Maximum Surgical Blood Ordering Schedules in hospitals across the West Midlands: what is their role in the era of electronic issue?

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Background

- A Maximum Surgical Blood Ordering Schedule (MSBOS) is used to guide appropriate pre-operative cross-matching and can[1]:
  - Ensure prompt blood availability
  - Minimise wastage
  - Reduce unnecessary cross-matching
  - Aid blood stock management
- There are no national standards; individual MSBOSs need to take into account local clinical and blood bank practices[2]
- Studies have shown updating MSBOSs has resulted in a reduction in pre-operative group and save (GS) testing and red cell crossmatches[3,4]
- Electronic issue (EI) has led to a significant reduction in the time taken for "cross-matching"
- We set to determine the current use of MSBOSs in the West Midlands region in the era of electronic issue

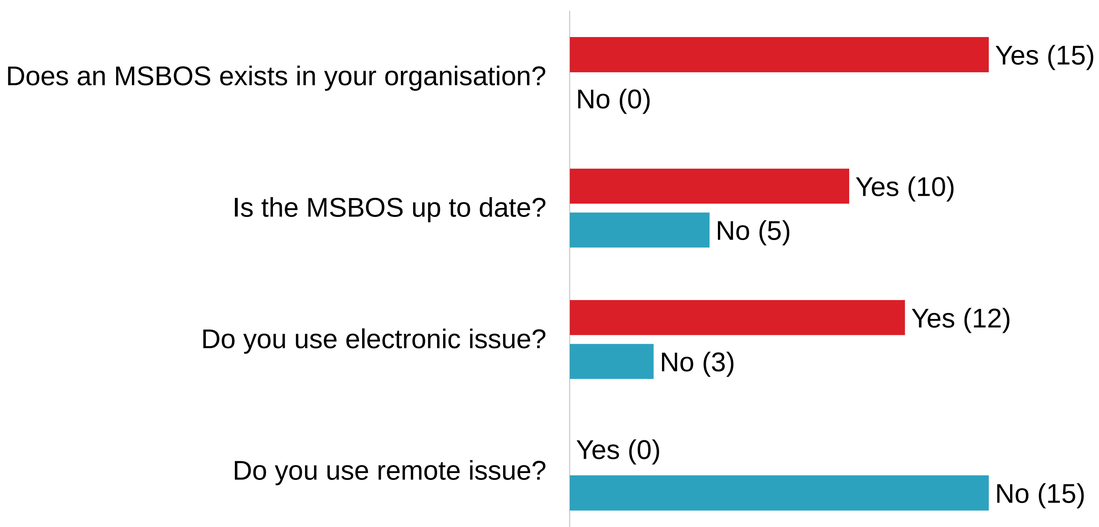
Methods

- Project approved by the West Midlands Regional Transfusion Audit Committee
- West Midlands hospitals' transfusion teams emailed in November 2019 requesting:
  - a copy of their MSBOS if available
  - document review date
  - whether EI and/or remote issue are used
  - any comments on the use of MSBOS in their organisation
- 15/18 (83%) organisations responded^
  - 5 sites (1 specialist hospital, 4 private hospitals) unintentionally omitted from the email distribution list
- A summary regional MSBOS was devised detailing the minimum, maximum and modal stated RBC order for procedures that feature on ≥3 MSBOSs
  - 14 MSBOSs included; 226 surgical procedures
  - 1 MSBOS excluded (paediatric procedures only)
- The summary regional MSBOS has been distributed back across the region to help local MSBOS revisions

^Results presented differ from values in the abstract as one further MSBOS received after abstract submission

Results

MSBOS, electronic and remote blood issue use



- The 3 hospitals that do not do electronic issue were the 1st, 2nd and 6th smallest in terms of hospital size (as determined by hospital bed numbers)
- There was substantial variation in the number of surgical procedures on each MSBOS (range 17 - 167, mean 72)

Comments received about the role of MSBOS with EI

'Our hospital no longer operates with a defined MSBOS. This was phased out when we moved to electronic issuing'

'Our MSBOS only applies to IAT crossmatches (14% of total issues) and patient's with a Hb below 100g/l. All other procedures except cardiac which are eligible for EI don't have blood issued but are kept to one side on day of operation with an "issue on demand" sticker'

Pre-operative red cell ordering pathways

'Conventional' blood ordering pathway 73% (11/15)		'Issue on demand' pathway 27% (4/15)
Blood issued for the patient as per the request (guided by MSBOS)	Blood issued as per the request (guided by MSBOS, different numbers of red cell units specified if red cell antibodies identified)	If no Abs/low Hb then request set aside, for 'issue on demand' (reliant on electronic issue)
40% (6/15)	**33% (5/15)**	If Abs/low Hb then blood issued as per request

- Most organisations have linked their MSBOS and EI by either:
  - Different red cell orders stated in the MSBOS for patients suitable/ not suitable for EI
  - Only pre-operatively issuing blood as per the MSBOS for patients not suitable for EI

MSBOS red cell orders

Procedures that appear on >11 MSBOSs

	Freq	Min	Max	Mode
Colectomy (including any of total, hemi, partial, sigmoid, Hartmann's)	14	GS	3	GS
Total hip replacement (THR)	14	0	2	GS
Abdominal perineal resection	13	GS	4	2
Total knee replacement	13	GS	2	GS
Cholecystectomy	12	0	GS*	GS
THR Revision	12	GS	4	2
Prostatectomy- open	12	GS	3	2
Transurethral resection of prostate	12	GS	2	GS

- For the most frequently listed procedures, there is no procedure where every hospital gave the same cross match requirement

Procedures with the most variation in recommended RBCs

	Freq	Min	Max	Mode
Splenectomy	7	GS	6	2
Oesophagectomy	6	GS	6	3
Elective open aortic aneurysm repair	7	GS**	6	4

- All of the maximum orders for these procedures are from one hospital's MSBOS

Commonly performed operations that appear infrequently

	Inclusion	Order	Transfusion rate[5]
Appendicectomy	14%	0 or GS	0.2%
Haemorrhoidectomy	14%	GS	1%
Varicose vein surgery	29%	GS	0%

- The low inclusion rate implies that the other hospitals do not even suggest GS, this is supported by the quoted transfusion rates
- 7% (1/15) MSBOS had different RBC orders for different named surgeons
- 7% (1/15) MSBOS had different RBC orders for different hospital sites

GS* – GS and crossmatch 2 units RBC if RBC antibodies or low Hb

GS** - GS and crossmatch 4 units RBC if RBC antibodies or low Hb

Conclusions

- MSBOSs continue to have a role in pre-operative blood ordering in the West Midlands despite widespread use of EI
- There is marked variation in the number of procedures listed and numbers of red cell units recommended between MSBOSs
- Further work is now required to audit whether MSBOS recommendations are followed, the number of units actually transfused for each procedure and clinician awareness of the pre-operative pathways

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