A CASE OF ONCE PER WEEK SCIG IN A TOTAL OF 36 MINUTES

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Introduction:

We present the case of a patient successfully transitioning from 7 hour IVIg with rate shock, poor venous access, and infiltration; to <20-minute weekly self-administered SCIg without site reactions.
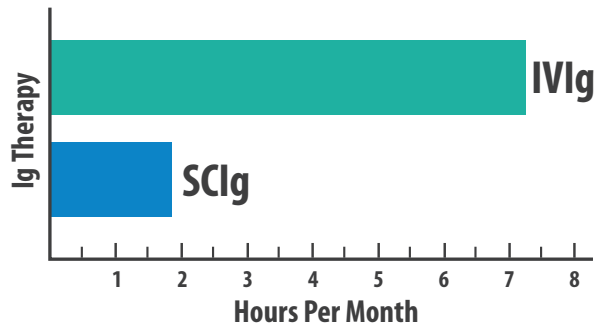
Objective:

To describe the steps in one case toward an optimal personalized SCIg delivery.

Methods:

Patient provided infusion records from 2007 to present, augmented by subjective history.

Results:

Patient on a mechanical pump and rate-control tubing aborted first weekly SCIg after 5 hours with local site reactions. Longer 9mm needles and faster flow tubing were selected.

By week 3 the patient recorded infusing 8gm, 50mL (16%), using an F275 flow tubing set, in a 3 hour infusion. Severe site reactions were resolved through dry needle insertion and non-rotated infusion sites. With serum IgG rising, dose was gradually reduced to 6.8gm 40mL by week 12. Rate was increased gradually (F600, F1200, F2400). The patient adopted a four site 26g needle set and reported reduced infusion time with more comfortable insertion and removal.

Patient now consistently achieves 11 to 20 minutes with 6gm, 30mL (20%) with no reactions. Patient experiences a setup/cleanup time of 16 minutes. 25 July, 2014, patient infused 6gm/30mL 20%, in 11 minutes using a high-speed flow tubing and 12mm-length needles. Total monthly commitment to therapy is 1 hour 48 minutes.

Conclusion:

Many patients miss an important opportunity to pursue personalized SCIg delivery. An SCIg decision support algorithm is in development to assist clinical providers in administration troubleshooting. Further study might both inform a standard of practice to optimize therapy to individual patient needs, and quantify the impact of this process on patient success and perception of therapy.

Constant Pressure Pumps use flow rate tubing to control the infusion. Each F-number provides a different level of flow restriction, which, when combined with the viscosity and volume of the medication, provides a predicted infusion rate and time, dependent on patient site absorption.

Needles and site irritation

Needle length should be determined according to how much sub-q tissue a patient has. 9mm needles tend to work well with average sized patients; while 6mm needles may be needed for very thin people and children. Similarly, larger patients may require 12 or 14mm needles.
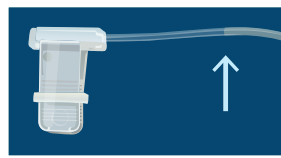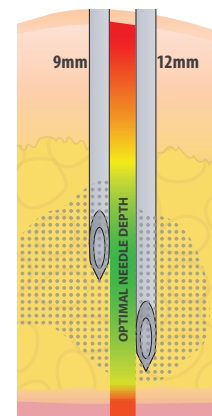
To minimize site irritation, it is recommended to insert the needles dry. When priming the tubing, one should try to stop flow about two inches short of the needle(s).

lancet cut

tricuspid incision
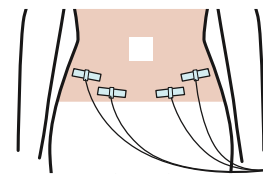*less tearing, faster healing*

