

2017 (v3.0) Proposed changes to v2.1 of the Criteria for the clinical use of intravenous immunoglobulin in Australia

v2.1 CONDITION NAME: Kidney transplantation	
<p>Kidney transplantation has already been endorsed by NIGAC and JBC in 2015 with revised criteria as a condition for which Ig has an emerging therapeutic role. At the time, the need for further review was acknowledged by the Specialist Working Group and this review has now been completed as part of the current Specialist Working Group work program.</p> <p>PROPOSED APPROACH:</p> <p>To retain Kidney transplantation in <i>Emerging therapeutic role</i> with the changes as outlined.</p>	<p>SUMMARY OF RATIONALE:</p> <p>The recommended changes are supported by factors including that:</p> <ul style="list-style-type: none"> - Access to ongoing (rather than one-off) Ig treatment is not available in BloodSTAR v2.1 and was not requested during the 2015 review process. However, this review has identified that additional doses for up to six months are required for two specific indications. Ig has been accessed for these indications for a number of years. Multiple doses are currently being accessed via a workaround solution in BloodSTAR v2.1. Ig protocols vary across Australia and it is acknowledged that some protocols that use multiple dosing without requiring further review and authorisation, will not be supported by these proposed changes. This review has defined the qualifying criteria for the indications where additional therapy is required. Access to ongoing therapy is proposed to be for a maximum of six months, with a clinical response needing to be demonstrated after two months for authorisation of the final four months of Ig treatment. - Ig use in kidney transplantation has been steadily increasing in line with investments by governments over the last few years into transplantation programs and this trend is expected to continue. However, it is recognised that while there is no evidence for treating ‘chronic rejection’ with Ig therapy, some transplant patients have been treated for periods of time longer than six months, which will no longer continue under the proposed changes. In the current criteria, there is also no requirement to demonstrate that a patient is responding to Ig therapy nor any control on the number of requests that can be made. Ig use in these areas is expected to reduce. - Treatment for ‘chronic antibody mediated rejection’ and ‘de-sensitisation of patients who are highly sensitised and unlikely to otherwise receive a transplant’ are both included in the Canadian (Ontario Regional Blood Coordinating Network, 2016) guidelines. The UK guidelines (UK Department of Health, 2011) include desensitisation of antibody incompatible solid organ transplantation but do not specifically cover ongoing treatment for antibody mediated rejection (up to 2 g/kg repeated for 2-3 doses).
<p>v2.1 CONDITION CATEGORY: Condition for which Ig has an Emerging therapeutic role(Chapter 6)</p> <p>2015 PUBLIC CONSULTATION CATEGORY: Condition for which Ig has an Emerging therapeutic role (Chapter 6)</p> <p>v3.0 CONDITION CATEGORY: Condition for which Ig has an Emerging therapeutic role(Chapter 6)</p>	

Role of Ig therapy: Ig therapy plays an important immunomodulatory role in incompatible organ transplantation with proven benefit (Level 1 evidence) in a variety of clinical settings including the de-sensitisation of highly sensitised patients pre-transplant to improve transplant rates and clinical outcomes (Jordan 2004) and also by reducing acute antibody mediated rejection (Diamali, 2014). For patient desensitisation, trials have demonstrated improved long term outcomes when IVIg is used in low dose with plasmapheresis (Montgomery, 2011). Evidence supports the use of IVIg in association with plasmapheresis and immunosuppressant agents in the treatment of Acute antibody mediated rejection (Takemoto, 2004). It is also recognised to provide benefit in the treatment of secondary hypo-gammaglobulinaemia and some infectious complications in solid organ recipients (Jordan, 2011).

There are a number of potential mechanisms of action reported for Ig therapy in this context. These include inhibition of complement activation by the Fc fragment of IgG molecules in the IVIg preparations, or possible contamination of IVIg products with soluble HLA molecules (Wanatabe, 2005) It has also been reported to be related to variations in glycosylation and amino acid sequence causing the crystallisable fragment of IgG to assume specific conformations that have high affinity for canonical crystallisable fragment receptors (FcR) or a newly discovered class of FcRs, labelled type II FcRs. Signalling through type II FcRs is reported to trigger anti-inflammatory pathways (Tedla, 2015).

