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Bloody Good News

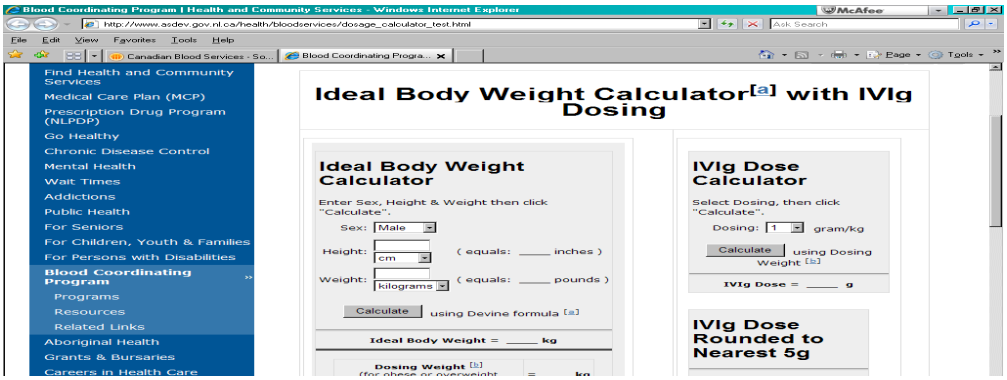
Newfoundland and Labrador Provincial Blood Coordinating Program

Request Approval Process & IVIG Dose Calculator

Special Interest Articles:

- The Request Approval Process and IVIG Dose Calculator
- Clinical Handover and Transfusion Safety

Individual Highlights:



The Request Approval Process (developed by the Atlantic Collaborative IG Utilization Working Group) has been implemented within the Western and Central Regional Health Authorities. Two facilities in the Eastern Region recently implemented the Request Approval Process and piloted the IVIG Dose Calculator, which is now on the facilities intranet.

The purpose of the Request Approval Process is to ensure that IVIG is used for the appropriate indication, dose and frequency recommended by the current literature and expert clinical opinion. The IVIG Dose Calculator is used to determine the dose of IVIG for clinically obese patients. The dose calculator is not intended to replace sound clinical judgment concerning a patient's unique situation.

To use the IVIG dose calculator you enter the sex, height, weight of the patient and you click calculate to get the ideal body weight. You then select the dosing (dosing increments from 0.1 to 1.0 and 2.0g/kg) and click calculate and to determine the adjusted IVIG dose – in grams. The dose calculator will also round the IVIG dose to the nearest 5 grams.

The IVIG dose calculator was piloted for a twelve-week period at Newfoundland and Labrador's largest healthcare facility.
The results: The number of patients 67
Pre-calculator dosage: 6,722 grams
Post-calculator dosage: 5,515 grams
Grams saved 1,207
Cost savings: $72,420

Implementation of the Request Approval Process in all Regional Health Authorities along with the IVIG Dose Calculator will:

- Reduce use of IVIG for Unlabeled Not Indicated conditions.
- Assess dosing practices, reducing the amount of improper dosing.
- Stabilize the utilization, minimizing increase in use.
- Decrease the number of adverse events that may arise due to improper dosing.
- Decrease the proportion of doses administered higher or more frequent than recommended.
- Decrease the cost the province pays for this product.
- Provide an overall decrease in the number of grams of IVIG utilized in Newfoundland and Labrador ensuring proper utilization and in turn future availability.

The Electronic Crossmatch – Is it in our Future?

Ludwig Hektoen

Ludwig Hektoen first proposed serologic crossmatching in 1907 as a means to improve transfusion safety.

R Ottenberg performed the first serologic crossmatch in 1908.

The first computer crossmatch procedure was initiated at the Blood Bank at the University of Michigan Hospital.

The American Association of Blood Banks (AABB) established standards in 1993 to allow electronic crossmatching to replace immediate spin crossmatching.

In 1998, WJ Judd announced to the International Society of Blood Transfusion's Congress that electronic crossmatching procedures were used in at least 10 North American facilities, as well as Scandinavia, Hong Kong, and Australia.

The crossmatch, which is part of pretransfusion testing, is used to detect ABO incompatibility (the immediate spin crossmatch) and other clinically significant antibodies (the antiglobulin crossmatch). Electronic crossmatching is a computer-assisted crossmatch where the donor unit is issued to a recipient based on the laboratory information system ensuring the recipient and donor unit are ABO compatible. The testing includes ABO & Rh typing on the donor unit and on the recipient, and an antibody screen done on the recipient.

