Atlantic Clinical Indications and Criteria for Intravenous and Subcutaneous Immunoglobulin (IVIG/SCIG)

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1. Background

Since 2001, the use of intravenous/subcutaneous immunoglobulins (IVIG/SCIG) in Canada increased at a steady rate of five to ten percent each year. Over the past five years, in the Atlantic Provinces, utilization has increased by 45% at a cost of $29 million in 2016/17. IVIG/SCIG is priced at $55-75 per gram and can cost about $25,000 to $100,000 per patient per year, depending on the amount and frequency per treatment. In addition, there have been concerns over the appropriateness of the use of IVIG/SCIG. In 2003 the Atlantic Deputy Ministers determined that an Atlantic Collaborative, to assess and develop interventions to ensure appropriate IVIG/SCIG utilization, would be of benefit. The Nova Scotia Provincial Blood Coordinating Team (NSPBCT) acts as the secretariat for the Atlantic collaborative. It was agreed that the Atlantic collaborative would provide professional leadership in identifying, designing and implementing cost-effective IVIG/SCIG utilization management initiatives to achieve optimal patient outcomes. In 2007 The National Advisory Committee on Blood and Blood Products (NAC) developed guidelines on the use of IVIG for the most common Neurological and Hematological indications. In 2010, NAC also developed guidelines for the use of IVIG/SCIG in Solid Organ Transplant and Primary Immune Deficiencies. During 2016, the following list of indications, along with any pre-requisites/criteria required for the release of product to access publicly funded IVIG and SCIG were developed, by the Atlantic Collaborative, using the NAC recommendations along with expert clinical advice from 307 Atlantic physicians in adult and pediatric hematology, neurology, immunology, rheumatology, dermatology, infectious disease, solid organ transplant, internal medicine, family medicine, obstetrics and gynecology, oncology and emergency medicine.

2. Introduction

Intravenous/subcutaneous immunoglobulins (IVIG/SCIG) are blood products made from pooled human plasma and as such, are not risk-free to patients. In appropriately selected patients and clinical settings, IVIG/SCIG therapy can be lifesaving. However, serious adverse reactions can occur, such as: hemolysis, renal failure, aseptic meningitis, anaphylaxis and thromboembolic events. Patients must be monitored throughout their treatment to confirm efficacy of the product and that the desired clinical outcomes are achieved.

IVIG/SCIG is increasingly prescribed for unlicensed conditions; in some conditions there is limited or no evidence-based research to support use. Efforts must be made to ensure that IVIG/SCIG is provided by physicians only where evidence suggests that it is the most appropriate therapy. To help limit non-evidence based use of IVIG/SCIG and to mitigate unsustainable increase in utilization in the Atlantic Provinces, the Atlantic Deputy Ministers of Health are endorsing the implementation of this IVIG/SCIG utilization management strategy. This strategy will support consistency in access to IVIG/SCIG across the Atlantic Provinces by building on the existing process and introducing new measures. Adherence to this strategy will address issues of non-evidence based product utilization, appropriate dosing and duration of treatment. Each order will be reviewed prior to dispense of product to ensure any pre-requisites have been met, as well to confirm that the dosing, frequency and duration of treatment meet the indications and criteria for use. In the event of an incongruity, the ordering physician will be contacted and discussion ensue regarding the discrepancy. If the order is outside the parameters of the guideline, product will not be issued. If the ordering physician continues to support this variation, he or she will be asked to discuss the case with a clinical expert in the specialty.

Making the product available for patients with medical conditions where there is evidence of clinical efficacy is a primary objective of this strategy as supply may not be able to meet demand without control points in place.

Orders deemed to be **urgent** will be dispensed immediately and the order will be reviewed after dispense. Any follow up required with the ordering physician will still occur. However, as patient safety is the main focus, the follow up will occur after the order has been dispensed. In the indications and criteria list, any indications deemed by the experts as having a possibility of urgency, are marked with an asterisk (*) and any additional criteria required is written in red.

For all indications, tailor to the lowest dose that maintains clinical efficacy.

For Primary Immune Deficiency patients, monitor IgG trough levels every 5 months to achieve a trough level of 7 – 10 g/L. **Clinical considerations:** The IgG trough generally stabilizes after 3 to 4 months of treatment with IVIG. After this time, regular monitoring of IgG trough levels allows adjustment of immunoglobulin dosage.