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Condition Name	Kidney transplantation	Kidney transplantation	Unchanged
Specialty	Transplantation	Nephrology/Transplantation	Unchanged
Category	<i>Emerging therapeutic role</i>	<i>Emerging therapeutic role</i>	
Specific Conditions	<ul style="list-style-type: none"> i. 1st kidney ii. 2nd kidney iii. 3rd kidney iv. 4th kidney v. Liver & Kidney vi. Heart & Kidney vii. Pancreas & kidney viii. Other 	<ul style="list-style-type: none"> i. 1st kidney ii. 2nd kidney iii. 3rd kidney iv. 4th kidney v. Liver & Kidney vi. Heart & Kidney vii. Pancreas & kidney viii. Other 	Unchanged
Level of	Clear evidence of benefit (Category 1).	Clear evidence of benefit (Category 1).	Unchanged

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Evidence			
Justification for Evidence Category	<p>An RCT enrolling adult patients with end stage renal disease (ESRD) who were highly sensitised to HLA antigens found that IVIg was better than placebo in reducing anti-HLA antibody levels in highly sensitised patients with ESRD (followed for two years after transplant), and that transplant rates were improved with IVIg therapy (Jordan et al 2004).</p> <p>Multiple case series have been reported in the literature, indicating efficacy in (acute) antibody mediated rejection, and recommended by a consensus conference (Takemoto et al 2004).</p> <p>Jordan et al (1998) combined data from seven renal transplant recipients and three heart transplant recipients with steroid-resistant combined antibody-mediated and cellular rejection. All patients in this series were successfully treated with high-dose IVIg.</p> <p>A small RCT of transplanted patients with a five-year follow-up period showed that IVIg was as effective as OKT3 monoclonal antibodies in the treatment of steroid resistant rejection (survival rate at two years was 80% in</p>	<p>Desensitisation: The only RCT to date on desensitising patients awaiting kidney transplantation found that IVIg was better than placebo in reducing allosensitisation in highly sensitised patients with end stage kidney disease (followed for two years after transplant), and that transplant rates were improved with IVIg therapy (Jordan et al, 2004). Nonrandomised clinical observational studies suggest that a combination of plasmapheresis and low-dose IVIg is effective and provides a survival benefit for recipients (Montgomery, 2011).</p> <p>Treatment of Acute Rejection: Multiple case series and some controlled trials have been reported in the literature indicating efficacy of IVIg in treating acute/active antibody mediated rejection, and it is recommended by a consensus conference (Takemoto et al, 2004). There are no randomized controlled studies that have specifically studied the benefits of IVIg in acute ABMR, despite its common use in this context. Since 2008 there have been four non RCT and 3 RCT examining management of AbMR, all but one included IVIg and usually used both in the control and intervention arm of the trial. (Lee 2016, Montgomery 2016, Choi 2016, Einecke 2016, Vigglietti 2016, Sautenet 2016, Zarkhin 2008)</p> <p>Chronic Antibody Mediated Rejection (AbMR): This</p>	<p>Revised following Specialist Working Group consideration of more recent literature.</p>

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	<p>both groups) but IVIg generated fewer side effects (Casadei et al 2001).</p>	<p>is a challenging and evolving area, despite the significant adverse impact of chronic AbMR, there is limited literature to guide clinical practice and no widely accepted standard of care. (Cooper 2014, Gupta 2014).</p>	
<p>Indications</p>	<p>Pre - transplant where donor specific antibody/ies prevent transplantation (HLA or anti-blood group) in highly sensitised patients</p> <p>Post-transplant - acute anti-body mediated rejection</p> <p>Treatment or prevention of graft rejection where conventional immunosuppressive therapies is contraindicated or pose a threat to the graft or patient</p>	<p>Immediate pre-transplant where donor specific antibody/ies prevent transplantation (HLA or anti-blood group).</p> <p>Post-transplant - acute antibody mediated rejection</p> <p>Treatment or prevention of graft rejection where conventional immunosuppressive therapies is contraindicated or pose a threat to the graft or patient</p> <p>De-sensitisation of patients to improve the likelihood of transplantation</p> <p>Treatment of ongoing active antibody mediated rejection</p>	<p>The first indication has been amended slightly to distinguish longer desensitisation from short term Ig use immediately pre-transplant.</p> <p>Two additional indications have been developed to support eligible patient access to treatment for up to six months.</p>
<p>Description and Diagnostic Criteria</p>	<p>Transplant rejection occurs when a recipient’s immune system attacks a transplanted organ or tissue. Despite the use of immunosuppressants, one or more episodes of rejection can occur after transplantation. Both cellular and humoral (antibody-mediated) effector mechanisms can play a role. The presence and pattern of rejection need to be established by biopsy.</p>	<p>Transplant rejection occurs when a recipient’s immune system attacks a transplanted organ or tissue. Despite the use of immunosuppression, rejection occurs in a significant number of recipients and may impact on long term graft survival. Both cellular and humoral (antibody-mediated) effector mechanisms may play a role. Rejection is diagnosed histologically on tissue biopsy, with contributory information from clinical assessment, radiological and laboratory tests</p>	<p>This section has been updated following further consideration of more recent literature.</p>

