

# Electronic Crossmatching- One Year on!

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# Electronic Crossmatching (eXM)

- Introducing Electronic Crossmatching
- Current Guidelines
- The application of eXM to SVUH
- eXM on Demand
- Advantages & Disadvantages
- The Future of the eXM

## Electronic Crossmatching Definition

- The selective replacement of the conventional serological crossmatch with an Electronic Procedure for the Release of Compatible Blood.
- The Electronic Crossmatch (Electronic Issue) allows for donor blood to be issued to a patient instantaneously.

# Introducing eXM

- Traditional Compatibility Testing Involves:
  - a) A review of the patient's transfusion history
  - b) ABO & Rh D typing of the patient
  - c) Antibody Screening
  - d) The Serological Crossmatch
  
- Role of the Serological Crossmatch (sXM)
  - a) Ensuring ABO compatibility between recipient & Donor
  - b) Detection of irregular red cell alloantibodies

## Introducing eXM-how is it possible?

- Improvements in the antibody screening cells to allow for the detection of all clinically significant antibodies
- The necessary automation, computer software and documented quality control procedures are now in place for guaranteeing ABO compatibility.

## eXM depends upon:

- Electronic Records of patients group and antibody screen and of donor unit group
- Concordance between the patients current and historical transfusion record
- The absence of a positive antibody screen on record or on the current sample for the patient
- The ability of the LIS to detect any ABO & Rh incompatibility between patients sample and donor red cells

## Introducing eXM – lab requirements

- Laboratory IT system supporting eXM
- Automated blood grouping analysers
- Analyser/IT interface – no manual data transfer
- Availability of confirmed donor group blood from your supplier
- On-Site Validation of the system

# Current Guidelines for Electronic Crossmatching



# Current Guidelines for eXM

- Two sets of guidelines have been published for Electronic Crossmatching:
  - a) **AABB**- American Association of Blood Banking
  - b) **BCSH**- Blood Transfusion Task Force of the British Committee for Standardization in Haematology

## Current Guidelines for eXM

- When all the criteria for eXM have been satisfied blood can be released on demand, without delay
- If any one of the requirements cannot be fulfilled, eXM is abandoned and the sXM employed

## Electronic Crossmatching Criteria

1. Two Concordant blood groups on the recipient (BCSH)
2. The patients serum/plasma does not contain, and has not been known to contain clinically significant red cell alloantibodies reactive at 37°C (BCSH, AABB)
3. Extensive 'on-site' validation prior to introduction of electronic issue is essential (BCSH, AABB)

# Electronic Crossmatching in SVUH- Patient Eligibility Study



# Electronic Crossmatching in SVUH- Patient Eligibility Study

Aim of Study:

- assess the % of the patient population in SVUH who would be eligible for eXM according to the BCSH guidelines
- assess the reasons for samples being unsuitable for eXM

# SVUH eXM Patient Eligibility

Sample size                      507 consecutive

% Requesting crossmatch                      31%

% of these eligible for eXM                      61%

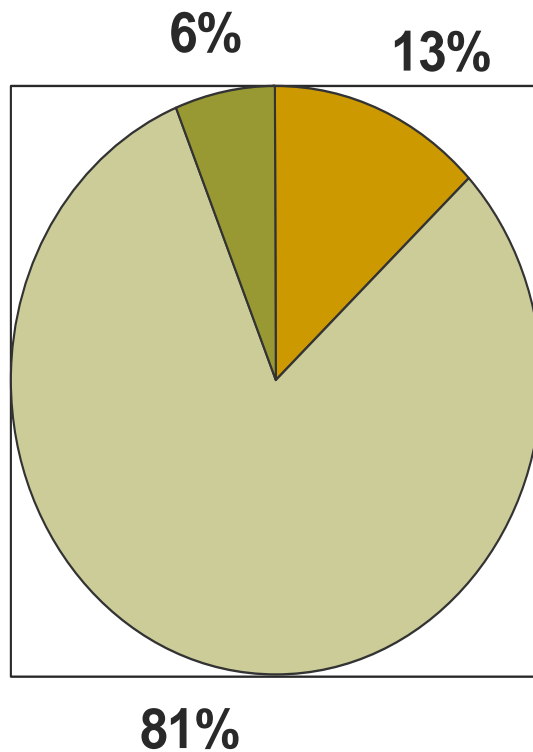
## Conclusion:

