

# ABSTRACTS FROM THE 43RD ANNUAL MEETING OF THE EUROPEAN SOCIETY FOR BLOOD AND MARROW TRANSPLANTATION: EBMT NURSE GROUP—POSTER SESSION (NP001–NP063)

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## Nurse and allied health professionals

### NP001

#### **Peripherally inserted central catheter (PICC) in hematopoietic stem cell transplantation**

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The use of a central venous access is essential for hematopoietic stem cell transplantation (HSCT), allowing a simultaneous administration of cytostatics, fluid therapy, immunosuppressants, blood products, parenteral nutrition, antibiotic therapy as well as blood sampling and infusion of hematopoietic cells. The experience gained in managing the PICC in the haematology ward, showed that it was easy to place them and they were associated with absence of major complications and more patient comfort, which determined its exclusive use in the HSCT. **Objective:** To determine the incidence of complications related to the use of PICC in the context HSCT and to determine whether it is a valid alternative to classic centrally inserted catheters. We conducted a longitudinal descriptive study in which all adult patients undergoing HSCT were included. Two lumen catheters were used for the autologous and three lumen for allogeneic, valved or non-valved, with a caliber of 5 Frenchs. Both the hematopoietic cells and the blood products were administered by volumetric infusion pumps, using a perfusion system of 200 micron filters. Prior to the start of the study, a procedure for the maintenance of PICC was developed and a database was built to record the variables. Upon catheter removal microbiological culture of the tip was performed using the Maki's semiquantitative procedure. Patient satisfaction with the catheter use was evaluated by a numerical scale from 1 (worst) to 10 (best). Between 1/1/16 and 31/10/16 a PICC was placed in 56 patients. Of these, 27 (48%) received allogeneic transplants whilst 29 (52%) were autologous. Forty (71%) catheters were maintained without problems throughout the whole procedure. In 22 patients (39%) it was removed at Hospital discharge without complication, whilst 18 (32%) were not removed because the patient presented a difficult venous access and persisted the need for further treatment and analytical control. Sixteen (29%) catheters were removed before the end of the transplantation hospital admission: 14 due to persistent fever, although microbiological growth was documented only in 3 of them; 1 catheter was removed due to pain in the arm the next day of being placed and 1 catheter was retired due to an accidental exit. Six patients bled slightly in the zone of the inserted catheter and 3 showed hypersensitivity to the type of dressing used. No venous thrombosis was documented. The median days until hematological recovery (neutrophils  $>0.5 \times 10^9/L$ ) in allogeneic and autologous HSCTs were 15 days and 13 days, respectively, compared with 17.5 days and 13 days, respectively, observed

in 65 control patients transplanted in 2013. The use of PICC considerably reduces the number of major complications compared with other central pathways. The infusion of hematopoietic cells by volumetric perfusion pumps did not delay hematological recovery. The degree of patient satisfaction is very high (9.1/10). In 78.6% of the catheters removed by persistent fever subsequent microbiological growth is not documented. The PICC is a valid alternative in the TPH.

**Disclosure of conflict of interest:** None.

### NP002

#### NP003

#### **Outdoor physical activity for hematological patients: does it improve quality of life?**

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Even when the procedures are successful, patients (pts) experience considerable physical, psychological, and emotional stress before and after hematopoietic stem cell transplantation (HSCT). Physical exercise therapy constitutes a potentially promising intervention to reduce such stress. The most common approach includes aerobic and stretching exercises and is applicable after chemotherapy and HSCT. The aim of the current analysis was to evaluate the effects of physical activity on possible improvement in quality of life in pts post HSCT. Once a week group including pts, physician, nurse and a physical instructor walks 5 km distance. Each pt walks at an individual pace. The group includes pts before, during and after HSCT process. A group walks and perform stretching and power exercises. We prospectively collected data on 30 consecutive pts using a questionnaire before and after physical activity. The evaluated parameters were: age, gender, breath, fatigue, physical balance, appetite, sexual activity, sleep. The questionnaire included closed YES/NO questions and open questions. Pts were also invited to make their own comments. This program has been running at the Rambam Department of Hematology and BMT for 26 months. Thirty pts (16 males and 14 females) answered the questionnaire (Table). Pt age: 42–63 (average 50) males and 37–63 (average 50) females; 4 pts died during this period due to leukemia relapse. The most significant improvement changes were found in emotional state, balance and appetite (the % of improvement was higher 60–100% after physical activity). It also improved their breath, elevating up the stairs, sex life. Minimized fall risk, decreased steroid myopathy and emotional problems (anxiety, depression). Pts noted that mutual physical activity with the medical staff made their communication less formal. It allowed them to learn each other better not only as a 'patient and caregiver,' but also as human beings with different personalities, problems and feelings. They emphasized that such informal relations improved medical and nursing follow-up in recurrent hospitalizations. Physical

activity decreased fatigue, reduced severity of treatment-related side effects of HSCT patients and improved overall quality of life. We strongly recommend that outdoor physical activity will be considered as a standard of care in HSCT pts. The medical staff should be guided. Their awareness and ability to provide adequate professional information to pts should be raised especially when the patient in his low point of his physical and emotional state. Future research is needed to provide more rigorous evaluation of these interventions in the HSCT context.

