Integrated Impact Assessment Report for Clinical Commissioning Policies

Policy Reference Number	F01X07		
Policy Title	Second allogeneic haematopoietic stem cell transplant for relapsed disease		
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Section K - Activity Impact			
Theme	**Questions**	**Comments** (Include source of information and details of assumptions made and any issues with the data)	
K1 Current Patient Population & Demography / Growth	K 1.1 What is the prevalence of the disease/condition?	K1.1 This policy recommends the **routine commissioning** of second allogeneic haematopoietic stem cell transplants for patients with haematological malignancies and relapsed disease that occurred more than 12 months after the first transplant. It is estimated that c.1,260[i] patients received a first allogeneic transplant in England in 2014/15, and only a subset of these patients would be eligible for treatment (please refer to K1.2).	

	K1.2 What is the number of patients currently eligible for the treatment under the proposed policy?	K1.2 Of the patients estimated to have received a first allogeneic transplant, identified in K1.1, those eligible under the policy will be those:[ii] • who are in complete remission; • have relapsed more than 12 months after their first transplant; and • are clinically fit to undergo treatment. It is estimated that **c.16 patients** in 2014/15 would have met these criteria and therefore be eligible to undergo a second transplant due to relapsed disease year[iii], and this would be expected to increase over time in line with the trend in first transplantations.[iv]
	K1.3 What age group is the treatment indicated for?	K1.3 This treatment is indicated for patients of all ages. The impact assessment has been calculated based on adults meeting the criteria. It is recommended that the policy apply to all ages, but as transplant in children is much lower, the calculation of paediatric numbers is not thought to be material to the assessment. In addition, feedback from the HSCT community is that second transplants in children are routinely undertaken at present.[v]
	K1.4 Describe the age distribution of the patient population taking up treatment?	K1.4 There is a large variance in the age distribution of patients requiring a second allograft.[vi]
	K1.5 What is the current activity associated with currently routinely commissioned care for this group?	K1.5 From April 2013, this activity was not routinely commissioned.[vii] Between April 2013 and January 2015, 11 IFRs were approved[viii]. This corresponds to c. 6 procedures per year.[ix] Prior to April 2013, however, activity levels were closer to the size of the target population identified in K1.2.[x]

		Remaining patients from the eligible population unable to receive a second transplant are likely to have received:[xi] • further chemotherapy; • novel biological agents; • withdrawal of immunosuppressive treatment (given to reduce graft-versus-host disease); • infusion of donor lymphocytes; • treatment with cytokines; or • palliative and supportive care (see K5.1). However, it is noted by the Policy Working Group that mortality is very high in these cases.
	K1.6 What is the projected growth of the disease/condition prevalence (prior to applying the new policy) in 2, 5, and 10 years?	K1.6 Based on the trend in transplantations identified from the BSBMT registry, the future number of first transplants could be in the region of: [xii] • ~ 1,405 in 2016/17 (year 1) • ~ 1,480 in 2017/18 (year 2) • ~ 1,735 in 2020/21 (year 5)
	K1.7 What is the associated projected growth in activity (prior to applying the new policy) in 2,5 and 10 years?	K1.7 In the 'do-nothing' this treatment would continue to not be routinely commissioned. Future activity is likely to be small and assumed 'steady state' as in K1.5 going forward.
	K1.8 How is the population currently distributed geographically?	K1.8 Across England, no geographic differences were identified in the literature.[xiii]

K2 Future Patient Population & Demography	K2.1 Does the new policy: move to a non-routine commissioning position / substitute a currently routinely commissioned treatment / expand or restrict an existing treatment threshold / add an additional line / stage of treatment / other?	K2.1 As mentioned in K1.5, from April 2013, second allogeneic transplants for relapsed disease were not routinely and this policy moves to a **routine commissioning position** for NHS England for the specific target population defined in K1.2. Prior to April 2013, second transplants for relapsed disease were available and funded via local mechanisms.[xiv]
	K2.2 Please describe any factors likely to affect growth in the patient population for this intervention (e.g. increased disease prevalence, increased survival).	K2.2 The full causes of most haematological malignancies are not yet known[xv]. In some cases they are related to genetic factors.[xvi] Moreover, age, smoking, certain chemical exposures, certain chemotherapy drugs, radiation exposure or certain blood disorders could increase the risk of Acute Myeloid Leukaemia (AML).[xvii] However, it is difficult to quantify these factors.
	K 2.3 Are there likely to be changes in geography/demography of the patient population and would this impact on activity/outcomes? If yes, provide details.	K2.3 No changes in geography/demography were identified. Specifically, blood cancer incidence rates do not vary significantly across socio-economic groups.[xviii] However, outcomes (in terms of survival) vary by deprivation. [xix]
	K2.4 What is the resulting expected net increase or decrease in the number of patients who will access the treatment per year in year 2, 5 and 10?	K2.4 Given the current activity of c.6 patients per year, as in K1.5, and a target population of c.16 patients in 2014/15, as in K1.2, which would increase each year in line with the trend in transplants[xx], the **net increase** in the number of patients receiving a second transplant for relapsed disease is estimated to be in the region of: • ~ 12 in 2016/17 (year 1) • ~ 13 in 2017/18 (year 2) • ~ 16 in 2020/21 (year 5)