3. Indications and Criteria

3.1 Hematology

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Adult Hematology	**Indicated Conditions**		
	Immune Thrombocytopenia (ITP)*	Patient must meet 1 of the following 3 criteria: 1. Major bleeding and platelets less than 50 x 10^9/L ***OR*** 2. Failed to respond to steroids after 3 or more days ***OR*** 3. To produce an increase in platelet count to a level considered safe	**Acute:** 1 g/kg per day for 2 consecutive days **Chronic:** 1-2 g/kg no more frequently than every 2 weeks
	Pregnancy Associated ITP*	Patient must meet 1 of the following 3 criteria: 1. There is major bleeding ***OR*** 2. Platelet counts falls below 10 x 10^9/L anytime in the pregnancy ***OR***10-30 x 10^9/L during the second or third trimester ***OR*** 3. Rapid elevation of platelets required before delivery	1 g/kg per day for 2 consecutive days
	Post Transfusion Purpura (PTP)*	No criteria are required other than a diagnosis of PTP	1 g/kg repeated if necessary
	Possibly Indicated Conditions		
	Acquired Hemophilia with Factor VIII Inhibitor*	Order must be in consultation with a Hematologist	2 g/kg divided over 2 to 5 days
	Factor XIII Inhibitor*	Order must be in consultation with a Hematologist	2 g/kg divided over 2 to 5 days
	Secondary Immunodeficiency	Order must be in consultation with a Hematologist	0.4 g/kg every 3 to 4 weeks
	Warm Autoimmune Hemolytic Anemia	Patient must be resistant to steroids and exhibit symptomatic anemia	Up to 2 g/kg

*** May be considered URGENT if notified by ordering physician as such**

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Pediatric Hematology	**Indicated Conditions**		
	Fetal Alloimmune Thrombocytopenia (FAIT)*	Patient must meet both of the following criteria: 1. Mother had a previously affected pregnancy ***OR*** has a family history of F/NAIT ***OR*** has been found to have platelet alloantibodies ***AND*** 2. Treatment is under the direction of a maternal fetal medicine center	1 g/kg per week throughout the pregnancy
	Neonatal Alloimmune Thrombocytopenia (NAIT)*	Treatment includes consultation with or is within a high-risk neonatal center	1 g/kg per day x 2 days
	Hemolytic Disease of the Newborn (HDN)*	Total serum bilirubin (TSB) rising despite intensive phototherapy	0.5 to 1 g/kg, with repeat dosing every 12-24 hours as necessary
	Immune Thrombocytopenia (ITP)*	Patient must meet 1 of the following 2 criteria: 1. Platelets less than 50 x 10^9/L ***AND*** either the presence of major bleeding or surgery required ***OR*** 2. Platelets less than 20 x 10^9/L ***AND*** treatment clinically indicated	0.8 to 1 g/kg, with a 2nd dose within 48 hours if the platelet count has not increased to above 20 x 10^9/L
	Neonates of Mothers with ITP*	Patient must meet 1 of the following 2 criteria: 1. Platelets less than 50 x 10^9/L ***OR*** 2. Imaging evidence of intracranial hemorrhage or other serious bleeding	1 g/kg daily for 2 days with a second dose of 1 g/kg if platelet count is still less than 30 x 10^9/L
	Possibly Indicated Conditions		
	Hematological Malignancy*	Patient must meet criteria number 1 and either criteria number 2 or 3 1. Acquired hypogammaglobulinemia **PLUS** 2. History of severe invasive or recurrent sinopulmonary infections ***OR*** 3. Registered on a multinational protocol which requires IVIG support	0.4 to 0.6 g/kg every 3 to 4 weeks
	Secondary Immunodeficiency*	Order must be in consultation with a pediatric Hematologist	0.4 g/kg every 3 to 4 weeks

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3.2 Neurology

<table>
<tr><th></th><th>Medical Condition</th><th>Pre-requisites</th><th>Dose/Frequency of Administration</th></tr>
<tr><td rowspan="5">Adult Neurology</td><td colspan="3">Indicated Conditions</td></tr>
<tr><td>Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)</td><td>Order must be in consultation with a Neurologist</td><td>2 g/kg divided over 2-5 days
Maintenance: 1 g/kg every 2 to 6 weeks
Tailor to the lowest dose that maintains clinical efficacy, usually 0.5-1g/kg q 4-8 weeks</td></tr>
<tr><td>Guillain-Barré Syndrome*</td><td>Patient must meet both of the following criteria:
1. IVIG is being given within 2 weeks of symptom onset
AND
2. Hughes Disability score of 3 or more or less than 3 with symptoms progressing