The electronic crossmatch replaces the immediate spin crossmatch for detecting ABO incompatibly between the blood sample submitted for pre-transfusion testing and the donor unit selected for transfusion.
There are several CSA & CSTM requirements that must be met to implement this process. Clinically significant antibodies should not be detected in the recipient's serum/plasma on the current sample, and there must be no history of such antibodies. The donor units must be ABO confirmed and there must be two determinations of the recipient's ABO group. The computer system must be validated on site, capable of detecting incompatibility, and a procedure in place to verify that the data has been correctly entered, prior to the release of blood. If any of these requirements cannot be met, the electronic crossmatch is abandoned and the serological crossmatch is performed.

Continuous improvement in Transfusion Medicine is a goal of all health care providers and the electronic crossmatch has major benefits such as increased patient safety and a significant decrease in the crossmatching workload. Other benefits would include reduced patient sample requirements, equivalent or decreased cost, increased accuracy, reduced handling of potentially hazardous samples. The false positive or false negative reactions associated with serologic crossmatches will be eliminated and for eligible recipient's immediate availability of blood (improved turnaround time).

There are several concerns that should be noted with the use of the electronic crossmatch. The electronic crossmatch does not detect antibodies against low frequency antigens or donor cells with a positive direct antiglobulin test. All donor units must be ABO confirmed before being placed into the inventory. There is also an extensive on-site validation process prior to implementation of the electronic crossmatch.

There would also be a slight increase in the phlebotomist's workload as there is a requirement for two ABO/Rh type results for the same patient. The rationale for two determinations of the recipients' ABO & Rh type is to ensure that the recipients' ABO/Rh type is transcribed in the computer correctly. It will not detect a sample that is mislabeled during collection, unless there is a previous ABO/Rh type in the computer that does not match the current results. The ideal electronic crossmatch system would have detection and error prevention capabilities.

With the appropriate computer software, validation, standard operating procedures, training and education, the electronic crossmatch can replace the serological crossmatch providing a safe and efficient method to detect ABO incompatibility. The electronic crossmatch would be a tremendous asset for the Transfusion Medicine Laboratories in Newfoundland and Labrador.

New Product – Solvent Detergent Treated Human Plasma

Solvent detergent treated human plasma (S/D Plasma) is virus inactivated frozen plasma with comparable plasma protein contents (45-70 mg/ml) to that of a single-donor fresh frozen plasma (FFP). In Canada S/D Plasma is available as OCTAPLASMA™. The National Advisory Committee on Blood and Blood Products (NAC) has released recommendations for the appropriate use and distribution of OCTAPLASMA™. (www.nacblood.ca).

NAC recommends OCTAPLASMA™ use in Canada for certain patients based on the Canadian Agency for Drugs and Technologies recommendations. OCTAPLASMA™ use is restricted to patients who require a large number of transfusions annually because they have congenital or acquired thrombotic thrombocytopenic purpura (TTP), hemolytic uremic syndrome (HUS) with a deficiency in factor H and clotting factor deficiencies for which licensed concentrates may not be readily available. It is also recommended for patients who have experienced a prior allergic reaction to frozen plasma, have a pre-existing lung disorder and/or require frozen plasma but a blood group compatible product is not available in a timely manner.

The dosage of OCTAPLASMA™ is dependent on the patient's clinical situation, underlying disorder and regimen of treatment. It is recommended that a hematologist be consulted in the event of major hemorrhage. OCTAPLASMA™ should be administered under the supervision of a qualified health professional experienced in the use and management of anticoagulant agents and coagulation disorders.

According to the manufacturer (www.octapharma.com) the recommended starting dose is 12-15 mL/kg body weight, it must be ABO group compatible and administered intravenously via a filtered blood set. The clinical response is monitored through the measurement of prothrombin time, partial thromboplastin time and coagulation factor assays.

OCTAPLASMA™ is contraindicated in patients with protein S and IgA deficiencies, plasma protein allergies, pulmonary edema, manifest or latent cardiac decomposition and prior hypersensitivity to Fresh Frozen Plasma or OCTAPLASMA™.

Although the treatment of plasma with solvent detergent provides a higher level of safety with regards to enveloped viruses, lowers the risk of post-transfusion infections, does not contain detectable levels of leukocyte reactive antibodies and has potential benefit of reducing allergic, febrile and transfusion related associated lung injuries, as with all blood products the possibility of blood born pathogens and adverse reactions does exist. OCTAPLASMA™ is not effective against non-enveloped viruses.

OCTAPLASMA™ should be requested and used as per recommendations by NAC and administered and monitored in adherence to regional transfusion policies.

