Adverse Drug Reactions and Nursing Competence in Immunoglobulin Therapy: Results of the IgNS Patient 360 Longitudinal Survey

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Abstract

Introduction
Adverse drug reactions (ADRs) remain a key challenge in immunoglobulin (Ig) therapy, influencing safety, tolerability, adherence, patient outcomes, and infusion experience. This 2025 Patient 360 Longitudinal Survey analysis examines ADR patterns by route of administration (IVIg vs SCIg/fSCIg). It highlights the impact of nursing practices, vital sign monitoring, infusion rate management, pump troubleshooting, and follow-up on the reduction of preventable ADRs, which remains a key

Methods
This exploratory, confidential, and deidentified IgNS Patient 360 Longitudinal Survey of patients receiving Ig was distributed to IgNS patient-subscribers via a HIPAA-compliant survey tool between March and July 2025. An interim analysis was conducted among 309 respondents receiving intravenous immunoglobulin (IVIg), subcutaneous immunoglobulin (SCIg), or facilitated SCIg (fSCIg) in home and infusion center settings. ADRs were captured from patient responses to the survey, including systemic and infusion-site reactions, infusion rate issues, and device-related problems. Analyses compared ADR patterns within IVIg and SCIg/fSCIg cohorts and examined associations with nursing practices and competence using regression models.

Results
Of 309 respondents, 52.5% reported a primary immunodeficiency, 9.6% chronic inflammatory demyelinating polyneuropathy, 4.3% myasthenia gravis, and 5.9% idiopathic inflammatory myopathies.

Among IVIg respondents (n=133), 95% received premedication. Of those, 84% reported treatment-related systemic ADRs (46% mild, 38% moderate). Nurse competency correlated with fewer pump errors (p<.05), fewer unnecessary rate increases (p<.001), consistent vital sign monitoring, encouragement of hydration, and follow-up.

Among SCIg respondents (n = 176), premedication did not reduce the severity of local site ADRs. Of those premedicated, 97% reported infusion-related local ADRs (66% mild, 30% moderate, 1% severe). Over 75% were satisfied or very satisfied with SCIG education, which correlated with fewer ADRs. Nurse competency was inversely associated with pump errors (p<.05) and improved issue resolution.

Discussion
This analysis demonstrates that the safety and infusion success of IVIg and SCIg/fSCIg are strongly influenced by the competence of the nurse and patient education, while premedication had a surprisingly low impact on the reduction of ADRs. With IVIg, systemic ADRs persisted despite premedication, but higher competency was associated with fewer pump errors, reduced rate escalations, and greater consistency in monitoring, hydration support, and follow-up. With SCIg/fSCIg, premedication did not reduce the frequency or severity of local site ADRs, yet competency in pump management improved error resolution. Importantly, patients who reported greater satisfaction with SCIg education experienced fewer ADRs, highlighting the role of education in shaping safety outcomes and treatment experience. Together, these findings emphasize that targeted nursing practices and robust patient teaching are critical to optimizing infusion safety across both IVIg and SCIg/fSCIg therapies.

Conclusion
IVIg and SCIg/fSCIg patients experience distinct ADR profiles. IVIG is primarily associated with systemic ADRs, which can be mitigated through evidence-based nursing practices such as hydration, monitoring, individualized infusion rates, and post-infusion follow-up. SCIg/fSCIG ADRs are primarily local reactions that can be improved through patient training, technique monitoring, and pump management. Across modalities, nursing interventions in monitoring, rate management, and education reduce preventable ADRs and enhance patient safety, underscoring the need for standardized, competency-based training and follow-up protocols to lower ADR burden and to improve satisfaction.