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	<p>Laboratory tests to assess the presence and strength of antibodies to the donor antigens can provide additional useful information. Clinical assessment, blood tests, ultrasound and nuclear imaging are used primarily to exclude other causes of organ dysfunction.</p> <p>Acute cellular rejection occurs in 15–30% of renal transplants and is responsive to steroids in more than 90% of cases. When rejection is steroid resistant, IVIg is a safer therapy than anti-T cell antibody therapy with equal efficacy.</p> <p>Antibody mediated rejection (AbMR) occurs in 5–10% of renal transplants that have been performed with a compatible cross match. Before the use of IVIg and plasma exchange, AbMR failed to respond adequately to therapy in most cases. Additionally, complications from therapy were severe and sometimes fatal. AbMR responds to IVIg with or without plasma exchange in more than 85% of patients. Diagnostic criteria for AbMR must be consistent with Banff Criteria (Banff 2013 Meeting Report American Journal of Transplantation 2014:14; 272-283</p>	<p>including determination of the presence and strength of antibodies to the donor antigens. According to the current Banff criteria (Haas et al, 2014), kidney transplant rejection may be classified as acute or chronic, cellular or antibody mediated rejection, or mixed.</p> <p>Acute cellular rejection occurs in 5–20% of kidney transplants and is generally responsive to high doses of steroid treatment.</p> <p>Antibody mediated rejection (AbMR) occurs in 5–10% of renal transplants that have been performed with a compatible cross match but may be significantly higher in more sensitised recipients. Diagnostic criteria for AbMR must be consistent with Banff Criteria (Haas, 2014).</p> <p>Before the use of IVIg and plasma exchange, AbMR often failed to respond adequately to therapy resulting in progressive graft dysfunction and loss. Additionally, complications from other therapies were severe and sometimes fatal. While the use of IVIg and plasma exchange forms the basis of treatment for acute AbMR, management of chronic AbMR is more challenging and there are currently very few controlled trials to guide clinicians on the optimal treatment of chronic AbMR.</p>	

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	page 277).				
Diagnosis is required		No	By which specialty	N/A	Unchanged
Diagnosis must be verified		No	By which specialty	N/A	
Exclusion Criteria					
Qualifying Criteria	<p>Pre - transplant where donor specific antibody/ies prevent transplantation (HLA or anti-blood group)</p> <ul style="list-style-type: none"> • ABO incompatible transplant planned with or without HLA antibody or antibodies (at least 500 MFI) prevent organ transplantation <p>Post-transplant - active acute anti-body mediated rejection</p> <ul style="list-style-type: none"> • Presence of incompatible ABO blood group donor specific antibody/antibodies and/or donor specific HLA antibody / antibodies (at least a minimum 	<p>Immediate pre - transplant where donor specific antibody/ies prevent transplantation (HLA or anti-blood group) in highly sensitised patients</p> <p>ABO incompatible transplant planned with or without HLA antibody or antibodies (at least 500 MFI) prevent organ transplantation</p> <p>Post transplant - acute anti-body mediated rejection</p> <ul style="list-style-type: none"> • Presence of incompatible ABO blood group donor specific antibody/antibodies and/or donor specific HLA antibody / antibodies (at least 500 MFI) <p>AND</p> <p>Current clinical and laboratory evidence of graft</p>			The criteria for the first three indications are unchanged.

