Clinical evidence demonstrating the safety of subcutaneous immunoglobulins

Bibliographic reference	Study type	Study aim	Number of patients	Patient characteristics	Intervention	Outcome measures	Organisation/ Contacts
Chapel H.et al The comparison of the efficacy and safety of intravenous versus subcutaneous Ig replacement therapy. Clin.Immunol.2000;20:94-100	An international, multicenter, open label, crossover study.	To compare the efficacy of immunoglobulin replacement therapy given intravenously versus subcutaneously to prevent infections in patients with primary antibody deficiency syndromes.	40		Patients were randomized to receive either subcutaneous or intravenous immunoglobulin replacement therapy for 1 year. In the second year, patients were switched to the alternative treatment, enabling patients to act as their own controls.	There are no significant differences in efficacy or adverse reaction rates between immunoglobulin replacement therapy given subcutaneously or intravenously.	Department of Immunology, John Radcliffe Hospital, Oxford, England.
Gardulf A. et al Subcutaneous immunoglobulin replacements in patients with primary ID: Safety and costs. Lancet 1995; 345: 365-69		Collect information on the frequency of adverse systemic reactions during subcutaneous therapy, the occurrence and intensity of tissue reactions at the infusion sites, and serum IgG changes and compare costs between the different replacement regimes.	165	69 women, 96 men, aged 13-76 years with primary hypogammaglobulinaemia or IgG-subclass deficiencies	Data were compiled from questionnaires filled in by the patients and from their medical records.	Subcutaneous administration of IgG is a safe and convenient method of providing immunoglobulins. It was possible to reach serum IgG concentrations similar to those by the intravenous therapy and it was found that the method could also be used successfully in patients with previous severe or anaphylactoid reactions to intramuscular injections.	Department of Clinical Immunology, Karolinska Institute, Huddinge University Hospital, Sweden

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Gardulf A, Nicolay U, Asensio O, Bernatowska E, Bock A, Carvalho BC, Granert C, Haag S, Hernandez D, Kiessling P, Kus J, Pons J, Niehues T, Schmidt S, Schulze I, Borte M. Rapid Subcutaneous IgG Replacement Therapy is Effective and Safe in Children and Adults with Primary Immunodeficiencies-. J Clin Immunol. 2006 Apr 26; [Epub ahead of print]	A Prospective, Multi-National Study	Evaluate (i) IgG levels when switching patients from intravenous IgG (IVIG) infusions in hospital to subcutaneous (SCIG) self-infusions at home using the same cumulative monthly dose, (ii) protections against infections, and (iii) safety of a new, ready-to-use 16% IgG preparation.	60	16 children, 44 adults	All patients received IVIG therapy for >6 months at enrolment. Ten adults who had been on SCIG therapy for many years served as controls.	The SCIG administration route was safe. High IgG levels were easily maintained resulting in a very good protection against infections	Department of Laboratory Medicine, Section of Clinical Immunology, The Swedish Centre for Immunodeficiencies, Karolinska Institutet at Karolinska University Hospital Huddinge, Stockholm, Sweden. ann.gardulf@ki.se

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Ochs HD et al. Safety and efficacy of self-administered subcutaneous immunoglobulin in patients with primary immunodeficiency diseases.J Clin Immunol. 2006 May;26(3):265-73	open-label study	Investigate the efficacy and safety of a subcutaneously administered immunoglobulin preparation (16% IgG) in patients with PIDD	65		After their final IVIg infusion, 65 patients entered a 3-month, wash-in/wash-out phase, designed to bring patients to steady-state with subcutaneously administered immunoglobulin. This was followed by 12 months of weekly SCIg infusions, at a dose determined in a pharmacokinetic substudy to provide noninferior intravascular exposure. This resulted in a mean weekly dose of 158 mg/kg, calculated to equal 137% of the previous intravenous	We conclude that subcutaneous administration of 16% SCIg is a safe and effective alternative to IVIg for replacement therapy of PIDD.	Department of Pediatrics, University of Washington School of Medicine, Seattle, Washington, USA.
Gardulf A. et al. Immunoglobulin treatment for primary antibody deficiencies : advantages of the subcutaneous route. BioDrugs. 2007;21(2):105-16.	Review of international studies	Review treatment of PIDs with SCIG as Subcutaneous IgG (SCIG) therapy, using small portable pumps for once-per-week self infusions, has shown many advantages compared with the two other routes of administration				This review highlights findings from international studies and demonstrates that: (i) SCIG therapy is safe, with very few adverse effects; (ii) the therapy can be used for patients with previous adverse effects to intravenous administration of IgG; (iii) the therapy leads to high serum IgG levels and good protection against infections; (iv) the therapy facilitates home therapy, as the infusion technique is easy for children, adults and elderly people to learn and there is no need for venous access; (v) SCIG home therapy leads to significantly improved life situations for the patients; (vi) the SCIG home therapy regimen in particular reduces the costs of treatment.	Department of Laboratory Medicine, Section of Clinical Immunology, Karolinska Institute, Karolinska University Hospital, Huddinge, Stockholm, Sweden

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Gaspar J, et al. Immunoglobulin replacement treatment by rapid subcutaneous infusion. Arch Dis Child. 1998 Jul;79(1):48-51.		Long term intravenous immunoglobulin (IVIG) infusion is an effective treatment for children with immunodeficiencies, but can be complicated by poor venous access, systemic adverse reactions, and the need for frequent hospital admission. Rapid subcutaneous immunoglobulin (SCIG) infusion has been found to be effective in adults with primary immunodeficiency.		Twenty six children were treated with SCIG for a median period of two years (range six months to 3.5 years). Fifteen children had previously been treated with IVIG	Retrospective analysis showed that trough IgG concentrations while receiving SCIG were comparable with those while receiving IVIG during maintenance treatment. In severe hypogammaglobulinaemia, however, initial loading with SCIG or IVIG is probably indicated. During the treatment period there was no systemic adverse reaction nor severe reaction requiring admission to hospital. The subjective impression of all families was a significant improvement in the quality of life.	This preliminary experience with SCIG in children suggests that it is an effective, convenient, and well tolerated alternative to intravenous treatment. Larger prospective studies are required to determine the place of SCIG in the management of immunodeficiencies	Department of Immunology, Great Ormond Street Hospital for Children, NHS Trust, London, UK.