		For total activity under the policy, please refer to K3.2.
K3 Activity	K3.1 What is the current annual activity for the target population covered under the new policy? Please provide details in accompanying excel sheet.	K3.1 Current annual activity is identified in K1.5.
	K3.2 What will be the new activity should the new / revised policy be implemented in the target population? Please provide details in accompanying excel sheet.	K3.2 Given the 'do-nothing' activity in K1.7 and the net increase in K2.4, the number of second allogeneic transplants for the patient group, is estimated to be in the region of: • ~ 18 in 2016/17 (year 1) • ~ 19 in 2017/18 (year 2) • ~ 22 in 2020/21 (year 5) This assumes that the entire target population identified in K1.2 would receive a second transplant under the policy[xxi]. There could also be an increase in the number of outpatient attendances however these are not expected to be additional as they are likely to have been required if the patient went down a non-transplant route.[xxii]
	K3.3 What will be the comparative activity for the 'Next Best Alternative' or 'Do Nothing' comparator if policy is not adopted? Please details in accompanying excel sheet.	K3.3 If the policy were not implemented, future activity relating to second transplants is assumed to be the same as the 'do-nothing' described in K1.5. The remaining patients in the target population would instead receive an alternative treatment, as described in K1.5, and this is likely to vary based

		on the patient's age and their underlying disease.[xxiii]
K4 Existing Patient Pathway	K4.1 If there is a relevant currently routinely commissioned treatment, what is the current patient pathway? Describe or include a figure to outline associated activity.	K4.1 Second Allo-HSCT is not currently routinely commissioned. For comparators, see K5.
	K4.2. What are the current treatment access criteria?	K4.2 Not applicable.
	K4.3 What are the current treatment stopping points?	K4.3 Not applicable.
K5 Comparator (next best alternative treatment) Patient Pathway	K5.1 If there is a 'next best' alternative routinely commissioned treatment what is the current patient pathway? Describe or include a figure to outline associated activity.	K5.1 When patients relapse following their first Allo-HSCT, a multi-disciplinary team consisting of a haematology specialist, specialist nurse and transplant physicians is called to assess what clinical options are available. Other than second Allo-HSCT, these include: further chemotherapy; withdrawal of immunosuppressive treatment (given to reduce graft-versus-host disease); infusion of donor lymphocytes; treatment with cytokines; or palliative and supportive care. It is noted by the Policy Working Group that mortality is very high in these cases.
	K5.2 Where there are different stopping points on the pathway please indicate how many patients out of the number	K5.2 Not applicable.

	starting the pathway would be expected to finish at each point (e.g. expected number dropping out due to side effects of drug, or number who don't continue to treatment after having test to determine likely success). If possible please indicate likely outcome for patient at each stopping point.	
K6 New Patient Pathway	K6.1 Describe or include a figure to outline associated activity with the patient pathway for the proposed new policy.	K6.1 MDT considers clinical options as in K5 when patients relapse following their first Allo-HSCT. Where relapse has occurred >12 months after procedure, decision whether patient is clinically fit to undergo a second Allo-HSCT is taken. Due to the severity of the procedure, the wishes of the patient is taken into consideration on a case-by-case basis. Where a decision to go ahead with a second Allo-HSCT is taken, the procedure is similar to that of the first. The transplant procedure begins with 'conditioning' therapy (chemotherapy with or without total body irradiation [TBI]) at a range of doses depending on the type and severity of disease being treated. The aim of conditioning is to: 1. Eradicate the host immune response, to minimise graft rejection 2. Kill leukaemia/tumour cells (in malignant diseases) 3. Eradicate existing bone marrow tissue (in order to provide space for engraftment of transplanted donor stem cells) (The patient pathway is described in detail in the BMT service specifications for adults.)
	K6.2 Where there are different stopping points on the pathway please indicate how many patients out of the number starting the pathway would be expected	K6.2 No numbers available. Patients may choose not to undergo the procedure due to its severity (as discussed in K6.1).

