Reviewing A&E Blood Sampling Procedures to enhance Patient Safety

A hospital has arranged extra training and guidance for its Accident and Emergency staff following an audit of blood sampling conducted by the hospital laboratories and Clinical staff in the A&E department. The audit, reported in the Annals of Clinical Biochemistry, also led the hospital to review its guidelines for blood collection to simplify and clarify them as much as possible and to make staff more aware of the possible pitfalls, ensuring that patients are cared for as speedily and safely as possible.

Collecting Blood samples (“phlebotomy”) has to be done properly so that the necessary tests can be carried out and accurate results obtained. Laboratories, Hospitals and GP Practices have set procedures for the blood sample collection and often employ professionals (“phlebotomists”) dedicated to this work. The report has emphasised that for “routine” blood testing when the blood is collected in a hospital ward or out-patient department or in a GP practice or phlebotomy centre the procedures are generally carried out correctly with very few samples being rejected or giving erroneous results due to poor practice.

The report has drawn attention to a less positive situation in the Accident and Emergency Unit. This is an area where blood test results need to be received quickly as they may be vital to the treatment of the patient. It is also an area where the staff are under a great deal of pressure and time is short. Blood samples may be collected by a large number of different doctors and nurses who are busy with treatment and examination of the patients. It is perhaps not surprising that the blood collection guidelines are not always followed and many tests have to be repeated because the samples have not been collected properly the first time.

Dr Jonathan Berg, Pathology Director at the hospital that has undertaken the research comments that “We have shown that the majority of A&E blood samples are taken by junior doctors and many are not collected correctly. Good blood taking
technique is vital to ensure that the results reflect the true status of the patient. Junior doctors have surprisingly little training in taking blood and have a love of still using syringes which cause major problems and this is very easy to correct with a simple training programme. This is an issue right across the country and in junior doctors’ love of needles and syringes “

Dr. Robert Hill, the Director of Scientific Affairs of the Association for Clinical Biochemistry commented “Laboratory scientists working with A&E staff often quickly identify the source of a problem with blood collection such as those mentioned in the paper. The compromises to specimen quality made in A&E when attempting to rush through investigations clearly put some patients at risk so fixing the problem requires more than just identifying a culprit. Solutions must include monitoring the competence of those taking blood during their training period and discouraging those whose lack of practice prevents them from doing it properly.”

Notes:
Problems with the collection of blood samples are now one of the main sources of error with blood testing as the procedures and technologies within the laboratories have developed to a high degree of reliability. These errors, that arise before the samples are actually tested are called “pre-analytical errors”. The errors that can arise with sample collection include:

- Mis-identification
  Where the information filled in on the blood specimen tube about the patient’s identity do not match the information on the accompanying form requesting the tests.

- Haemolysis
  This is damage caused to the blood cells when the sample is collected, possibly because too small a needle has been used for the collection. Chemicals can leak out of the damaged cells and make the sample so clouded that it can not be analysed or affect the results of the tests to render them worthless. The sampling then has to be repeated.

- Collection in the wrong order
  Different groups of tests require the blood to be collected in different types of tube, some of which contain chemicals that would affect the results of other groups of tests. It is important that the different tubes are filled in the correct order so that those chemicals are not passed from tube to tube.
Using the wrong procedure to collect the blood

Most blood samples these days are collected into vacuum tubes with special needles which reduce the possibility of haemolysis or contamination but sometimes the blood is collected into syringes and then transferred to the sample tubes, this is where haemolysis can occur due to the use of the wrong type of needle or there is contamination due to sampling in the wrong order. There is also the danger of mis-using a tourniquet to make the veins more accessible for sampling.

If the patient already has a tube in their vein, for example for an IV drip, that tube can be used for sampling the blood, but if the correct procedure is not followed there can be contamination from the drip itself.

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