**Disclosure of conflict of interest:** None.

[NP003] Table 1

Questions	% of improvement after physical activity
Do you feel tired?	11
Do you feel depressed?	100
Does physical activity improve your balance?	67
Is it easier for you to go up the stairs?	60
Does physical activity improve your sex life?	25
Does physical activity improve your breath?	44
Do you sleep better on the day of exercising?	45
Does physical activity improve your appetite?	66

#### NP004

##### The effect of reflexology for patients undergoing hematopoietic stem cell transplantation

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Recipients with hematopoietic stem cell transplantation (HSCT) are suffered from physiological and psychological distress caused by the complication of HSCT especially during the first several weeks. Because prescribed medicines are usually insufficient for treatment of complications, we have introduced reflexology, one of the complementary and alternative medicine (CAM), from the beginning of the HSCT. Although there are several reports about the effects of CAM on quality of life in HSCT survivors, little has been known about the effects during the early period of HSCT. The aim of present study was to investigate the safety and efficiency of reflexology during the early period of HSCT. Twenty patients administered in this study. Written informed consent was obtained from every patient. Ten patients received autologous

HSCT and 10 received allogeneic HSCT. Reflexology consists with appropriate pressure to specific points on the feet, hands, or ears provided by a trained reflexologist. Participants were received median 4 course (range 2–10) of weekly reflexology therapy after HSCT. We surveyed by original questionnaire to investigate the efficiency. The questionnaire consisted of three dimensions ('spiritual pain,' 'social pain,' and 'impression on reflexology'). Participants answered the questionnaire before and after first reflexology therapy and 3–4 weeks after HSCT. In addition, we extracted the objective physical symptom, e.g. stomatitis, edema, nausea, vomiting and weariness from their medical chart, scored by CTCAE. We evaluated the effects of reflexology on these elements. Although many participants had skin erythema and lower leg edema, reflexology showed no adverse effects on lower legs. No other adverse effects were observed. Reflexology showed no significant effect on the physical symptom, spiritual pain, and social pain. However, the impression on reflexology indicated the relief from the strain with the words of 'relaxed,' 'feels good,' and 'sleepy.' Participants often fell asleep nevertheless, they were in the condition of severe sleep disturbance caused by severe oral pain and frequent diarrhea. Foot reflexology induced no adverse effects on patients during the early period of HSCT. Most of participants felt asleep even though they had severe sleep disturbance caused by physical and psychological stress. Thus, the reflexology may have the possibility to be one of the effective tools to reduce patients' strain and induce good sleep during the first several weeks of HSCT.

**Disclosure of conflict of interest:** None.

#### NP005

##### Central venous catheter and peripheral venous access comparison at the allogeneic donors

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Peripheral blood stem cells (PBSC) are the preferred stem cell source of allogeneic hematopoietic stem cells. The collection of PBSC with leucapheresis requires a sufficient venous access which allows an adequate blood flow between donor and apheresis machine. Leukapheresis can be carried out using veins in the arms but some donors' veins are difficult to access. For these donors a central femoral line is a useful alternative. Central venous catheter insertion implies some risks and prolongs hospitalization, therefore peripheral access should be the preferred whenever possible. This retrospective analysis includes the allogeneic donors, who underwent PBCS collections from January 2012 to December 2015. The following data were reviewed: donors' demographic characteristic, venous access type, the number of repeated apheresis, complications of venous access. We retrospectively studied 124 adult allogeneic PBSC donors (71 unrelated, 53 related family

[NP005] Table 1. Donors and venous access

Year	Unrelated donors	Venous access	Related donors	Venous access	Year	Unrelated donors	Venous access	Related donors	Venous access
2012	♂ 13	PV 11 × CVC 2 ×	♂ 10	PV 4 × CVC 6 ×	2014	♂ 14	PV 11 × CVC 3 ×	♂ 7	PV 2 × CVC 5 ×
	♀ 4	PV 2 × CVC 2 ×	♀ 9	PV 1 × CVC 8 ×		♀ 2	PV 1 × CVC 1 ×	♀ 7	PV 3 × CVC 4 ×
2013	♂ 10	PV 7 × CVC 3 ×	♂ 5	PV 4 × CVC 1 ×	2015	♂ 19	PV 18 × CVC 1 ×	♂ 4	PV 3 × CVC 1 ×
	♀ 4	PV 3 × CVC 1 ×	♀ 8	PV 1 × CVC 7 ×		♀ 5	PV 3 × CVC 2 ×	♀ 1	PV 0 × CVC 1 ×
						<b>Σ 71</b>	<b>PV 56 × CVC 15 ×</b>	<b>Σ 51</b>	<b>PV 18 × CVC 33 ×</b>