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	<p>of 500 MFI)</p> <p>AND</p> <ul style="list-style-type: none"> • Current clinical and laboratory evidence of graft dysfunction where biopsy is not available <p>OR</p> <ul style="list-style-type: none"> • Organ biopsy demonstrates antibody mediated rejection according to Banff criteria¹ <p>OR</p> <ul style="list-style-type: none"> • There is a high clinical suspicion that it is antibody mediated rejection and evidence is not yet available (one-off request in early period of acute rejection). <p>For second dose, the Donor Specific Antibody (DSA) must be proven and biopsy must be abnormal but may not yet meet all of the Banff 1 diagnostic criteria. For subsequent doses, Banff1 criteria on biopsy must be met.</p> <p>1. Banff 2013 Meeting Report American</p>	<p>dysfunction where a biopsy is not available</p> <p>OR</p> <p>Organ biopsy demonstrates antibody mediated rejection according to Banff criteria (Haas et al, 2014)</p> <p>OR</p> <p>There is a high clinical suspicion that it is antibody-mediated rejection and evidence is not yet available (one-off request in early period of acute rejection).</p> <p>For second dose, the Donor Specific Antibody (DSA) must be proven and the biopsy must be abnormal but may not yet meet all of the Banff (Haas et al, 2014) diagnostic criteria. For subsequent doses, Banff criteria (Haas et al, 2014) on biopsy must be met.</p> <p>Treatment or prevention of graft rejection where conventional immunosuppressive therapies is contraindicated or pose a threat to the graft or patient</p> <ul style="list-style-type: none"> • Conventional immunosuppressive therapy is contraindicated and a reason is provided. 	

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	<p>Journal of Transplantation 2014 :14;272-283 page 277.</p> <p>Treatment or prevention of graft rejection where conventional immunosuppressive therapies is contraindicated or pose a threat to the graft or patient</p> <p>Conventional immunosuppressive therapy is contraindicated and reason is provided.</p>	<p>De-sensitisation of patients to increase the likelihood of transplantation</p> <ul style="list-style-type: none"> Highly sensitised patient with known antibody(ies) of at least 1000 Mean Fluorescence Intensity (MFI) <p>AND</p> <ul style="list-style-type: none"> Circumstances indicate that the likelihood of receiving an organ is very low <p>Treatment of ongoing active antibody mediated rejection</p> <ul style="list-style-type: none"> Ongoing antibody mediated rejection as demonstrated by biopsy in accordance with BANFF criteria 	<p>Consistent criteria have been developed across both Kidney and Solid organ transplantation (other than kidney) for ‘De-sensitisation of patients to increase the likelihood of transplantation’. Evidence items will capture the type(s) of HLA Ab, the MFI and testing platform.</p> <p>Evidence items for ‘ongoing active antibody mediated rejection’ will include the date of organ transplant, key biopsy findings and confirmation that BANFF criteria are met.</p>
<p>Review Criteria</p>	<p>No review is required for one-off dosing</p>	<p>Immediate pre-transplant where donor specific antibody/ies prevent transplantation (HLA or anti-blood group) in highly sensitised patients</p> <p>Review is not mandated for this indication however the following criteria may be useful in assessing the effectiveness of therapy.</p> <p>Clinical effectiveness of Ig therapy may be demonstrated by:</p> <ul style="list-style-type: none"> Reduction in antibody level 	<p>Outcome measures for first three indications have been developed.</p>

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		<ul style="list-style-type: none"> • Transplantation proceeds <p>Post-transplant - Acute antibody mediated rejection</p> <p>Review is not mandated for this indication however the following criteria may be useful in assessing the effectiveness of therapy.</p> <p>Clinical effectiveness of Ig therapy may be demonstrated by:</p> <ul style="list-style-type: none"> • Reduction in antibody level • Reduction in evidence of graft rejection on biopsy • Improvement in graft function <p>Treatment or prevention of graft rejection where conventional immunosuppressive therapies is contraindicated or pose a threat to the graft or patient</p> <p>Review is not mandated for this indication however the following criteria may be useful in assessing the effectiveness of therapy.</p> <p>Clinical effectiveness of Ig therapy may be demonstrated by:</p> <ul style="list-style-type: none"> • Reduction in evidence of rejection on biopsy • Improvement in graft function 	