Hughes Disability Scale:<table><tr><th>Grade</th><th>Description</th></tr><tr><td>0</td><td>Healthy</td></tr><tr><td>1</td><td>Minor signs or symptoms, able to run</td></tr><tr><td>2</td><td>Able to walk 5 m independently</td></tr><tr><td>3</td><td>Able to walk 5 m with a walker, stick or one-person support</td></tr><tr><td>4</td><td>Bed or chair bound</td></tr><tr><td>5</td><td>Requiring assisted ventilation</td></tr></table></td><td>2 g/kg divided over 2-5 days</td></tr>
<tr><td>Multifocal Motor Neuropathy (MMN)</td><td>No criteria are required other than a diagnosis of MMN</td><td>2 g/kg divided over 2-5 days
Maintenance: 1 g/kg every 2 to 6 weeks</td></tr>
<tr><td>Myasthenia Gravis (MG)*</td><td>Patient must meet 1 of the following 3 criteria:
1. Acute exacerbation (myasthenic crisis)
OR
2. Optimization prior to surgery and/or thymectomy
OR</td><td>2 g/kg divided over 2-5 days every 4 to 6 weeks</td></tr>
</table>

		3. As maintenance therapy for moderate to severe MG in combination with immunosuppressive agents **May be considered urgent if patient is ventilated**	
	Possibly Indicated Conditions		
	Autoimmune Encephalitis: N-Methyl-D-Aspartate (NMDA)	Patient must meet both of the following criteria 1. Cared for in consultation with a Neurologist ***AND*** 2. Used in conjunction with immunosuppressives and/or plasmapheresis	2 g/kg divided over 2 to 5 days
	Autoimmune Encephalitis: Rasmussen's Encephalitis*	IVIG is used as a short term, temporizing measure	2 g/kg divided over 2 to 5 days
	Autoimmune Optic Neuropathy	Patient has failed or has contraindications to steroids	2 g/kg divided over 2 to 5 days
	Lambert-Eaton Myasthenic Syndrome (LEMS)	Order must be in consultation with a Neurologist	**Induction Dose:** 2 g/kg in 2 to 5 divided doses **Maintenance Dose:** 0.4 to 1 g/kg every 2-6 weeks
	Multiple Sclerosis (MS) Relapsing/ Remitting Only	Patient must meet 1 of the following 2 criteria: 1. Pregnant/immediate post partum period when other immunodmodulation is contraindicated ***OR*** 2. Relapsing/remitting MS who fail or have contraindications to standard immunomodulatory therapies	1 g/kg monthly with or without a 5 day induction of 0.4 g/kg daily
	Neuromyelitis Optica (NMO)	Patient has failed or has contraindications to plasma exchange and/or steroids	1-2 g/kg in 2 to 5 divided doses
	Paraneoplastic Cerebellar Degeneration	Patient must meet both of the following criterion: 1. Treated within 1 month of symptom onset ***AND*** 2. Used in conjunction with chemotherapy treatment	2 g/kg every 4-6 weeks
	Stiff Person Syndrome	Patient has failed or has contraindications to GABAergic medications	2 g/kg divided over 2 to 5 days every 4 to 6 weeks