donors). Male to female ratio was 83:41. Unrelated donors age was between 19 and 48 years (median 33 years), age of related donors ranged from 16 to 70 years (median 43 years). Central venous catheter was used in 15 unrelated donors. In family donors the central catheter placement was more frequently necessary, 34 of 53 donors. The details are given in Table 1. The second apheresis procedure was performed in 33 donations. We recorded following venous access complications: there was a need to replace peripheral venous access for central line in 2 donors, 1 donor experienced bleeding from the catheter site after the completion apheresis session, in 1 donor there was swelling of the arm with inserted peripheral needle. Peripheral veins are the standard venous access for PBSC donation. Only in donors with inadequate peripheral veins, the use of central venous catheter, usually introduced to femoral veins, is considered as possible option. In donors with poor peripheral veins the most experienced nurses are allowed to perform the puncture. The aim is to avoid central venous catheter insertion, as it is associated with higher risk of bacterial infection, thrombosis or bleeding around the catheter site. Central venous catheter also increases the discomfort of donor and prolongs hospitalization.

**Disclosure of conflict of interest:** None.

#### NP006

### **Spectra Optia CMNC<sup>®</sup> is equivalent to Optia MNC<sup>®</sup> apheresis for T-cell collection and has the potential to offer greater harvest customisation**

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**Introduction:** Reliable, efficient and reproducible procedures for the procurement of cellular therapy products, and the ability to optimise the final product for further manipulation are becoming increasingly relevant to apheresis centres. Here we compare two platforms currently in use for the collection of lymphocytes. **Patients and Methods:** Single centre data was collected prospectively from 54 non-mobilised lymphocyte donations using either the Spectra Optia CMNC or MNC apheresis platforms. CMNC collections were exclusively from related donors ( $n=19$ ), whereas unrelated volunteer donors were harvested using the MNC platform ( $n=35$ ). All collections were performed according to institutional procedures using peripheral access. Data are shown as median (IQR) with  $P$ -values calculated using the Mann–Whitney  $U$ -test.

**Results:** The median age of unrelated donors was lower than related donors (30 vs 47 years) due to the selection criteria set by volunteer registries. There was no difference in donor weight, total blood volume and pre-collection haematology results between the two groups with the exception of WBC which was slightly higher in the CMNC cohort (6.88 vs  $5.42 \times 10^9/L$ ,  $P=0.002$ ). This higher WBC resulted in an associated higher peripheral blood CD3+ cell count (1635 vs  $1053/\mu L$ ,  $P=0.032$ ) although the CD3 and Mononuclear cell (MNC) percentages were not significantly different. Blood volume processed, run times and product volumes were comparable (see Table 1.). The total RBC content of the CMNC products was higher than the MNC procedures (5.6 vs 3.7 ml,  $P=0.03$ ) although this would likely be of little clinical significance. Platelet content was significantly higher in the CMNC products ( $2130$  vs  $1360 \times 10^9/L$ ,  $P \leq 0.001$ ); however, no significant difference of post apheresis peripheral blood platelet count was observed. The final product WBC was higher in CMNC cohort (90 vs  $67 \times 10^9/L$ ,  $P=0.01$ ) with the mononuclear cell and CD3+ cell content comparable in both. Finally, collection efficiency (CE2%) for mononuclear cell (CMNC=58.2 vs 54.6,  $P=NS$ ) and CD3+ cell content (CMNC=54.4 vs 51.6,  $P=NS$ ) were equivalent.

**Conclusions:** Both collection platforms are efficient and comparable in performance and final product content. Possible interface instability and operator-specific variables

may explain higher non-target cell contamination in cell product of CMNC group. However, CMNC allows the operator greater collection control of the MNC interface thus creates the potential for customising the final product. This may be valuable when further manipulation of the product by processing laboratories is necessary, or for clinical trials where more specific product requirements need to be met.