Introduction

Adverse drug reactions (ADRs) pose a significant challenge in immunoglobulin (Ig) therapy, impacting treatment safety, tolerability, and the overall patient experience. While Ig therapy is an essential, often lifelong treatment, systemic and local ADRs impact overall tolerability and safety, can reduce adherence and negatively impact the infusion experience and quality of life. Nursing practices, such as vital sign monitoring, infusion rate management, pump troubleshooting, hydration support, and structured follow-up, have been proposed to reduce these risks. However, few studies have linked nursing competency directly to measurable differences in ADRs. This study uses the IgNS Patient 360 Longitudinal Survey to examine ADR patterns in intravenous immunoglobulin (IVIG), subcutaneous immunoglobulin (SCIG), and facilitated SCIG (fSCIG), and the impact of nursing competence on safety outcomes.

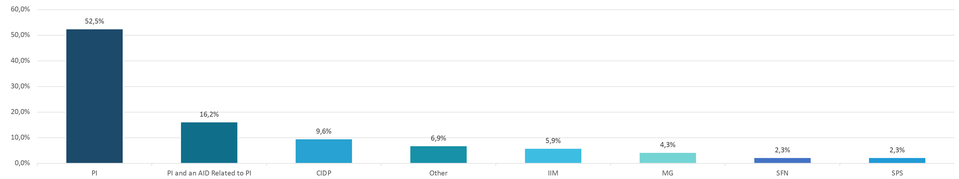
Methods

This exploratory study on adverse drug reactions and nursing practices is based on an analysis of data from the IgNS Patient 360 Longitudinal Survey. This confidential survey, administered annually using a HIPAA-compliant survey tool, was administered between March and July 2025. In total, 309 respondents who received intravenous immunoglobulin (IVIG), subcutaneous immunoglobulin (SCIG), or facilitated subcutaneous immunoglobulin (fSCIG) in home and infusion center settings were included in this survey. Both adverse drug reactions (ADRs) and nursing practices were captured through patient responses to the survey, including systemic and infusion-site reactions, infusion rate problems, and device issues. Analyses compared ADR patterns within IVIG and SCIG/fSCIG cohorts and examined associations with nursing practices and competence using regression models.

Results

Of the 309 respondents, 52.5% had primary immunodeficiency (PI), 9.6% had chronic inflammatory demyelinating polyneuropathy (CIDP), 4.3% had myasthenia gravis (MG), and 5.9% had idiopathic inflammatory myopathies.

Figure 1: Primary Reason for Ig Treatment



In the IVIG subgroup (n = 133), 95% received premedication, and 84% of those reported systemic adverse reactions (46% mild, 38% moderate). Perceived nurse competence was associated with fewer unnecessary infusion rate increases (β = −1.9, t = −4.4, p < .001), higher frequency of vital sign monitoring (β = 2.37, t = 4.54, p < .001), more follow-up calls after infusion (β = 4.4, t = 4.42, p < .001), and greater likelihood of facilitation of pre-infusion hydration (log odds = 2.66, t = 3.62, p < .001).

Figure 2: IVIg Systemic ADR Symptoms (with Premedication)

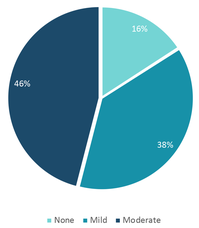


Figure 3: Perceived Nurse Competence and Nursing Infusion Practices

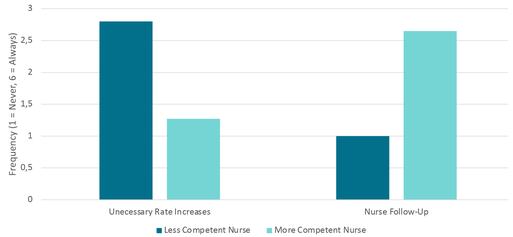


Figure 4: Perceived Nurse Competence and Nursing Infusion Practices

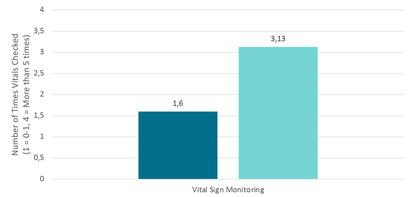
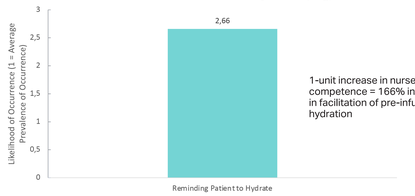


