Student Driven Intravenous Immune Globulin Dosing using Ideal Body Weight

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PURPOSE

Memorial Hospital at Gulfport (MHG) approved a system-wide policy to promote dosing of Intravenous Immune Globulin (IVIG) according to Ideal Body Weight (IBW) instead of Actual Body Weight (ABW) in the outpatient setting due to national drug shortage.

Rationale:

- In this era of rising healthcare costs and drug shortages, restricting IVIG to the lowest effective dose will reduce unnecessary costs and stretch very limited supplies of IVIG as well as allow hospitals to treat more patients in need of therapy.

Supporting Evidence and Potential Benefits:

- IVIG is a human-sourced biologic molecule with a small volume of distribution. The pharmacokinetic profile of IVIG suggests the drug will not distribute into adipose tissues and that dosing by IBW may be appropriate. Limited literature suggests no difference in patient outcomes between those dosed using IBW compared to ABW.[1-5]

Dosing by IBW may:

- Decrease mean per-patient use of IVIG by approximately 20%
- Allow treatment of patients previously unable to access IVIG therapy due to drug shortages
- Reduce the risk of harms associated with high-dose IVIG therapy
- Reduce mean per-patient cost of IVIG therapy

METHODS

Inclusion Criteria:

- Patients receiving outpatient IVIG therapy at MHG between 3/3/2020 and 9/3/2020.

Methods:

- Data was obtained from electronic medical records.

Mechanism:

- Pharmacy students are responsible for running a weekly report of the outpatient infusion clinic schedule for the upcoming week. Each patient scheduled for IVIG treatment is evaluated for possible weight-based dosage changes. Students also review patient charts for recent lab results and evidence of therapeutic failure. If a dosage adjustment is appropriate, students verbalize the recommendation to the preceptor and document dose adjustments via interventions.

RESULTS

Total Patients Screened for Adjustment: 31

Total Patients with Dosage Adjustments: 11

Table 1: Dosage Adjustments per Eligible Patient

Patient #	Original Dose	Modified Dose	Savings Per Dose	No. of Doses Adjusted	Cumulative Savings
1	30g	20g	10g	1*	10g
2	25g	20g	5g	15	75g
3	45g	40g	5g	1	5g
4	35g	30g	5g	4	20g
5	20g	15g	5g	9	45g
6	80g	60g	20g	7	140g
7	35g	20g	15g	4	60g
8	35g	30g	5g	1*	5g
9	50g	40g	10g	15	150g
10	40g	25g	15g	2*	30g
11	25g	20g	5g	5	25g

*Dosage adjustments were reversed by provider after administration of stated doses.

Total Savings over 6 months: 565 grams

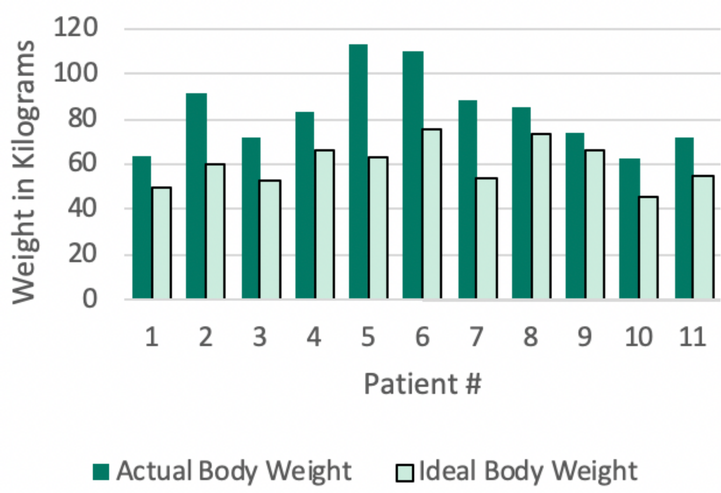


Figure 1: Actual body weight compared to ideal body weight in patients with dosage adjustments.

CONCLUSIONS

- Other approaches that may help mitigate the shortage of IVIG but may not be advantageous to patients, include:
  - Dose reduction by a prespecified percentage
  - Allowing treatment on a first come first serve basis
  - Screening patients and allowing treatment for life-sustaining conditions only
- Considering the pharmacokinetic profile of IVIG, using IBW to dose therapy enables the hospital to ration IVIG while maintaining therapeutic levels in each patient.
- The use of IBW dosing allowed MHG to allocate an extra 565 grams of IVIG over a 6-month time frame that was then used to treat patients who may otherwise have been unable to receive treatment.
- Pharmacy students will continue to monitor patients receiving IVIG for long term effectiveness, including treatment failures, as well as safety and the reduction of side effects related to reduced doses.
- The use of IBW dosing for IVIG has the potential for expansion to inpatient use for indications such as idiopathic thrombocytopenic purpura (ITP) and other autoimmune conditions.

IMPORTANT INFORMATION

Obese patients on chronic IVIG therapy may receive a reduced dose of their maintenance IVIG and should be monitored closely for treatment efficacy. Providers may respond to any treatment failure with an increase in the mg/kg dose prescribed.

REFERENCES

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