	to finish at each point (e.g. expected number dropping out due to side effects of drug, or number who don't continue to treatment after having test to determine likely success). If possible please indicate likely outcome for patient at each stopping point.	
K7 Treatment Setting	K7.1 How is this treatment delivered to the patient? o Acute Trust: Inpatient/Daycase/ Outpatient o Mental Health Provider: Inpatient/Outpatient o Community setting o Homecare delivery	K7.1 This treatment is delivered as an inpatient procedure.[xxiv]
	K7.2 Is there likely to be a change in delivery setting or capacity requirements, if so what? *e.g. service capacity*	K7.2 No change anticipated; the service is identical to first Allo-HSCT and the numbers are small and not expected to impact on capacity.
K8 Coding	K8.1 In which datasets (e.g. SUS/central data collections etc.) will activity related to the new patient pathway be recorded?	K8.1 This in an inpatient procedure and would be recorded in SUS. In addition, activity related to stem cell transplants is recorded in the British Society of Blood and Marrow Transplantation (BSBMT) registry.[xxv]
	K8.2 How will this activity related to the new patient pathway be identified?(e.g.	K8.2 Although this would be recorded in SUS, this would not be at a sufficient level of granularity to isolate second transplants from relapsed

	ICD10 codes/procedure codes)	disease by using OPCS and ICD-10 codes[xxvi]. Activity for those patients with relapsed disease receiving a second transplant not currently identifiable in the BSBMT registry but would need to be in the future.[xxvii]
K9 Monitoring	K9.1 Do any new or revised requirements need to be included in the NHS Standard Contract Information Schedule?	K9.1 No.
	K9.2 If this treatment is a drug, what pharmacy monitoring is required?	K9.2 Not applicable.
	K9.3 What analytical information /monitoring/ reporting is required?	K9.3 Complete data must be submitted to the BSBMT registry for all transplants carried out by UK centres. All centres must provide the data required for the BMT Quality Dashboard.
	K9.4 What contract monitoring is required by supplier managers? What changes need to be in place?	K9.4 No additional monitoring required.
	K9.5 Is there inked information required to complete quality dashboards and if so is it being incorporated into routine performance monitoring?	K9.5 See K9.3.

	K9.6 Are there any directly applicable NICE quality standards that need to be monitored in association with the new policy?	K9.6 No
	K9.7 Do you anticipate using Blueteq or other equivalent system to guide access to treatment? If so, please outline. *See also linked question in M1 below*	K9.7 No
Section L - Service Impact		
Theme	**Questions**	**Comments** (Include source of information and details of assumptions made and any issues with the data)
L1 Service Organisation	L1.1 How is this service currently organised? (i.e. tertiary centres, networked provision)	L1.1 HSCT is a highly specialised procedure, performed by experienced – JACIE accredited – transplant teams in specialist transplant centres. Post-transplant follow-up in local haemato-oncology providers as agreed between providers.
	L1.2 How will the proposed policy change the way the commissioned service is organised?	L1.2 No change.
L2 Geography & Access	L2.1 Where do current referrals come from?	L2.1 Patients will already be under the care of the specialised MDT

	L2.2 Will the new policy change / restrict / expand the sources of referral?	L2.2 No
	L2.3 Is the new policy likely to improve equity of access?	L2.3 Yes, through having a consistent commissioning position across England.
	L2.4 Is the new policy likely to improve equality of access / outcomes?	L2.4 No
L3 Implementation	L3.1 Is there a lead in time required prior to implementation and if so when could implementation be achieved if the policy is agreed?	L3.1 No
	L3.2 Is there a change in provider physical infrastructure required?	L3.2 No
	L3.3 Is there a change in provider staffing required?	L3.3 No
	L3.4 Are there new clinical dependency / adjacency requirements that would need to be in place?	L3.4 No

