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Implementing an **IVIG Supply Management Protocol**

INTRAVENOUS IMMUNE GLOBULIN (IVIG) IS A BLOOD PRODUCT THAT IS commonly used in many specialty areas including allergy, dermatology, immunology, infectious disease, oncology, neurology, and rheumatology. As with all blood products, the supply of IVIG is vulnerable to frequent shortages. Over the years, a complex distribution system has developed that involves the allocation of IVIG by manufacturers to GPOs. GPOs further allocate their supply to their members through specialty distributors. As a result of this distribution method, health care organizations find themselves dependent on their GPOs to provide product.

Located in Marshfield, Wisconsin, the Marshfield Clinic is a large multi-specialty clinic with more than 700 physicians in over 80 specialties. The clinic system provides patient care, research, and education across 41 locations in northern, central, and western Wisconsin, making it one of the largest comprehensive rural medical systems in the United States.

In the early part of 2006, the manufacturer ZLB Behring discontinued their IVIG product, Gammar PIV. As Gammar PIV had been the IVIG product allocated to Marshfield Clinic by our GPO, we were without a source for IVIG. At that time, our GPO was not able to obtain another consistent allocation for our organization nor were they able to provide a timeline for resolution. Hence, we were left without an assured supply of IVIG for an indefinite period of time.

Photo courtesy of Grifols USA

Table 1.
Level I: Medical conditions for which there is convincing evidence of benefit resulting from IVIG therapy

- Replacement therapy for primary immune deficiency states, including common variable immune deficiency, functional-specific antibody deficiency, IgG subclass deficiency (except IgG3) ataxia telangiectasia with hypoglobulinemia and recurrent infections, and Wiskott-Aldrich Syndrome with infections
  - Monitor IgG trough level to maintain low normal range
- Acute idiopathic thrombocytopenia purpura (ITP)
  - Persistent or potentially life-threatening hemorrhage with platelet levels less than $50x10^9$/L
  - IVIG is used when the patient is unresponsive to corticosteroid treatment and/or RhIG, or when these therapies are contraindicated (e.g., Rh-negative or splenectomized patient)
- Chronic ITP
  - Persistent or potentially life-threatening hemorrhage with platelet < 50×10^9/L.
  - IVIG is used when the patient is unresponsive to corticosteroid treatment and/or RhIG, or when these therapies are contraindicated (i.e., Rh-negative or splenectomized patient)
- CLL patients with hypogammaglobulinemia with recurrent sinopulmonary infections unresponsive to antibiotics
- Allogeneic stem cell or bone marrow transplantation
- Acute and chronic inflammatory demyelinating polyradiculoneuropathy (CIDP)
- Idiopathic or associated with monoclonal gammopathy of undetermined significance (MGUS), including Guillain Barre Syndrome (GBS)
- Autoimmune neuropathies (including multi-focal motor neuropathy with conduction block, anti-myelin associated glycoprotein (MAG) sensory-motor neuropathy, radiculoplexus, and autoimmune autonomic neuropathy
- Myasthenia gravis: acute exacerbation and prethymectomy
- Kawasaki's disease

To address this issue, the Marshfield Clinic set out to designate all of the IVIG supply within our clinical areas and sterile product production facilities to a specific patient for a specific infusion date. In doing so, we have been able to limit access to IVIG for those patients that are within our protocol guidelines, and therefore have improved our control over our IVIG inventory.

Setting A Goal

Because of our inability to predict the future supply of IVIG, the Marshfield Clinic's drug evaluation committee was asked to evaluate the potential supply assurance criteria for IVIG use in the system. The pharmacy department was charged with developing a protocol that matched our use to available supplies. Pharmacy's goal was to ensure that patients requiring IVIG as an essential part of their care would have the blood product available to them at the time of their appointments.

Developing Standards of Use

In order to improve our management of the IVIG supply, our medical director sent a communication to providers via e-mail recommending:

- a continuing conservative approach to use of IVIG
- dose reductions and/or dosing interval increases be implemented when possible
- alternate therapies, when possible, for patients not currently on IVIG, and for patients whose benefits from current IVIG are questionable

Specialty providers, including allergy, dermatology, immunology, infectious disease, neurology, oncology/hematology, and rheumatology, were surveyed via e-mail to determine which diagnoses reflected the greatest need. Using a list of diagnoses provided in the first edition of the British Columbia Provincial Blood Coordinating Office's "IVIG Utilization Management Handbook" (www.bloodlink.bc.ca/images/stories/ivighandbook1.pdf), we separated the clinical criteria into two categories: Level I and Non-Level I indications (See Table 1 for Level I indications.). Level I indications have the most convincing evidence of benefits resulting from IVIG therapy. Non-Level I indications are medical conditions for which IVIG is considered a second-line treatment option or for which there is not sufficient evi-

dence of benefit with IVIG therapy. Our specialists identified very few discrepancies between their practices and the supplied list of Level I and Non-Level I indications. Discrepancies would have been resolved by our medical director and the drug evaluation committee.