* **May be considered URGENT if notified by ordering physician as such**

<table>
<tr><th></th><th>Medical Condition</th><th>Pre-requisites</th><th>Dose/Frequency of Administration</th></tr>
<tr><td rowspan="8">Pediatric Neurology</td><td colspan="3">Indicated Conditions</td></tr>
<tr><td>Guillain-Barré Syndrome*</td><td>Patient must meet both of the following criteria:
1. IVIG is being given within 2 weeks of symptom onset
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<tr><td>Myasthenia Gravis (MG)*</td><td>Patient must meet 1 of the following 3 criteria:
1. Acute exacerbation (myasthenic crisis)
OR
2. Optimization prior to surgery and/or thymectomy
OR
3. As maintenance therapy for moderate to severe MG in combination with immunosuppressive agents
May be considered urgent if patient is ventilated</td><td>2 g/kg divided over 2 to 5 days</td></tr>
<tr><td colspan="3">Possibly Indicated Conditions</td></tr>
<tr><td>Acute Disseminated Encephalomyelitis (ADEM)*</td><td>Patient failed to respond or has contraindications to corticosteroids</td><td>1 g/kg daily for 2 days every 4 to 6 weeks</td></tr>
<tr><td>Autoimmune Encephalitis: N-Methyl-D-Aspartate (NMDA)*</td><td>Patient must meet both of the following criteria
1. Cared for in consultation with a pediatric Neurologist
AND
2. Used in conjunction with immunosuppressives and/or plasmapheresis</td><td>1 g/kg daily for 2 days</td></tr>
<tr><td>Autoimmune Encephalitis: Rasmussen’s Encephalitis</td><td>IVIG is used as a short term, temporizing measure</td><td>2 g/kg daily for 2 days</td></tr>
<tr><td>Post-streptococcal Autoimmune Disorders: Pediatric</td><td>Order must be in consultation with a pediatric Neurologist</td><td>1 g/kg daily for 2 days</td></tr>
</table>

	Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections (PANDAS) and Sydenham's Chorea		

3.3 Immunology

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Adult Immunology	**Indicated Conditions**		
	Primary Immuno-deficiency*	Order must be in consultation with an Immunologist Monitor IgG trough level every 5 months to maintain 7 – 10g/L in most patients May be considered urgent if acute/severe infection	0.4 to 0.6 g/kg every 4 weeks
	Secondary Immuno-deficiency*	Patient has/had recent life threatening or recurrent clinically significant infection(s) related to low levels of polyclonal immunoglobulin May be considered urgent if acute/severe infection	0.4 to 0.6 g/kg every 4 weeks
	Possibly Indicated Conditions		
	Chronic Idiopathic Urticaria	Patient must meet both of the following criteria 1. Has failed to respond or has contraindications to high dose antihistamines ***AND*** 2. Failed to respond or has contraindications to Omalizumab (if covered)	**Induction dose:** 1 g/kg/day for 3 days **Maintenance dose:** 1 g/kg every 4 weeks

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Pediatric Immunology	**Indicated Conditions**		
	Primary Immuno-deficiency*	Order must be in consultation with an Immunologist May be considered urgent if acute/severe infection	0.3 to 0.6 g/kg every 4 weeks
	Secondary Immuno-deficiency*	Order must be in consultation with an Immunologist May be considered urgent if acute/severe infection	0.6 to 0.7 g/kg every 3 to 4 weeks

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3.4 Dermatology

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Adult Dermatology	**Indicated Conditions**		
	Scleromyxedema	Patient failed to respond or has contraindications to corticosteroids	0.4 g/kg/day for 5 consecutive days every 4 weeks
	Systemic Vasculitic Syndromes including Polyarteritis Nodosa and Livedoid Vasculopathy	Order must be in consultation with a Dermatologist	2 g/kg every 4 weeks
	Possibly Indicated Conditions		
	Chronic Idiopathic Urticaria	Patient must meet both of the following criteria 1. Has failed to respond or has contraindications to high dose antihistamines ***AND*** 2. Failed to respond or has contraindications to Omalizumab (if covered)	**Induction dose:** 1 g/kg/day for 3 days **Maintenance dose:** 1 g/kg every 4 weeks
	Dermatomyositis*	Patient must meet both of the following criteria 1. Has significant muscle weakness ***AND*** 2. Failed to respond or has contraindications to corticosteroids	2 g/kg divided over 2 to 5 days
	Necrobiotic Xanthogranuloma	Patient failed to respond or has contraindications to corticosteroids	2 g/kg every 4 weeks
	Pre-Tibial Myxederma	Patient failed to respond or has contraindications to intralesional and oral steroids	2 g/kg every 4 weeks
	Pyoderma Gangrenosum	Patient must meet both of the following criteria 1. Cared for in consultation with a Dermatologist ***AND*** 2. Failed to respond or has contraindications to systemic steroids	2 g/kg every 4 weeks
	Severe Forms of Autoimmune Blistering Diseases (Pemphigus vulgaris, Pemphigus foliaceus, Pemphigoid,	Patient must meet both of the following criteria 1. Disease is rapidly progressing ***AND*** 2. Failed to respond or has contraindications to systemic steroids	2 g/kg every 4 weeks