	L3.5 Are there changes in the support services that need to be in place?	L3.5 No
	L3.6 Is there a change in provider / inter-provider governance required? (e.g. ODN arrangements / prime contractor)	L3.6 No
	L3.7 Is there likely to be either an increase or decrease in the number of commissioned providers?	L3.7 No
	L3.8 How will the revised provision be secured by NHS England as the responsible commissioner? (e.g. publication and notification of new policy, competitive selection process to secure revised provider configuration)	L3.8 Not applicable.
L4 Collaborative Commissioning	L4.1 Is this service currently subject to or planned for collaborative commissioning arrangements? (e.g. future CCG lead, devolved commissioning arrangements)	L4.1 No information.
Section M - Finance Impact		
Theme	**Questions**	**Comments** (Include source of information and details of assumptions made and any issues with the data)

M1 Tariff	M1.1 Is this treatment paid under a national prices*, and if so which?	M1.1 No
	M1.2 Is this treatment excluded from national prices?	M1.2 Yes
	M1.3 Is this covered under a local price arrangements (if so state range), and if so are you confident that the costs are not also attributable to other clinical services?	M1.3 Yes; the cost per transplant varies substantially across regions and is estimated to be between £50,000 and £120,000 per procedure.[xxviii] [,xxix] The range in prices is likely to reflect the local differences in packages, i.e. whether or not this includes only the transplant or the whole package of care.[xxx]
	M1.4 If a new price has been proposed how has this been derived / tested? How will we ensure that associated activity is not additionally / double charged through existing routes?	M1.4 Not applicable.
	M1.5 is VAT payable (Y/N) and if so has it been included in the costings?	M1.5 VAT would be recoverable under certain specific conditions[xxxi]. It is assumed here that VAT would not be recoverable.
	M1.6 Do you envisage a prior approval / funding authorisation being required to support implementation of the new policy?	M1.6 Not applicable.

M2 Average Cost per Patient	M2.1 What is the revenue cost per patient in year 1?	M2.1 As described in M1.3, the costs of a transplant are estimated to range between £50,000 and £120,000.[xxxii] The costs of comparator treatments are difficult to quantify as these are highly variable and depend on the specific indication and patient circumstances.[xxxiii]
	M2.2 What is the revenue cost per patient in future years (including follow up)?	M2.2 The number of follow-ups depends on patient survival rates. For successful patients, this could cost c. £100 per attendance.[xxxiv] It is likely these appointments would already have occurred either as a result of their first transplant, or were the patient to go down the non-transplantation route.[xxxv]
M3 Overall Cost Impact of this Policy to NHS England	M3.1 Indicate whether this is cost saving, neutral, or cost pressure to NHS England.	M3.1 The additional costs to NHS England from providing second transplants to the patients identified in K2.4 could be:[xxxvi]: • ~ £0.6m to £1.5m (mid-estimate of £1.0m) in 2016/17 (year 1) • ~ £0.7m to £1.6m (mid-estimate of £1.0m) in 2017/18 (year 2) • ~ £0.8m to £2.0m (mid-estimate of £1.3m) in 2020/21 (year 5) Please refer to M6.3 for the scenarios considered. As discussed in K3.3, were these patients not to receive a second transplant in the 'do-nothing', they would have received alternative treatments. The costs of these comparator treatments are difficult to quantify as these are highly variable and depend on the specific indication and patient circumstances. However, information provided by the policy working group suggests that there is scope to significantly offset the cost pressure identified above. Two example patient pathways when not receiving a second allogeneic

		transplant (costing c. £50k – £120k as noted in M1.3) indicate that they could have incurred costs of c. £130k over a 1 year period, or c. £160k over 3 years.[xxxvii] However, as discussed in K3.3, even if patients receive a second transplant, many will relapse within 5 years and require further treatment options. There is not systematic data to ascertain how many of those patients will go on to have further treatment, although patient representatives and clinicians suggest many are likely in practice to refuse further treatment. As such, the cost impact of this policy is uncertain however it is expected that there would be both a **cost pressure** from the increase in the number of second transplants undertaken, as well as a **cost saving** from the reduced need for alternative treatments.
	M3.2 Where this has not been identified, set out the reasons why this cannot be measured.	M3.2 Whether or not this is cost neutral, cost saving or cost pressure depends on the costs of comparator treatments. These are both highly disease/patient specific and may potentially depend on the future availability of high-cost treatments.[xxxviii] Furthermore, costs are affected by patient mortality rates for the specific comparators which are highly uncertain.[xxxix]
M4 Overall cost impact of this policy to the NHS as a whole	M4.1 Indicate whether this is cost saving, neutral, or cost pressure for other parts of the NHS (e.g. providers, CCGs).	M4.1 This is expected to be **broadly cost neutral** to other parts of the NHS.
	M4.2 Indicate whether this is cost saving, neutral, or cost pressure to the NHS as a whole.	M4.2 The cost impact to the NHS as a whole is expected to be to NHS England. Please refer to M3.1.