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		<p>De-sensitisation of patients to increase the likelihood of transplantation</p> <p>Review by a Transplantation Specialist is required within 2 months of treatment to determine whether the patient has responded. If no response, Ig therapy should be ceased. The maximum period of treatment is six months.</p> <p>Documentation of clinical effectiveness is necessary for continuation of IVIg therapy.</p> <p>On review of the initial authorisation period</p> <p>Clinical effectiveness of Ig therapy can be demonstrated by:</p> <ul style="list-style-type: none"> • Reduction in the level of HLA Antibody(ies) as demonstrated by a decrease in the MFI (or functional reactivity) compared to the qualifying assessment <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • A reduction in Non HLA Ab, if relevant <p>AND</p> <ul style="list-style-type: none"> • Specific circumstances exist to justify treatment for a further course <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • The patient has received an organ <p>Treatment of ongoing active antibody mediated</p>	<p>Both indications that allow treatment for up to six months will require review to confirm that a clinical response to Ig therapy has been demonstrated after two months treatment prior to authorisation of the final four months of treatment. The maximum treatment period is up to 6 months.</p> <p>In some instances, the antibody level itself may not change but there may be evidence of</p>

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		<p>rejection</p> <p>Review by a Transplantation Specialist is required within 2 months of treatment to determine whether the patient has responded. If no response, Ig therapy should be ceased. The maximum period of treatment is six months.</p> <p>Documentation of clinical effectiveness is necessary for continuation of IVIg therapy.</p> <p>On review of the initial authorisation period</p> <p>Clinical effectiveness of Ig therapy can be demonstrated by:</p> <ul style="list-style-type: none"> • Improvement in biopsy evidence of rejection compared to the qualifying assessment <p>AND</p> <ul style="list-style-type: none"> • Clinical evidence of response to Ig therapy compared to the qualifying assessment 	<p>reduced reactivity such as demonstrated by flow cross match, dilutional studies or other means. The assessment method and response will be captured.</p> <p>Relevant clinical improvements may include Improvement in creatinine level, non-progressive rise in creatinine level; a falling Donor Specific Antibody level, improvement in biopsy or decreased level of proteinuria.</p>
Dose	<p>IVIg with plasma exchange 0.1 to 0.5 g/kg after each exchange (Total maximum dose of 2.5g/Kg divided across 5 doses)</p> <p>IVIg without plasma exchange (single dose) Up to 2 g/kg to a maximum of 140 g as a single dose.</p>	<p>Immediate pre -transplant where donor specific antibody/ies prevent transplantation (HLA or anti-blood group) in highly sensitised patients</p> <p>IVIg with plasma exchange 0.1 to 0.5 g/kg after each exchange (Total maximum dose of 2.5g/Kg)</p> <p>IVIg without plasma exchange (single dose) Up to 2 g/kg to a maximum of 140 g as a single dose.</p> <p>IVIg without plasma exchange (divided dose) 2 to</p>	<p>Dosing is unchanged for the first three indications.</p>

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	<p>IVIg without plasma exchange (divided dose) 2 to 3.5g/kg in a divided dose The aim should be to use the lowest dose possible that achieves the appropriate clinical outcome for each patient.</p> <p>Dosing above 1 g/kg per day is contraindicated for some IVIg products.</p> <p>Refer to the current product information sheet for further information.</p>	<p>3.5g/kg in a divided dose</p> <p>The aim should be to use the lowest dose possible that achieves the appropriate clinical outcome for each patient</p> <p>Refer to the current product information sheet for further information on dose, administration and contraindications.</p> <p>Post-transplant - acute anti-body mediated rejection</p> <p>IVIg with plasma exchange 0.1 to 0.5 g/kg after each exchange (Total maximum dose of 2.5g/Kg)</p> <p>IVIg without plasma exchange (single dose) Up to 2 g/kg to a maximum of 140 g as a single dose.</p> <p>IVIg without plasma exchange (divided dose) 2 to 3.5g/kg in a divided dose</p> <p>The aim should be to use the lowest dose possible that achieves the appropriate clinical outcome for each patient</p> <p>Refer to the current product information sheet for further information on dose, administration and contraindications.</p>	<p>Dosing controls have been developed by Specialist Working Group</p> <p>The Specialist Working Group advised that there was no evidence to support treatment for Antibody mediated rejection without</p>