**Disclosure of conflict of interest:** RS is an employee of Terumo TBC.

[NP006] Table 1. Donor characteristics/apheresis and collection product parameters

	<i>Spectra Optia</i> CMNC	<i>Spectra Optia</i> MNC
Patient weight (kg)	90 (69.5–117.5)*	81 (69.5–97)
Pre WBC ( $\times 10^6/mL$ )	6.88 (6.14–7.95)	5.42 (4.24–6.15)
Pre peripheral CD3+ ( $\mu L$ )	1635 (985–2092)	1053 (820–1369)
TBV processed	2.0 (1.87–2.0)	2.0 (1.97–2.13)
Run time (min)	225 (214–244)	241 (226–258)
Product volume (mL)	193 (181–197)	183 (147–216)
Product HCT (%)	3.0 (2.0–3.0)	2.0 (2.0–2.3)
CD3+ CE2%	54.4 (47.6–63.0)	51.6 (44.6–64.2)
PLT loss (%)	25.3 (21.2–28.1)	23.9 (17.8–27.3)

#### NP007

### **The emotional impact on adolescent sibling bone marrow donors**

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This paper reports on the short and medium term emotional impact on adolescent bone marrow donors who donate to a brother or sister. The research was undertaken in my role as a Child and Adolescent Psychotherapist working in a large London Hospital. Five sibling donors, who donated bone marrow to a sibling during their adolescent years, were interviewed. The youngest participant was 13 and the oldest 18. Each was interviewed once with the invitation to speak about the experience of deciding to donate, about their experience of donating and about their feelings after donation. The interviews were informed by a psychoanalytic approach in which close attention was paid to what may have been left unsaid, as well as what was said, and to the unconscious communication of emotion. Interviews were analysed using thematic analysis. This approach revealed a number of themes including the extent of donors' anxiety when their brother or sister suffered side effects such as GvHD. This can be understood psychoanalytically as a concrete form of projective identification where the more angry ordinary mixed feelings of one sibling for another have been projected visibly (in fantasy) into the sibling. This created feelings of anxiety and guilt and in one case had a detrimental impact of the donor's education and feeling of self-worth. Feelings of anxiety about the donation of a bodily fluid, which in adolescence can have an unconscious sexual connotation, were also evident in the material. The donor's sense of being linked to the recipient sibling in a particular way was powerful and the need to preserve one's self in case further donations were required was also present. The research findings have led to the establishment of a follow up clinic for adolescent sibling donors which currently will be offered at 3 and 6 months post donation. Outcomes for this work will be closely followed to gather further evidence of the importance of attention to this particular group of bone marrow donors.

**Disclosure of conflict of interest:** None.

## NP008

### Treating patients suffering from grade IV acute graft vs host disease (aGvHD): ethical dilemmas and coping strategies on a curative-palliative spectrum

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Bone marrow transplants (BMT) are aimed at curing a disease; treatment for Graft vs Host Disease (GvHD) has no less lofty a goal. Yet, while physicians recognize a point of futility in treatment of BMT, there is not a clear standard for such a point in aGvHD. Nurses, closely involved in all aspects of patient care, witness their suffering firsthand, while managing and carrying out intensive treatments aimed at cure. They report experiencing distress as they grapple with the ethical dilemma of providing aggressive treatment to patients requesting to be relieved of pain. If patients with aGvHD do not respond to treatment, and if their condition worsens considerably, at what point does the team recognize that the treatment is no longer beneficial, and shift their emphasis to end-of-life palliative care? Who should reach this decision? As we get better at treating aGvHD, and we extend patient's lives, are we sometimes only prolonging their suffering? The aim of this article is to describe the complexity of these ethical dilemmas, to explore the difficulty of the nurse's position, and to identify and recommend possible mechanisms to help staff and patients cope. Following informal discussions among nurses, and after they raised issues in monthly nurses' staff meetings, we reviewed the literature and identified themes that arose relevant to care in aGvHD patients. The staff is composed of BMT nurses aged 23–63, with clinical experience from 3 months to 30 years, from multicultural backgrounds. The ethical dilemma as expressed by the nurses has three aspects: (1) as medical thinking and technology are ever advancing, there is always another treatment line to be offered. As the suffering of the patient may extend for a long time, despite all this, one is led to ask when is the right time to consider end-of-life palliative care. (2) Ideally, the patient should decide when to stop active treatment and turn to end-of-life supportive care. Unfortunately, rarely is a situation so clear-cut. When a patient is suffering from virulent aspects of aGvHD, their ability to make decisions may be colored by their immediate suffering. Family involvement in the treatment is also significant, and there could be a conflict between their outlook and the patient's. (3) Last is the issue of patient education. Can we fully describe to our patients what is aGvHD grade IV? Despite our continuous built-in education plan, we often hear allogeneic BMT survivors say they were not adequately informed. We have outlined possible ways of coping with the dilemma: strengthen the staff support system, and help them cope with the difficult situations described. Involve patients in decisions and help them express preferences about treatment, and allow them to assign power of attorney, thus clarifying some of the potential issues. Examine the timing of additional patient education, with emphasis on GvHD and participation of significant other. Examine and establish ways to integrate palliative care into curative therapy, through coordinated efforts of senior nursing and medical staff, specially trained in these areas. As the BMT nurse is routinely exposed to complex ethical issues, it is imperative to conduct further in-depth nursing studies to clarify the relationships between curative care, palliative care and the nursing staff's coping strategies.