Backcut needle tip design, which makes a tricuspid incision, will result in less tearing of the skin.
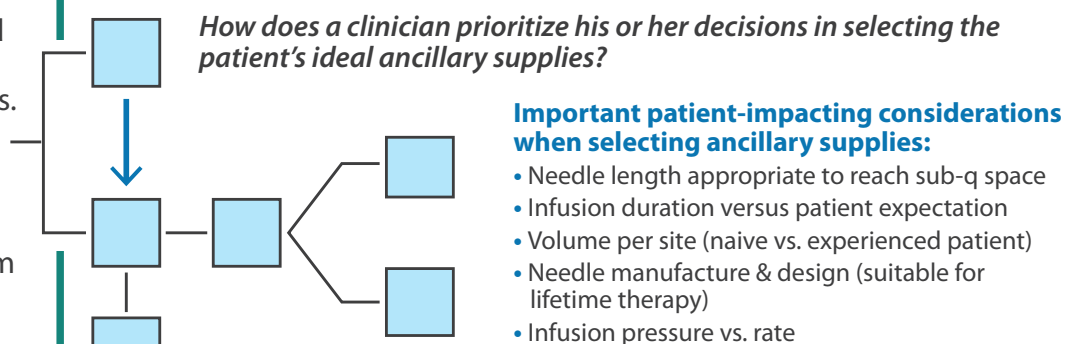
1 needle 4X per week vs 4 needles 1X per week

Changing the infusion frequency and offering self-administration gives patients choices, empowering the patient through greater control of his/her therapy.

In May of 2009, this patient was given the opportunity to try infusing 10ml into one site on four different days of the week, as opposed to 4 sites simultaneously. With the new method, the patient reported increased site reactions, and increased time and waste in setup and cleanup. The patient returned to once per week infusions of 40mL, with a single 60ml syringe, 4-site needle set, F1200 flow tubing, and a mechanical syringe pump.

SCIg decision support algorithm

How does a clinician prioritize his or her decisions in selecting the patient's ideal ancillary supplies?

Important patient-impacting considerations when selecting ancillary supplies:
• Needle length appropriate to reach sub-q space
• Infusion duration versus patient expectation
• Volume per site (naive vs. experienced patient)
• Needle manufacture & design (suitable for lifetime therapy)
• Infusion pressure vs. rate

There are hundreds of decisions which can affect patient outcomes on sub-q therapy.

Duff et. al. introduced an algorithm in 2013 for addressing "technical or clinical complaints at the local infusion site", essential with SCIG "because infusion-site issues are the primary adverse reactions experienced with SCIG therapy." The authors are building on this algorithm with a tool to simplify complex troubleshooting of factors affecting the local site.

Support Studies:
Younger ME, Aro L, Blouin W, Duff C, Epland KB, Murphy E, Sedlak D; Nurse Advisory Committee Immune Deficiency Foundation. Nursing guidelines for administration of immunoglobulin replacement therapy. J Infus Nurs. 2013 Jan-Feb;36(1):58-68.

Duff C, Ochoa D, Riley P, Murphy E, Zampelli A. Importance of ancillary supplies for subcutaneous immunoglobulin infusion: management of the local infusion site. J Infus Nurs. 2013 Nov-Dec;36(6):384-90.

Gardulf A, Hammarström L, Smith CI. Home treatment of hypogammaglobulinaemia with subcutaneous gammaglobulin by rapid infusion. Lancet. 1991 Jul 20;338(8760):162-6. Accreditation. UK Primary Immunodeficiency Network. 2014. [http://ukpin.org.uk/home/accreditation.html]

Chapel H, Gardulf A. Subcutaneous immunoglobulin replacement therapy: the European experience. Curr Opin Allergy Clin Immunol. 2013 Dec;13(6):623-9.

About Immunoglobulin Certified Nurse (IgCN) Credentialing. IgNS Immmunoglobulin Nursing Society. 2014. [https://www.ig-ns.org/ig-nursing-national-certification-program]

Perspective: Standard of practice to optimize therapy to individual patient needs

1991
Study of 3232 rapid sub-q administrations: "administration is very easy to learn and is appreciated by the patients" by Hammarstrom, Gardulf and Smith.

2013
IDF's Nurse Advisory Council "Nursing Guidelines for Administration of Immunoglobulin Replacement Therapy" published in JINS.

2013
Chapel and Gardulf present concepts on patient education and training for SCIg self-administration.

1990   2006   2008   2010   2012   2014

2007
UK accreditation scheme for PID centers established to develop "common approaches to diagnosis, care, support and management" through "consensus standards of practice and service organization".

2014
Immunoglobulin Nursing Society's detailed standards of Clinical Administration become a part of IgCN certification in the United States.

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