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		<p>Treatment or prevention of graft rejection where conventional immunosuppressive therapies is contraindicated or pose a threat to the graft or patient</p> <p>IVIg with plasma exchange: 0.1 to 0.5 g/kg after each exchange (Total maximum dose of 2.5g/Kg divided across 5 doses)</p> <p>IVIg without plasma exchange (single dose): Up to 2 g/kg to a maximum of 140 g as a single dose.</p> <p>IVIg without plasma exchange (divided dose): 2 to 3.5g/kg in a divided dose</p> <p>The aim should be to use the lowest dose possible that achieves the appropriate clinical outcome for each patient.</p> <p>Refer to the current product information sheet for further information on dose, administration and contraindications</p> <p>De-sensitisation of patients to increase the likelihood of transplantation</p> <p>IVIg with plasma exchange: 0.1 to 0.5 g/kg after each exchange (Total maximum dose of 2.0g/Kg across divided doses, monthly)</p> <p>The aim should be to use the lowest dose possible</p>	<p>plasma exchange and that low dose treatment without plasma exchange is likely to be for chronic rejection which is not supported by evidence.</p>

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		<p>that achieves the appropriate clinical outcome for each patient</p> <p>Refer to the current product information sheet for further information on dose, administration and contraindications.</p> <p>Treatment of ongoing active antibody mediated rejection</p> <p>IVIg with plasma exchange: 0.1 to 0.5 g/kg after each exchange (Total maximum dose of 2.0g/Kg across divided doses, monthly)</p> <p>The aim should be to use the lowest dose possible that achieves the appropriate clinical outcome for each patient</p> <p>Refer to the current product information sheet for further information on dose, administration and contraindications.</p>	

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(most recent update: August 2016)

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POTENTIAL OPERATIONAL IMPACT	
<p>De-sensitisation of renal patients is currently practiced much less frequently than previously with only one to two patients being treated each year. There is unlikely to be any significant operational impact as a result of these changes, apart from a reduced workload in monthly re-ordering as staff will be able to access ongoing treatment for these patients.</p> <p>There is wide variability in treatment approaches across the country for treatment of ongoing active antibody mediated rejection. The introduction of a specific indication to support access to up to six months’ treatment will be welcomed due to the reduced workload in repeat ordering. The requirement for review prior to authorisation of a final four month period of treatment is a new requirement that is not practiced currently. This may result in patients requiring alternative treatment if they have not responded to Ig therapy within this timeframe.</p>	
POTENTIAL IMPACT ON PATIENTS, DEMAND AND EXPENDITURE	
Description of impact on patients:	<p>The further changes that have been made to the previously revised criteria include the definition of circumstances in which access to ongoing Ig treatment can be requested for patients undergoing kidney transplantation. The circumstances are aligned with current clinical practice to improve the likelihood for highly sensitised patients to be able to receive an organ or to treat patients with ongoing active antibody mediated rejection. In order to confirm that Ig therapy is achieving the expected clinical benefit, a formal review of the patient’s clinical response will be made after two months of treatment and if a response is demonstrated, treatment for a further four months can be authorised. When a response has not been achieved after two months, Ig therapy will cease and patients will require an alternative treatment approach. A maximum treatment period of six months will be provided for patients as this has been determined as sufficient Ig treatment time for a sustained change to be achieved. After this time, alternative treatment approaches should be used, if required.</p>
Impact on demand:	<p>Due to governments’ investment in organ transplantation over the last few years, and the nature of unrelated transplantation resulting in patient sensitisation and organ rejection, the trend of increasing use for this condition is likely to continue. There is not anticipated to be any impact on demand as a direct result of the changes related to desensitisation. However, given that there is currently no limit to the number of times one-off doses can be prescribed, some patients with chronic rejection may have been treated over the last few years, in some instances, for long periods of time. Such patients will no longer be eligible for Ig therapy and those with active rejection only treated for a maximum of six months. It is expected that there will be a reduction in use in this area, compared to historical practice however; use in kidney transplantation is likely to continue to increase overall due to activity levels.</p>

PUBLIC CONSULTATION 2017 - Kidney transplantation

	2011-12	2012-13	2013-14	2014-15	2015-16	The Specialist Working Group estimated magnitude of effect: Marginal: <\$500K reduction against projected demand
Patient number	334	356	443	393	421	
Total Grams issued	71,922	84,931	97,070	90,032	88,258	
% Total Grams issued	2.2%	2.36%	2.41%	2.02%	1.77%	

Specialist Working Group knowledge development opportunities and recommendations

None identified at this stage.

END OF PUBLIC CONSULTATION DOCUMENT

Next review: Twelve to eighteen months from BloodSTAR v3.0 implementation