Supply Assurance Protocol

To better manage our IVIG supplies, pharmacy worked with the Marshfield Clinic's physicians to develop the following supply assurance protocol:

1. The sterile products pharmacist sends a paper form (See Figure 1.) listing Level I IVIG indications to the provider for each dose of IVIG for each existing patient known to be receiving IVIG.
2. If the patient does not have a Level I diagnosis, the provider is required to complete the Non-Level I indication form (See Figure 2.), explaining the necessity for IVIG use and the alternative therapies that have been tried.
3. Non-Level I Indications require the approval of the chairperson of the drug evaluation committee, or his designee. Once the provider completes the Non-Level I form, the chairperson or designated reviewing physician determines whether or not IVIG is an appropriate treatment for that patient, and communicates that information to the requesting provider. Should the Non-Level I request be approved, the IVIG order is sent to pharmacy for processing.
4. Approved forms are also sent to the director of pharmacy purchasing and supply to ensure that our IVIG supply is restocked.

By designating all of the IVIG supply within our clinical areas and sterile product production facilities to a specific patient for a specific infusion date, we have been able to limit access to IVIG for only those patients that are within our protocol guidelines. Because of the uncertain nature of the national IVIG supply chain, the relative ease of our system, and the positive response from providers and pharmacy staff, we have continued to utilize this protocol even after our GPO was able to obtain a new monthly IVIG allocation on our behalf.

Figure 1. Level I Indication Form

Figure 2. Non-Level I Indication Form

The Marshfield Clinic uses its Level I and non-Level I request forms to manage its IVIG supply

Database for Tracking IVIG Supply

The efficiency of our protocol was greatly enhanced by an Access database that pharmacy developed internally with the help of our data analyst. It has the following capabilities:

1. The database tracks IVIG supply on hand and its location in the system. Once the prescribing physician submits their Level I or approved Non-Level I form to one of our nine sterile production pharmacies, a pharmacist manually enters the information from the form into the database. The central pharmacy supply staff is then able to access that information, and indicates in the database what IVIG product will be dispensed, the sterile products pharmacy to which it will be shipped, and when it will ship. Once the IVIG has been administered, the pharmacist makes note of the event in the database, completing the documentation and tracking of that dose.
2. The database tracks patient-approval date ranges and sends automatic, electronic notifications to pharmacy when a new approval is needed.
3. The database tracks upcoming infusion dates, which are viewable by pharmacists in our sterile production facilities and in central supply.
4. The database automatically requests IVIG from central supply for various locations based on upcoming infusion dates.
5. Via a report generated by pharmacy, the database allows our P&T committee and director of sterile products to track and trend usage by provider, indication, and dose. So far, we have been fortunate in that no provider's history has shown over-usage trends. However, should this situation arise, that provider's Non-Level I forms would be reevaluated to determine the necessity of those doses.

The IVIG tracking database does not yet interface with other IT systems in the Marshfield Clinic system, as other IT projects have currently taken precedence.

Conclusion

The development of a supply assurance protocol for IVIG has led to a substantial decrease in the monthly utilization of IVIG in the Marshfield Clinic system and has helped assure that IVIG is available for patients that require it as an essential part of their medical care. Our current level of IVIG usage has been reduced by approximately 30% since implementing the protocol.

The most important factor in setting up an effective IVIG supply assurance protocol is buy-in and support from both providers and staff. This is best accomplished by making sure that all staff and providers have a voice in the development of the protocol and understand the intended purpose. In addition, it is essential to have a physician that champions the protocol, regularly uses IVIG, and is respected by his or her colleagues to make the final determination on which patients and what doses are appropriate for non-Level-I requests. ■

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Photo courtesy of Baxter Healthcare Corporation

WHERE TO FIND IVIG:

Vendor	Reader Service Number
Baxter Healthcare Corporation www.baxter.com	52
CSL Behring www.cslbehring.com	53
Grifols USA www.grifolsusa.com	55
Octapharma USA www.octapharma.com	56
Talecris Biotherapeutics www.talecris.com	58