	M4.3 Where this has not been identified, set out the reasons why this cannot be measured.	M4.3 Please see the response to K3.2.
	M4.4 Are there likely to be any costs or savings for non NHS commissioners / public sector funders?	M4.4 None identified.
M5 Funding	M5.1 Where a cost pressure is indicated, state known source of funds for investment, where identified. *e.g. decommissioning less clinically or cost-effective services*	M5.1 Not applicable.
M6 Financial Risks Associated with Implementing this Policy	M6.1 What are the material financial risks to implementing this policy?	M6.1 The significant variability and uncertainty in the both : • The cost of the transplant, as noted in M1.3 this varies significantly by region; and • Estimating the costs of comparator treatments, as discussed in K3.3 and M2.1.
	M6.2 Can these be mitigated, if so how?	M6.2 No cost mitigations have been identified.
	M6.3 What scenarios (differential assumptions) have been explicitly tested to generate best case, worst case and most likely total cost	M6.3 The cost of the transplant procedure itself varies widely, mainly driven by differences in locally negotiated prices as discussed in M1.3.

	scenarios?	All scenarios assume that under the policy the whole target population in K1.2 receive a second transplant. This **net increase** in activity is outlined in K2.4. The cost ranges presented in M3.1 are based on: • The 'high' cost estimate assumes the costs of a transplant are at the high estimate of £120,000 per patient, as discussed in M1.3; • The 'mid' cost estimate assumes an average cost of £80,000 per transplant; and • The 'low' case invokes transplant costs of £50,000, the lower bound procedure cost per patient.
M7 Value for Money	M7.1 What evidence is available that the treatment is cost effective? *e.g. NICE appraisal, clinical trials or peer reviewed literature* M7.2 What issues or risks are associated with this assessment? *e.g. quality or availability of evidence*	M7.1 None M7.2 Not applicable.
M8 Cost Profile	M8.1 Are there non-recurrent capital or revenue costs associated with this policy? *e.g. Transitional costs, periodical costs* M8.2 If so, confirm the source of funds to meet these costs.	M8.1 None identified. M8.2 Not applicable.

[i] Based on 2013 figures from the British Society of Blood and Marrow Transplantation (BSBMT) Data Registry [Online]. Available from http://bsbmt.org/about-the-registry/ [accessed: 09/11/2015]. To arrive at a figure for 2014/15, the average growth rate in first transplants over the years 2008-2013 is applied (CAGR: ~5% pa)

[ii] Please refer to the policy proposition

[iii] This is based on the average number of second allogeneic transplants for those patients that relapsed more than 12 months ago over the years 2010-2012 [Source: British Society of Blood and Marrow Transplantation (BSBMT) Data Registry and discussions with the policy working group]. To arrive at a figure for 2014/15, the average growth rate in first transplants over the years 2008-2013 is applied (CAGR: ~5% pa) [Source: British Society of Blood and Marrow Transplantation (BSBMT) Data Registry [Online]. Available from http://bsbmt.org/about-the-registry/ [accessed: 09/11/2015]].

[iv] Based on discussions with the policy working group. The average growth rate in first transplants over the years 2008-2013 is applied (CAGR: ~5% pa) [Source: British Society of Blood and Marrow Transplantation (BSBMT) Data Registry [Online]. Available from http://bsbmt.org/about-the-registry/ [accessed: 09/11/2015]]

[v] Based on discussions with the policy working group.

[vi] Based on discussions with the policy working group.

[vii] Based on discussions with the policy working group.

[viii] Audit of IFRs for repeat allogeneic BMT for relapsed disease and discussions with the policy working group. 15 IFRs were received in total.

[ix] However, it was noted by the policy working group that the number may potentially be higher as not all IFRs were recorded in the audit. Furthermore, this number also includes children and patients that relapsed less than 12 months ago (although the policy working group estimated this to be only 1-2 of all the 15 IFRs registered in the audit).

[x] Based on discussions with the policy working group.