New Product - Hizentra™

Hizentra™, Subcutaneous Immune Globulin (SCIG) is indicated for the treatment of patients with primary immune deficiency (PID) and secondary immune deficiency (SID) that require immune globulin replacement therapy.

Hizentra™ is contraindicated in patients who have had an anaphylactic or severe systemic reaction to the administration of human normal immunoglobulin or to components of Hizentra™. It is also contraindicated in patients with hyperprolinemia.

There is a higher IgG concentration (20%) in Hizentra™ compared to the current SCIG being used for replacement therapy; therefore, the infusion volume and duration of infusion will be reduced.

The recommended weekly dose of Hizentra™ is 0.1-0.2 g/kg body weight /week administered subcutaneously. If the patient is converting from IVIG the monthly dose is divided into equivalent weekly doses. For patients already on SCIG treatment, the weekly dose is equivalent to the previous weekly dose. The dose may need to be adjusted to obtain the desired clinical response and serum IgG trough level. The patient's clinical response should be the primary consideration in dose adjustment.

Hizentra™ is available from Canadian Blood Services in 5, 10, and 20 ml vials. This product can be stored in the refrigerator or at room temperature and is stable for the period indicated by the expiration date.

The Atlantic SCIG Working Group has developed Guidelines for Subcutaneous Immune Globulin Home Administration Programs January 2012.

For more information regarding this product, refer to the product monograph at www.cslbehring.ca.

"Blood products are currently the safest in the history of blood banking… yet blood component therapy is inherently hazardous and results in some degree of harm in every patient."

Strategic Blood Management

Clinical Handover and Transfusion Safety

Clinical handovers involve the transfer of information and responsibility for care of a patient from one healthcare provider to another. The clinical handover process varies across institutions, shifts and healthcare providers, most often representing a transition in patient care during an admission, inter-hospital transfer, service change or shift change.

According to the 2010 Serious Hazards of Transfusion Report (SHOT) clinical handover reporting poses a safety risk for patients receiving blood component and blood product transfusions. When a handover report does not include all essential information concerning the patient, does not provide adequate information to make transfusion decisions or is open for interpretation, information can be misunderstood. These inconsistencies often result in a breakdown in the continuity of transfusion care. The 2010 SHOT Report provides evidence of this through reports where previously made decisions were overturned between shifts, incorrect blood components were prescribed for the correct patient and red cells were prescribed for an incorrect patient. Inadequate handover reports between health care providers working in transfusion medicine thus presents an opportunity for error which may result in unnecessary and inappropriate transfusions, the wrong treatment, disruptions in or a lack of patient monitoring and/or increase the potential of an adverse event.

The 2010 SHOT Report recommends decisions made concerning the need for transfusion support and laboratory tests be documented in clinical handovers. This will help prevent transfusion decisions made during the day from being overlooked by night shift, prevent night shift health care providers and on call physicians from having inadequate knowledge of specific patient transfusion needs and thus prevent disruptions in transfusion care.

Effective and timely communication and collaboration among healthcare providers before, during and after clinical handovers is critical in providing quality care, patient safety and in the avoidance of transfusion errors.

Case Study #15

An 87 year old male patient with a GI bleed was ordered to be transfused a unit of packed red blood cells. The patient's blood group was O positive and he had received previous transfusions within the past three months. He did not receive pre-medications prior to the start of the transfusion and his vital signs were normal.

One and a half hours into the red cell transfusion, the patient complained of pruritis, urticara and erythema.

The transfusion was stopped. The patient's temperature, pulse and respirations remained stable; the patient's blood pressure decreased from 105/35 to 85/40. Antihistamines and antipyretics were administered and the patient's symptoms resolved.

1. Classify type of reaction

2. What was the relationship of the adverse event to the transfusion?

3. What was the severity of the reaction?

4. What was the outcome of the adverse event?

Case Study #14 Interpretation

1. *Type of Reaction – TACO*
2. *Relationship of adverse event to transfusion – Possible*
3. *Severity of the reaction –Grade 2 (Severe)*
4. *Outcome –Minor*

Each newsletter will contain an interesting case study for you to review. The type of adverse event and answers to the questions will be provided in the next edition of the newsletter.

Upcoming Events:

- National Nurses Week May 7-13th,2012
- CSTM – Halifax, NS May 24- 27, 2012
- LABCON 2012 June 2-4 Gatineau, QC

"Instruction does not prevent waste of time or mistakes; and mistakes themselves are often the best teachers of all."

James Anthony Froude

Newfoundland and Labrador Provincial Blood Coordinating Program

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We're on the Web!

See us at:

http://www.health.gov.nl.ca/health/bloodservices/index.html