Figure 5: Perceived Nurse Competence and Likelihood of Facilitation of Pre-infusion Hydration (IVIg)



In the SCIG/fSCIG subgroup (n = 176), premedication was not associated with a reduction in local site adverse reaction severity. X% of SCIG/fSCIG-treated patients reported receiving pre-medication to mitigate local ADRs. Local ADRs were reported by 97% of those who received premedication (66% mild, 30% moderate, 1% severe). More than 75% respondents reported being satisfied or very satisfied with SCIg education provided by their nurse. Patient satisfaction with SCIg education was significantly associated with patient confidence in the nurse who provided the training (β = .73, t = 11.62, p < .001). Nurse competence was inversely associated with pump errors (log odds = .14, z = -2.16, p < .05); a one-unit increase in nurse competence was associated with a 32% decrease in pump errors, and was positively associated with troubleshooting success.

Figure 6: SCIg/fSCIg Local ADR Symptom Severity (with Premedication)

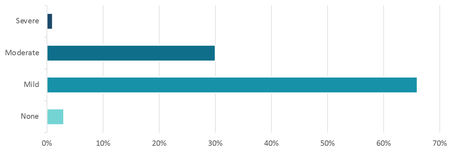
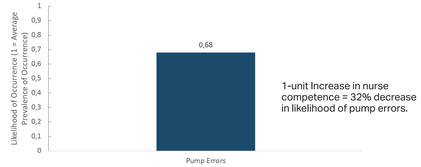


Figure 7: Perceived Nurse Competence and Likelihood of Pump Errors



Discussion

The findings from this analysis reinforce that the competence of the nurse strongly shapes infusion outcomes in immunoglobulin therapy. Across IVIg and SCIg/fSCIg-treated patient respondents, competence and consistency in clinical practices had a direct impact on safety, treatment experience, and patient confidence.

In the IVIg cohort, systemic ADRs remained common despite nearly universal premedication. However, higher nursing competency significantly improved the infusion experience through fewer unnecessary rate increases, consistent vital sign monitoring, structured follow-up, and greater emphasis on hydration. These associations underscore that proactive, evidence-based nursing practices—not premedication alone—drive safer and more tolerable infusions.

Within the SCIg/fSCIg cohort, premedication was not associated with a reduction in the severity of local reactions. Instead, the data highlight the importance of nurse-led education, infusion equipment, and training in infusion techniques. Over 75% of patients reported high satisfaction with their SCIg education, and this satisfaction was closely linked to confidence in the nurse providing training (β = .73, p < .001). Additionally, higher nurse competence correlated with a 32% reduction in pump errors (p < .05) and greater success in troubleshooting infusion challenges.

Taken together, these findings suggest that nursing competence, combined with structured and systematic patient training and education, enhances infusion safety and has a positive impact on patient confidence, technique reliability, and continuity of therapy.

Conclusion

IVIg and SCIg/fSCIg differ in dosing, administration, safety, tolerability, and various infusion interventions, requiring a high degree of nursing competence. Across all treatment types, the quality of nursing practices was critical to maintaining safety. The widely used pharmacologic premedication strategies continue to show limited effect in our data. In contrast, high-quality, competency-based monitoring and follow-up, along with appropriate interventions, do have a positive impact on patient outcomes. Additionally, patient education programs aimed at mitigating the ADR burden, enhancing safety, and improving patient satisfaction were also significant in strengthening infusion safety and overall infusion experience. Therefore, achieving and maintaining the highest level of nursing competence is imperative to improved Ig therapy practices and patient outcomes.

Disclosures

The 2025 Patient 360 Longitudinal Survey data analysis is supported by an educational grant from GC Biopharma.