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Electronic medical records and transfusion

As more and more health services move to using an electronic medical record (EMR) there are concerns that these electronic systems may contribute to errors in transfusion. The Blood Matters serious transfusion incident reporting system (STIR) has not specifically collected information on the EMR as a contributing factor in transfusion error, but will be looking at how this can be incorporated into our current reporting system.

The types of EMRs used varies with health services. They are set up to be used to assist nursing and medical staff to document the care they give. They can also assist in patient identification and safe matching for procedures. For transfusion this applies to pre-transfusion testing and the administration of blood products.

Areas where errors may occur:

Patient identification:

While an electronic system will assist with patient identification it is not completely fail safe. If the wrong identification band is placed on the patient, or there are multiple points where barcode scanning can occur, e.g. secondary ID bands not attached to the patient or patient labels with a scannable barcode, then errors can occur when the identity is not checked correctly or, where it is performed away from the patient side.

Example: In an audit in one health service, positive patient identification occurred in only forty per cent of specimen collections observed when using the EMR for specimen collection.

Functionality problems:

For the safety aspects of an EMR to be evident, the system must be used as it was intended. Errors may occur if clinicians need to change their workflow to accommodate the EMR. This disrupts established workflows and may interrupt patient interactions as staff try to become familiar with how the system works.

In the laboratory alert fatigue has been long recognised, where pop ups that may not always be helpful recur. When developing systems, awareness of alert fatigue is important, this should also be considered as a factor in the clinical areas. Ignoring pop ups because they keep occurring, and are of minimal assistance, and can lead to important ones being missed. A number of reports to STIR have involved laboratory staff not recognising an alert to an RhD mismatch when dispensing blood to patients. This occurs as laboratory staff see similar alerts regularly that do not require input or do not provide useful information.

Example: A woman attended an emergency department with (ED) with vaginal bleeding and a miscarriage was diagnosed. She was called back to the hospital for RhD immunoglobulin (Ig) when the medical officer mistakenly interpreted the negative antibody screen to mean the woman was RhD negative.

The health service had an electronic system for ordering of blood and blood products and the medical officer used this to order the product. This system included a pop up telling the medical officer that the patient is RhD positive and there is no requirement for RhD Ig. This is not a hard stop in the system and the medical officer overrode this and ordered the product anyway.

The laboratory provided the product, and it was administered as ordered.

Clinical decision support systems:

These may be built into some systems to assist clinical staff in treatment decisions and ordering. Staff need to understand when to question decisions made in this way. If the incorrect information is put into the system (either by error or in order to bypass an aspect of the system) then inappropriate treatment decisions can result.

Example: A child, post neurological surgery was prescribed three units of red cells via an electronic order. Orders are weight based for children of this age and as this child was less than 20kg the order should have been placed in mL rather than units. The electronic system did not allow for ordering of units for a child less than 20kg, so the medical officer ordered by changing the weight to greater than 20kg. The laboratory filled the order as requested. The nursing staff did question the order, but did not take it further than the medical officer who had prescribed the blood. Two of the three units were transfused with a check Hb indicating an abnormally high Hb at the time. Fortunately there was no long term harm to the child.

Data entry:

Errors can occur when staff choose items from a list. For example, at one health service where specimen labels are printed at the bedside at time of collection, staff can choose the printer for use by scanning the barcode on the printer. When staff choose the printer from a list there is the risk of accidentally choosing the wrong printer. This has been seen in audits and increases the risk of a WBIT.

Use of barcodes: Staff are busy and often working quickly in a stressful environment that leads to an increased risk of data entry errors. In transfusion inputting blood product barcodes is one area of risk, where an incorrect number entered may mean difficulty in tracing products to patients. Until systems can use the barcodes on the products to enter this information directly into the patient record, the risk of error remains. For processed products where patients may receive products with several different barcodes in one dose (e.g. IVIg) the ability to easily record all barcodes is also necessary.

Chart management:

With multiple staff using the same computer terminals, there is an associated risk. A clinician is using the computer to access their patient's EMR when they are called to the telephone. Another clinician uses the computer to look up another patient's EMR and is called away without logging out. The first clinician may not realise they are no longer in the same patient's EMR, leading to notes and orders being added to the incorrect patient record. This can mean that one patient has tests not required while the other has treatment delayed due to insufficient and timely testing.

Conclusion

An electronic medical record can be beneficial to patient care as it can streamline some functions, and there is one source of information. However, where systems are not user friendly and until staff become familiar with the system there can be an increase in errors. For transfusion this raises the concern of wrong blood in tube events and ABO incompatible transfusions. The systems when configured well and used as intended provide a number of safety mechanisms to help reduce these errors. The EMR is here to stay and we need to work with these systems to ensure they meet our needs and are as safe as possible.

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