	Cicatricial Pemphigoid, Linear IgA disease, Epidermolysis bullosa acquisita, Pemphigoid gestationis)		
	Severe Lupus Erythematosus	Patient failed to respond or has contraindications to corticosteroids	2 g/kg every 4 weeks

∗ **May be considered URGENT if notified by ordering physician as such**

	Medical Condition	**Pre-requisites**	**Dose/Frequency of Administration**
Pediatric Dermatology	**Indicated Conditions**		
	Kawasaki Syndrome*	No criteria are required other than a diagnosis of Kawasaki Syndrome	2 g/kg given once If failure to respond to initial dose, a 2nd dose may be given at least 24 hours after the 1st dose
	Scleromyxedema	Patient failed to respond or has contraindications to corticosteroids	0.4 g/kg/day for 5 consecutive days every 4 weeks
	Systemic Vasculitic Syndromes including Polyarteritis Nodosa and Livedoid Vasculopathy	Order must be in consultation with a Dermatologist	2 g/kg every 4 weeks
	Possibly Indicated Conditions		
	Chronic Idiopathic Urticaria	Patient must meet both of the following criteria 1. Has failed to respond or has contraindications to high dose antihistamines ***AND*** 2. Failed to respond or has contraindications to Omalizumab (if covered)	**Induction dose:** 1 g/kg/day for 3 days **Maintenance dose:** 1 g/kg every 4 weeks

	Dermatomyositis*	Patient must meet both of the following criteria 1. Has significant muscle weakness ***AND*** 2. Failed to respond or has contraindications to corticosteroids	2 g/kg over 2 days
	Necrobiotic Xanthogranuloma	Patient failed to respond or has contraindications to corticosteroids	2 g/kg every 4 weeks
	Pediatric Atopic Dermatitis	Patient failed to respond or has contraindications to topical steroids and calcineurin inhibitors	2 g/kg every 4 weeks
	Pre-Tibial Myxedema	Patient failed to respond or has contraindications to intralesional and oral steroids	2 g/kg every 4 weeks
	Pyoderma Gangrenosum	Patient must meet both of the following criteria 1. Is cared for in consultation with a Dermatologist ***AND*** 2. Failed to respond or has contraindications to systemic steroids	2 g/kg every 4 weeks
	Severe Forms of Autoimmune Blistering Diseases (Pemphigus vulgaris, Pemphigus foliaceus, Pemphigoid, Cicatricial Pemphigoid, Linear IgA disease, Epidermolysis bullosa acquisita, Pemphigoid gestationis)	Patient must meet both of the following criteria 1. Disease is rapidly progressing ***AND*** 2. Failed to respond or has contraindications to systemic steroids	2 g/kg every 4 weeks
	Severe Lupus Erythematosus	Patient failed to respond or has contraindications to corticosteroids	2 g/kg every 4 weeks

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3.5 Rheumatology

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Adult Rheumatology	**Indicated Conditions**		
	Immune-Mediated Inflammatory Myositis*	Patient must meet 1 of the following 2 criteria 1. Failed to respond or has contraindications to corticosteroids with/without immunosuppressive therapies ***AND/OR*** 2. The presence of life-threatening disease	**Initial dose:** 2 g/kg divided over 2 to 5 days every 4 to 6 weeks Taper when disease stable
	Possibly Indicated Conditions		
	Catastrophic Antiphospholipid Antibody Syndrome*	Order must be in consultation with a Rheumatologist	2 g/kg divided over 2 to 5 days
	Adult-onset Still's Disease	Order must be in consultation with a Rheumatologist	2 g/kg divided over 2 to 5 days
	Sjogren's Syndrome	Order must be in consultation with a Rheumatologist	2 g/kg divided over 2 to 5 days
	Hematophagocytic Lympohistiocytosis*	Order must be in consultation with a Rheumatologist	2 g/kg divided over 2 to 5 days