[xi] Based on discussions with the policy working group

[xii] Based on figures from the British Society of Blood and Marrow Transplantation (BSBMT) Data Registry [Online]. Available from http://bsbmt.org/about-the-registry/ [accessed: 09/11/2015]. The average growth rate in first transplants over the years 2008-2013 is applied (CAGR: ~5% pa)

[xiii] Quality appraisal comparing data from the National Cancer Data Repository (NCDR) with the population-based Haematological Malignancy Research Network (HMRN) (2012). “Haematological malignancies & cancer registration in England (2004-2008)”

[xiv] Based on discussions with the policy working group

[xv] Public Health England (2014). “National Cancer Intelligence Network Trends in incidence and outcome for haematological cancers in England: 2001-2010.”

xvi The university of Chicago Medicine .Hematologic (Blood) Malignancies Cancer Risk and Prevention. [Online] Available from http://www.uchospitals.edu/specialties/cancer/risk/about/hematologic.html [Accessed: 14/12/2015].

[xvii] American Cancer Society (2014). Leukemia--Acute Myeloid (Myelogenous) - Causes, Risk Factors, and Prevention. [Online] Available from http://www.cancer.org/cancer/leukemia-acutemyeloidaml/detailedguide/leukemia-acute-myeloid-myelogenous-risk-factors [Accessed: 14/12/2015].

[xviii] National Cancer Intelligence Network (NCIN) (2008). *Cancer Incidence by Deprivation England, 1995-2004.* [Online] Available from: http://www.ncin.org.uk/view?rid=73 [Accessed: 11/11/2015].

[xix] NCIN Data Briefing (2013). Deprivation and blood cancer survival in England: analysis of cancer registration data 2000-2007. [Online] Available from http://www.ncin.org.uk/publications/data_briefings/deprivation_and_blood_cancer_survival_in_england [Accessed: 14/12/2015].

[xx] This applies the growth rate in first transplants over the years 2008-2013 (as per discussions with the policy working group) [Source: BSBMT Data Registry] to the future number of transplant outlined in K1.2 (CAGR: ~5% pa).

[xxi] Based on discussions with the policy working group.

[xxii] Based on discussions with the policy working group

[xxiii] Based on discussions with the policy working group.

[xxiv] Based on discussions with the policy working group.

[xxv] Activity for stem cell transplants is already recorded within the BSBMT registry. High level figures are accessible under: http://bsbmt.org/about-the-registry/.

[xxvi] To confirm

[xxvii] Based on discussions with the policy working group

[xxviii] Based on IFR data for 2014/15 and 2015/16 received from NHS England.

[xxix] Clinical Commissioning Policy: Haematopoietic Stem Cell Transplantation (HSCT) (All Ages) (2015) "Draft content for revision of Blood and Marrow Transplant policy to include second allogeneic transplants for relapsed disease." Among others, the costs of a transplant depend on whether a related or mismatch unrelated donor is used (based on discussions with the policy working group)

[xxx] Based on discussions with the NHS England Finance Lead.

[xxxi] Please refer to Section 3.2 of VAT Notice 701/557 (https://www.gov.uk/government/publications/vat-notice-70157-health-professionals-and-pharmaceutical-products/vat-notice-70157-health-professionals-and-pharmaceutical-products)

[xxxii] Clinical Commissioning Policy: Haematopoietic Stem Cell Transplantation (HSCT) (All Ages) (2015) "Draft content for revision of Blood and Marrow Transplant policy to include second allogeneic transplants for relapsed disease." These costs cover all the stages of the transplant (physical examination, harvesting, conditioning, transplanting the stem cells and recovery period) based on discussions with the policy working group.

[xxxiii] Based on discussions with the policy working group.

[xxxiv] 2014/15 National Tariff, Follow Up Attendance - Single Professional for oncology of £91. A 10% Market Forces Factor is applied as well as an efficiency factor of -3.9% and inflation of 1.9% to the tariff figures in the first year.

[xxxv] Based on discussions with the policy working group

[xxxvi] The numbers use the number of patients defined in K2.4 and a costs per transplant of £50,000-£120,000.

[xxxvii] Based on data provided by the policy working group. The £130k cost estimate is based on PLICS data.

[xxxviii] Many of these treatments are currently trialled and it is unsure whether they would be approved once they are launched for use in relapse post allogeneic transplant by Cancer Drugs Fund/NICE. Furthermore, the clinical effectiveness of such treatments is unknown.

[xxxix] Based in discussions with the policy working group. Hence, it is difficult to calculate finite cost for some therapies if they are to be continued 'until disease progression'.