**Disclosure of conflict of interest:** None.

## NP009

### Autologous haematopoietic stem cell transplantation for multiple sclerosis managed with double lumen PICC's at Imperial college healthcare NHS trust: our experience

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Multiple sclerosis (MS) is an auto-immune condition where the immune system attacks the myelin sheath, causing a varied array of progressive neurological symptoms. Autologous Haematopoietic Stem Cell Transplant (AHSCT) for multiple sclerosis is a reasonably novel form of treatment, which aims to retune the immune system to prevent the attack on the central nervous system by the autoimmune system. AHSCT has been used for a very small section of patients with MS since 1995. Hammersmith Hospital is one of very few centres performing this procedure. Central venous access devices are an integral part of AHSCT. In the Haematology Department at Imperial College Healthcare NHS Trust (ICHNT), 12 patients underwent AHSCT for multiple sclerosis in 2016 (until end of October). The choice of central venous access device for the patients who underwent AHSCT in the beginning was Hickman line. The Hickman lines are inserted in the radiology department at the Imperial College Trust. The radiology department had longer waiting times. Therefore it was decided to insert PICC (peripherally inserted central catheters) on some of the patients after Haematopoietic Stem cell collection. The Haematology PICC service is nurse led and had dedicated PICC Placers. Therefore appointments for PICC's were much shorter. Referrals for PICC's were sent by the Transplant coordinator directly to the vascular access team. The Haematology PICC placers then placed a double lumen 6 Fr CT PICC on suitable patients. Until July, 7 patients had Hickman line and since August, 5 patients have had PICC's for their AHSCT. Eleven patients who had either of the Central venous access devices (CVAD) successfully completed their AHSCT without any CVAD-related complications. One patient had his PICC removed due to Thrombus on day+3 and since then managed with peripheral IV cannula until recovery. There were no other CVAD related Infections reported. In conclusion, autologous haematopoietic stem cell transplantation for multiple sclerosis can be managed with Double lumen 6 Fr PICC's and are suitable. The ideal time of PICC placement is after haematopoietic stem cell collection. As of early November the Vascular access team have received three more referrals for PICC placements on patients with multiple sclerosis prior to their AHSCT.

**Disclosure of conflict of interest:** None.

## NP010

### Experience of performing stem cell harvest on multiple sclerosis patients using cyclophosphamide and G-CSF mobilisation

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Multiple sclerosis (MS) has been defined as an autoimmune disease of the central nervous system (CNS). Autologous Haematopoietic stem cell transplantation (AHSCT) is currently being evaluated as a therapy for patients with multiple sclerosis (MS). This treatment aims to reset the immune system thereby preventing the autoimmune system attacking the central nervous system. The treatment is suitable for some patients with active MS. It is considered an exceptional therapy for these patients and the long term effects is still to be determined as the treatment is not curative. In 2016, the Haematology unit at Hammersmith Hospital started offering AHSCT as a treatment option for patients with MS. Hematopoietic stem cells (HSC) can be mobilized from the Bone Marrow (BM) into peripheral blood circulation in large

amounts by using chemotherapy and/or a specific cytokine, such as granulocyte colony-stimulating factor (G-CSF). For mobilizing stem cells and maximizing HSC collection, these cytokines are injected into the donor subcutaneously prior to harvesting stem cells. At Imperial College Healthcare NHS trust (ICHNT), Cyclophosphamide (alkylating agent) and G-CSF were used for mobilizing stem cells. Apheresis was performed using the Spectra Optia Apheresis System in accordance with our standard operating procedure. Data collection was done retrospectively from patient records and hospital information systems. At ICHNT, from March to October 2016, there were 14 MS patients who were mobilised. All were successfully mobilized and harvested target cell dose. The target cell dose was  $2 \times 10^6/\text{kg}$ . The majority of patients had peripheral access for the harvest. All patients were given intravenous calcium gluconate 10% 4.4 mmol replacement (prophylaxis) to reduce citrate-related toxicities as per local policy. Eight percent of the patients collected more than the target Cell dose on single procedure while the rest required dual procedures. The patients who required 2 days of collection were due to the timing of cyclophosphamide mobilization regime. The standard regimen is to give cyclophosphamide on day 1, start G-CSF day 4 and stem cell harvest on day 12 or 13. For the patients who required collection on 2 days the collection were days 13 and 14. None of the patients experienced any apheresis related complications. However, one patient developed transient neurologic deterioration following the harvest, which is a documented side effect of G-CSF in neurology patients. The overall 'Imperial' experience of PBSC collection in MS patients is safe, practical and effective.