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Pediatric Rheumatology	**Indicated Conditions**		
	Juvenile Dermatomyositis*	Patient must meet both of the following criteria 1. Glucocorticoids and other 2nd line agents are contraindicated OR IVIG is part of early therapy in a critically ill child ***AND*** 2. Cared for in consultation with a pediatric Rheumatologist	2 g/kg every 2 to 4 weeks
	Kawasaki Syndrome*	No criteria are required other than a diagnosis of Kawasaki Syndrome	2 g/kg given once If failure to respond to initial dose, a 2nd dose may be given at least 24 hours after the 1st dose
	Systemic Onset Juvenile Idiopathic Arthritis*	Patient must meet both of the following criteria 1. Is resistant to other forms of therapy ***AND*** 2. Cared for in consultation with a pediatric Rheumatologist	1 to 2 g/kg every 2 to 4 weeks

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3.6 Infectious Disease

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Adult and Pediatric Infectious Disease	**Indicated Conditions**		
	Group A Streptococcus (GAS) Necrotizing Fasciitis or Toxic Shock Syndrome*	Patient must be treated with a combination therapy of antibiotics and IVIG	1 g/kg on day 1 and 0.5 g/kg per day on days 2 and 3 ***OR*** 0.15 g/kg per day for 5 days
	Staphylococcus Aureus Toxic Shock Syndrome (TSS)*	Patient must be treated with a combination therapy of antibiotics and IVIG	1 g/kg on day 1 and 0.5 g/kg per day on days 2 and 3 ***OR*** 0.15 g/kg per day for 5 days
	Possibly Indicated Conditions		
	Chronic Parvovirus Infection with Anemia	Immunocomprised patient with HPV-B19 Pure Red Cell Aplasia	**Initial dose:** 2 g/kg **Maintenance dose:** 0.4 -1 g/kg every 4 weeks

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3.7 Solid Organ Transplant

	Medical Condition	Pre-requisites	Dose/Frequency of Administration
Indicated Conditions			
Adult and Pediatric Solid Organ Transplant	Acute Antibody Mediated Rejection	Patient must meet the following criterion: • Pathology proven acute antibody mediated rejection	IVIG is commonly administered as part of a treatment protocol that includes plasmapheresis. Regimens for administration include IVIG after each plasmapheresis treatment as a set dose of 2 g/kg total, alone or if given with plasmapheresis after the final plasmapheresis treatment

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Appendix A – Atlantic Clinical Experts

Specialty	Region	Contact Details
Hematology - Adult	Atlantic	Hematologist on call: (902) 473-2220 locating Fax if non urgent: (902) 473-3910
Hematology - Pediatric	Atlantic	Pediatric Hematologist/Oncologist on call: (902) 470-8888
Neurology – Adult	Atlantic	Call Dr. Ian Grant or designate in his absence Ph: (902) 473-3731 fax: (902) 473-4438
Neurology – Pediatric	Atlantic	Dr. Kevin Gordon ph: (902) 470-6839 fax: (902) 470-8486
Immunology – Adult	Atlantic	Call Dr. Gina Lacuesta or Dr. Lori Connors in Dr. Lacuesta's absence ph: (902) 425-3927 fax: (902) 425-3928
Immunology – Pediatric	Atlantic	Pediatric Immunology Specialist on call: (902) 470-8888
Rheumatology – Adult	Atlantic	Dr. Volodko Bakowsky ph: (902) 470-7040 Fax: (902) 473-7019 In his absence Rheumatologist on call: (902) 473-2220
Rheumatology – Pediatric	Atlantic	Dr. Adam Huber Ph: (902) 470-8827 fax: (902) 470-7217
Infectious Disease – Adult	Atlantic	Infectious Disease Specialist on call: (902) 473-5553
Infectious Disease – Adult	PEI ONLY	gjgerman@gov.pe.ca
Infectious Disease – Pediatric	Atlantic	Pediatric Infectious Disease Specialist on call: (902) 470-8888
Dermatology – Adult & Pediatric	Atlantic	Dr. Peter Hull Ph: (902) 473-7934 cell: (902) 817-6010 Dermatologist on call: 1-800-701-7774
Solid Organ Transplant – Adult	Atlantic	Dr. Bryce Kiberd Ph: (902) 473-2099 Fax: (902) 473-2675 Pager: 2178 Cell: (902) 817-6010
Solid Organ Transplant - Pediatric	Atlantic	Dr. Phil Acott Ph: (902) 470-8195 Fax: (902) 470-8900 Pager: 1987