61% of blood demands satisfied by eXM

# Patients excluded from eXM

- Patients who lack a second confirmatory group (**81%**)
- Patients with current or historic antibodies (**13%**)
- Others (**6%**) including:
  - Patients with a positive DCT and eluate
  - Patients who receive an ABO unmatched solid organ or stem cell transplant
  - Auto immune haemolytic anaemia patients

# Patients excluded from eXM



# eXM Implementation Process

- Jan '08 Validation of eXM began
- Mar '09 Hospital Transfusion Committee approval
- Apr '09 Group O patients - 9am-5pm  
(as per MSBOS)
- Aug '09 All groups - 9am-5pm  
(as per MSBOS)

# eXM Implementation Process

- Jan 2010 All ABO blood groups - 24/7  
(as per MSBOS)
- May 2010 All ABO blood groups - 24/7  
(on demand)
- Ongoing hospital ward & theatre staff education
- Audit blood usage and review the Maximum Surgical Blood Ordering Schedule (MSBOS)

# eXM on Demand

- Traditionally RCC's issued as per MSBOS
- Now patients that qualify for eXM RCC's issued when the surgical team request them i.e. 'ON DEMAND'
- Meet the requirement for surgical reserves with a minimal stock sub-inventory & blood is not held for patients who ultimately may not need it. This can lead to a decrease in the outdating of blood.

# Exceptions from eXM on Demand

1. Liver Resection
2. Anterior Resection
3. Whipples (Pancreatectomy)
4. Radical Prostatectomy
5. Aortic Aneurysm Repair
6. Aorta-Fem Pop Bypass

# Benefits of the eXM

- For eligible patients – immediate availability of blood i.e. improved turnaround times
- Reduced administration
- Reduced wastage due to restricted movement of blood
- Improved blood management – particularly during shortages
- Improved shelf life of blood transfused
- Blood issued without delay benefitting all concerned
- Properly validated is considered safer than serological crossmatching

# Blood Bank's with eXM??



# Benefits of eXM to the Blood Bank

- Significant reduction in crossmatching workload
- Staff free to work on other transfusion issues e.g. accreditation; could ultimately increase safety & promote a more efficient working environment
- Reduced stress levels on laboratory staff
- Cost saving for laboratory consumables
- Improved Blood Stock Management with consequent budget benefits

# Disadvantages to eXM

- Extensive *on-site* validation prior to the introduction of eXM and checking post computer updates
- Inability to detect antibodies against low frequency antigens
- Inability to detect antibodies below a certain titre – need for a National Antibody Database
- eXM is suspended during unexpected system failures leading to computer downtime or disruption to the LIS. If eXM is suspended serological crossmatching will be re-instated
- The requirement for 2 ABO/Rh type results for the same patient

# Two Concordant Blood Groups- Workload V's Benefit

- The risk of taking a sample from the 'wrong' patient – wrong blood in the tube (WBIT), or mislabelling the sample is an inherent phlebotomy risk and represents an important 'near-miss' error which may lead to an ABO-incompatible transfusion
- The risk is not peculiar to Electronic Crossmatching
- While the second sample group check of eXM increases workloads and costs, it does significantly decrease the risk of ABO-incompatible transfusions
- Should it be extended to all crossmatching methods??

# Continued aims for eXM

- To encourage an environment of maximising the eXM resource
- To promote the need for a National Antibody Database
- To deliver a quicker turnaround time to the patient
- On-going education and training to all hospital staff
- To maintain minimal blood wastage

Questions??..Thank you!