**Disclosure of conflict of interest:** None.

**NP011**

**Investigate and explore the cause of infusion-related adverse events of the third-part cord blood stem cell**

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Combine unrelated umbilical cord blood (UCB) and haplo-identical sources for transplantation as a novel approach is becoming more and more popular in recent years. And only when the third part of UBC infusion safe, the novel approach of transplantation could go well. However infusion of cryopreserved peripheral blood stem cell is associated with a variety of symptoms, there have been no reports detailing the data of infusion-related adverse events of UCB. Our research is to investigate the infusion-related adverse events of the third-part cord blood stem cell and to explore the cause of the adverse events. Retrospective study 305 patients who successfully underwent haploidentical stem cell transplantation combined with the third part cord blood stem cell infusion from January 2013 to December 2015, including 192 male and 113 female patients; and 40 cases in 2013, 108 cases in 2014 and 157 cases in 2015. Demographic variables collect questionnaire was used to investigate the characteristics of patients and cord blood products, the infusion-related side effects were evaluated and the cause of the adverse event was analyzed. **Results:** 49.5% of patients (151 in 305) experienced the adverse events while infusing the third part cord blood stem cell, 94.7% of patients experienced cardiovascular adverse events including the highest incidence of hypertension was 88.1%. Univariate analysis indicated that age, nucleated cells were found to be related with adverse events which had statistical differences ( $P < 0.05$ ). Multiple-factor analysis indicated that age, cord blood stem cell activity were found to be related with adverse events which had statistical differences ( $P < 0.05$ ). Analysis the correlation between adverse events and infusion time indicated that twenty

minutes infusion time could effectively reduce the incidences of infusion-related adverse events. Patients who were older and got more nucleated cells would experience much more infusion-related adverse events. Twenty minutes for cord blood infusing could reduce the incidence of adverse events.

**Disclosure of conflict of interest:** None.

[NP011] Table 1. Incidence of infusion-related adverse events of the third-part cord blood stem cell in 3 years

Infusion-related adverse events	2013	2014	2015	Total	Incidence (%)
Yes	13	48	90	151	49.50
No	27	60	67	154	50.49
Total	40	108	157	305	99.99

[NP011] Table 2. Importance of some variables on adverse events incidence studied by univariate and multivariate logistic regression

	Univariate analysis		Multivariate analysis	
	P-value	Exp (coef)	P-value	Exp (coef)
Age (years)	0.04	1.030	0.004	1.030
Nucleated cells number	0.461	0.967		
Cell activity	0.013	1.062	0.01	1.064
Actual time of infusion	0.742	1.005		
Type of ABO of receptor	0.048	0.786		

[NP011] Table 3. Twenty minutes for infusion and adverse events, n (%)

Adverse events	Twenty minutes infusion		Total
	Yes	No	
Yes	43 (28.5%)	108 (71.5%)	151
No	62 (40.3%)	92 (59.7%)	154
$\chi^2 = 4.689$ $P = 0.04$			

**NP012**

**Oral cryotherapy reduces the need of total parenteral nutrition and intravenous glutamine support for patients receiving myeloablative conditioning regimens**

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Oral Mucositis (OM) happened in 40–50% patients receiving curative chemotherapy for hematology malignancies. Patients with hematopoietic stem cell transplantation (HSCT) have a higher risk of OM, resulted from the conditioning chemotherapy. The OM is too painful for patients to take any food and prolongs the duration of total parenteral nutrition (TPN) support, raising the concern of infection. However, literature

regarding modified nursing techniques to reduce the severity of OM is scarce. In this study, we aimed to evaluate whether oral cryotherapy could improve the quality of life in patients with OM. Totally we enrolled 112 adult patients undergoing either autologous or allogeneic HSCT at our institute between February 2011 and December 2012. Among them, 89 (79.5%) patients suffered from OM and received TPN infusion for more than 1 day. There were 61 patients received myeloablative conditioning chemotherapy, including total body irradiation, Melphalan, and/or Cyclophosphamide. We used oral assessment guide (OAG) to evaluate OM severity. The higher OAG score (range, 8–24 points) represented for the worse OM condition. The oral cryotherapy group had 32 patients and the control group had 29 patients. For the cryotherapy group, we gave ice cubes or iced 0.9% normal saline for gargling at least 30 minutes before each dose chemotherapy or radiotherapy. Result The highest OAG score was higher in the control group than the oral cryotherapy group (17 versus 15 points). In the oral cryotherapy group, the most frequent conditioning protocols were composed of standard Busulfan/Cyclophosphamide, high dose Melphalan and BEAM with or without Rituximab but for the control group, BEAM with or without Rituximab, total body irradiation and cyclophosphamide, and standard Busulfan/Cyclophosphamide were the most frequent ones. To relieve the OM pain, morphine was prescribed more frequently in the oral cryotherapy group (28% versus 34%). The average duration of using TPN was 13.4 days (range, 3–25 days) in the oral cryotherapy group, which was much shorter than the control group (17.3 days, range, 8–56 days). Furthermore, a lower portion of patients in the oral cryotherapy group used TPN for more than 7 days or 14 days, compared with the control group (84.3% versus 100%, and 46.9% versus 58.6%, respectively). Patients in the oral cryotherapy group had less need of intravenous glutamine (46.9% versus 79.3%) and they used it for a shorter duration (15.5 days versus 19.3 days). Gastrointestinal (GI) tract-related infection was less identified in patients in the oral cryotherapy group (31.3% versus 38%) and the GI complications were also less common (9.3% versus 13.8%). Oral cryotherapy before myeloablative conditioning chemotherapy could effectively reduce the need for morphine and shorten the duration of TPN and glutamine infusion. It could also lower the rate of GI infection and complication. We would like to share this experience to strengthen the clinical care for patients with myeloablative conditioning chemotherapy. Further prospective trials are warrant to validate these findings.

