Service					_ '	10 SPITA		
Transfusion Refresher Training – What % of staff undertake annual updates/co	DR GRAY'S HOSPIT	AL	RAIGMORE H	IOSPITAL				

Hospital Blood Bank Sustainability Dashboard



SNBTS Blood Bank Sustainability 2014-15

Map of Blood Banks in Scotland	Blood Bank Dashboard	Blood Bank Rank	Key Risk question responses	Analysis of Blood Banks requesting assistance
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Key Areas of Concern

Risk List (highest to lowest risk)	Risk level	by hospi	tal			
Recruitment / Supply of Managerial staff within the Blood bank	BALFOUR HOSPITAL	BELFORD	CAITHNESS	DUMFRIES & GALLOWAY	FORTH	GOLDEN
Staffing levels that can cover out of hours in the Blood Bank			HOSPITAL	INFIRMARY	HOSPITAL	HOSPITAL
Recruitment / Supply of Operational staff within the Blood bank						
Risk to sustaining your blood bank services over the next 5 years						
Risk to achieving compliance with the UK Transfusion Laboratory Standards?	DR GRAY'S	GARTNAV	EL INVERCLYDE			
Training Support	HOSPITAL	GENERAL	HOSPITAL			
Dedicated Blood Bank staff						
Manual v automated techniques				LORN & ISLAP	NDS HOSPITA	-
Level of Investigation for antibody screens	MONKLAND	DISTRICT	ROYAL			
Multidisciplinary team	GENERAL HO	SPITAL	ALEXANDRA			
Lone working				PERINKOTA	L INFIRMATE I	
Proportion of staff with qualifications that satisfy the UK Transfusion Laborato	QUEEN ELIZA	ABETH HOSPITAL				
Quality manager			VALE OF LEVEN	ST JOHN'S H	SPITAL	
Risk to maintaining compliance with the BSQR?	RAIGMORE H	OSPITAL	HOSPITAL	31 30111 3110	SPILAL	
Interfaces to the Laboratory information System						
Loss of Knowledge/expertise of Operational BB Staff			ESTEDNISLES	ABERDEEN	Concession in the local division of the	POYAL
Loss of Managerial Staff within the Blood Bank	HOSPITAL	"H	OSPITAL	ROYAL		ROTAL
Level of Service				BORDERS		
Transfusion Refresher Training - What % of staff undertake annual updates/co				GENERAL		VICTORIA
				GLASGOW ROYAL INFIRMARY		HOSPITAL

Number of Hospitals requesting Assistance



SNBTS Blood Bank Sustainability 2014-15 Analysis of Blood Banks requesting assistance Map of Blood Banks in Blood Bank Blood Bank Rank Key Risk question **Blood Banks Requesting Assistance** Help Requested (Size - number of score categories, Colour - degree of risk) BALFOUR GILBERT BAIN PERTH ROYAL WESTERN CAITHNESS WESTERN Category Question (copy) Max HOSPITAL GENERAL HO ... HOSPITAL INFIRMARY GENERAL HO., ISLES HOSPIT ACTIVITY Interfaces to the Laboratory information System 5 Activity v supporting a high level clinical environment 4 💼 Level of Investigation for antibody screens 4 🔳 Level of Service 4 🔳 Manual v automated techniques 7 🗖 QUALITY & TRAINING SUPPORT Quality manager 4 Training Support 4 STAFE Proportion of staff with qualifications that satisfy the 6 TRAINING Risk to sustaining your blood bank services over the 4 Risk to achieving compliance with the UK Transfusio. 4 Risk to maintaining compliance with the BSQR? 4 Transfusion Refresher Training - What % of staff un. 5 STAFFING Dedicated Blood Bank staff 13 Recruitment / Supply of Managerial staff within the BL. 4 Recruitment / Supply of Operational staff within the B. 4 Staffing levels that can cover out of hours in the Bloo. 4 Multidisciplinary team 5 Lone working 6 🔳 Loss of Knowledge/expertise of Operational BB Staff 6 Loss of Managerial Staff within the Blood Bank 6 🔳 0 0 0 10 5 10 0 5 10 5 10 5 10 5 10 0 5 Score Score Score Score Score Score



2015 actual risk scores versus forecasted for 2020



2018 – Risk Matrix







2018 actual risk scores versus forecasted for 2023



2015 & 2018 actual risk scores at each site



2015 Conclusions

- Hospital Blood Banks are providing 24/7 services to underpin clinical services on their sites where relevant.
- Several Hospitals felt that they were already challenged and at risk
- Hospitals based in the remote and rural areas were most at risk
- The biggest areas of concern involved staffing both at senior technical levels and sufficiency of trained staff to provide an out of hours service.





2018 Initial Conclusions

- Hospitals most at risk remote & Rural
- Positive Improvements regulatory requirements risk is reducing, Quality Manager (dedicated time)
- Some HBB have limited access to training/qualifications to meet UKTLC
- There is a consistency at the top level of the ranking of HBB in relation to risk.
- Staffing is still continuing to cause concerns
- Forecasting is validated (Hospitals have asked for assistance).







Next Steps



HBB Sustainability Project



Team:

- Project Lead
- Programme Manager
- Quality Manager
- UAT testers/Process development from business
- Training Lead from training team









HBB Programme

- Delivery over the next two years
- Development of packages
- Offer Audit
- Customising service to meet the need of the Hospital







SMART FRIDGE TECHNOLOGY

SMART Fridge Technology

- Concept model currently being validated
- Shelving that can be installed into various Blood Bank Fridge models (an approved list available)
- Works directly with SMART fridge module of Traceline LIMS (MAK systems) - 14 out 28 HTL
- Main LIMS system makes the decisions
- RFID technology speeds up processes
- Remote access

HBB Sustainability Programme





PPID - Positive Patient Identification

- PPID Module from MAK systems
- Bedside ordering
- Uses Trace Line process flow
- Places orders at Bedside
- Checks Protocols
- Displays available components
- Enters Patient Diagnosis / Surgery
 - ✓ Trigger automatic protocols
 - Display MSBOS information
- Prints Sample Labels
- Request from PPID automatically seen

by Lab.



DDID Application	、 _ ``	
PPID Application	ent Orders	
User MAK-SYSTEM B	ADGE 25	/06/2017 11:3
Patient: SANDERSON	I MARY F 02/02	/1980
Lot		Clear
	\$	Add
Test		
	•	
Lot	1	Test
3031 Man G&S		
•	22	•
Cancel	Back	Next

PPID - Positive Patient Identification

- Checks component compatibility
- Alerts user to previous patient reactions
- Provides realtime Bedside confirmation of Transfusion
- Records Transfusion Surveillance
- Records Reactions





HBB Sustainability Programme





Quality Management Expertise

Quality Expertise

- Share Information/Documentation
- Share expertise
- Provide Quality leadership & Guidance
- Provide Training Training Packages



HBB Sustainability Programme





Education/Transfusion knowledge Expertise

Transfusion Expertise

- Share Information/Documentation
- Share expertise
- Provide Training leadership & Guidance
- Provide Training Training Packages



Acknowledgement:

Thank:

- SNBTS staff
- Hospital staff
- •