**Disclosure of conflict of interest:** None.

#### NP013

### Ultrasound-guided peripheral vein cannulation reduces the need for central venous catheterization for peripheral blood stem cell harvest procedures

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Achieving robust venous access is fundamental to performing successful and effective apheresis procedures. Peripheral cannulation by traditional visual and palpation techniques is often not possible, resulting in reliance on central venous catheterization (CVC). CVC with large bore catheters is associated with well documented insertion-related risks (Golestaneh and Mokrzycki<sup>1</sup>) and increased patient/donor discomfort. Use of bedside ultrasound to guide peripheral cannulation is a logical alternative and has been highly successful in our single center experience. Data was analyzed from procedural records collected in an Excel database between April 2008 and April 2016 for all patients who underwent a peripheral blood stem cell harvest (PBSCCH). **Results:** The Apheresis nurses took responsibility for undertaking the ultrasound guided peripheral cannulation (USG-PC) in April 2011. The veins cannulated were chosen for ease and accessibility and included both superficial and deep cephalic, basilic, and brachial veins. Three hundred and eighty-three

PBSCCHs were undertaken (Graph 1) in 203 patients (range 1–7, average 1.9, median 2 procedures per patient). There were 226 mobilization episodes (MEs). When comparing procedures four years before and after the introduction of USG-PC (Table 1), the need for femoral cannulation was reduced from 33% to 7% ( $P < 0.0001$ ). In the later period, 92% of procedures were successfully completed using peripheral vein venous access. The results were similar when comparing MEs; femoral cannulation reduced from 30% to 7% ( $P < 0.0001$ ). Procedures that used a combination of approaches have not been included in the analysis.

The introduction of ultrasound to facilitate peripheral vein cannulation has significantly reduced the need for CVC in patients undergoing PBSCCH. Anecdotal feedback has indicated that USG-PC is the preferred method for gaining vascular access in the majority of patients and donors. Additional advantages include significant cost savings, reduced procedure time and improved strategies for preservation of veins. Although using USG-PC is associated with a learning curve, acquiring proficiency in the skill is not difficult, especially with one-to-one support. It is less appropriate for patients requiring multiple procedures in a short time interval and for those with emergent conditions. USG-PC is underutilized within the apheresis setting and when the technology is available, should be considered standard care.

(NP013) Table 1. Venous access approached (%) used for PBSCCHs

	Femoral (%)	Peripheral (%)	Int. Jugular (%)	Periph/ STCVC (%)	Periph/ Fem (%)	
2008–09	22	78	0	0	0	100
2009–10	42	52	2	4	0	100
2010–11	35	54	0	11	0	100
2011–12	37	47	5	8	3	100
2012–13	5	95	0	0	0	100
2013–14	5	95	0	0	0	100
2014–15	6	94	0	0	0	100
2015–16	11	83	0	6	0	100
Total	163	598	7	28	3	

STCVC = skin-tunnelled central venous catheter.

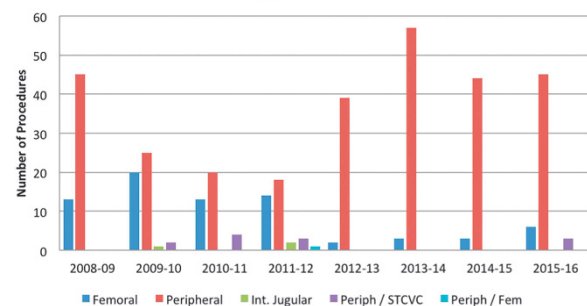
**Disclosure of conflict of interest:** None.

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#### [NP013]

### Venous Access Approach used for PBSCCH



#### NP014

### The CVC management handbook: integration of information for continuity care in a pediatric hematology unit/day hospital/hospital/territory

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The Central Venous Catheter (CVC) is the most commonly used vascular access in Haematopoietic Stem Cell Transplantation (HSCT) for its safety and efficiency. The use of CVC has also greatly improved the quality of care in patients undergoing chemotherapy and stem cell transplants. Although CVC is indispensable in HSCT, but it also represents a significant source of complications, one of which is the development of catheter-associated infections (CAI). The prevalence of CAI depends on intraluminal and exit site infections prophylaxis by using appropriate CVC maintenance equipment and techniques based on worldwide guidelines. The standardization of the CVC management among operators means that the risk of mechanical and infectious complications is significantly reduced. In our reality there was a device management difference between our department, day hospital, in the same hospital and the territory bringing issues related to its management. To try to solve these problems, last year the nursing group of our center has felt the need to create a common tool for the management of CVC who represents an identity document who will follow the whole patient pathway. The nursing group of pediatric onco-haematology unit has developed in collaboration with the medical staff an improvement plan which is divided into several steps.

**First step:** Identification of problems: lack of homogeneity in behaviors in the CVC management and dispersion of data, each department had different forms for documenting maneuvers not shared with other participating centers. **Second step:** Identification of the strengths and weaknesses about procedures in force: sharing of documentation and design of a common document. **Third step:** Handbook implementation. **Fourth step:** sharing of the Handbook through a training course. The Handbook consists of two sections: one contains all the procedures that the staff of the department performs, the second part consists of a catheter in the booklet which will contain all the maneuvers performed by all operators involved in the care plan. The booklet starts to be active on the day of CVC insertion and is delivered, after an explanation to the family that will take care to hand it to the nursing staff whenever the interventions are carried out on the catheter. The handbook will be returned to our center on the day of removal of the CVC at the end of the treatment protocol. With this project, we hope to make CVC management more homogeneous by all health care providers involved, to ensure the completeness of the data and their usability for future studies, and to instill a greater confidence to families. This work provides an annual reassessment, to implement any changes, based on problems encountered after the activation of this instrument.

**Disclosure of conflict of interest:** None.

#### NP015

### Importance of patient education prior to cyclophosphamide priming of multiple sclerosis patients

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Autologous stem cell transplantation (ASCT) is becoming an established treatment for stabilising Multiple Sclerosis (MS). A specific lymphocyte depleting protocol with high dose cyclophosphamide (4 g/m<sup>2</sup>) is employed at our centre for priming and harvesting of stem cells. In 2015, our centre saw a 240% increase in referral of patients for ASCT from the previous year (12 vs 5). The objectives of this audit are to evaluate the: effectiveness of patient education on their

preparedness for emergency situations; type and number of adverse events following intensive cyclophosphamide priming; average day of harvesting to optimise apheresis use. We evaluated a cohort of MS patients who underwent Peripheral Blood Stem Cell Harvest between January 2012 and September 2016. Patients are administered cyclophosphamide 4 g/m<sup>2</sup> in divided dose on Days 1 and 2 as in-patient and discharged home afterward if they were well. Patients receive subcutaneous Granulocyte-stimulating-factor 10 mcg/kg starting from Day 7 to the day of planned harvest. Our centre followed the standard mobilisation protocol with planned harvesting between Days 13 and 15. Patients received education on the side effects of chemotherapy, neutropenic diet, risk of infection, signs and symptoms of infection and were given emergency contact numbers for advice. Between January 2012 and September 2016, 34 patients with a diagnosis of MS (secondary progressive = 11, relapsed remitting = 20, primary progressive = 3) were harvested. Mean Expanded Disability Score (EDSS) of their MS was 5.5 (range 2.5–8) and average age 41 years (range 22–60).

[NP015]

No. of patients	34
Cell dose CD34 average (range)	11 × 10 <sup>6</sup> /kg (4.2–23.3)
No. of bags average (range)	2.26 (1–5)
Actual harvest day average (range)	14.36 (12–19) <sup>a</sup>

<sup>a</sup>One patient had neutropenic sepsis and was harvested on D17. Another patient was neutropenic on D15 (Thursday) and harvested on D19 (Monday) as there was no weekend service.

Readmissions following discharge after cyclophosphamide priming were 29% (10/34); neutropenic sepsis = 9, haematuria = 1. All readmitted patients rang the hospital for advice or attended their local Emergency Department. All were discharged following successful stem cell harvest with no further adverse event. Only one patient (Primary Progressive, EDSS 6.0, age 35) remained as in-patient from cyclophosphamide priming until stem cell harvest. Average day of harvesting was D14 with the majority harvested between D12 and D15. No patients failed to mobilise and all patients were harvested in a single day with very good yields. Discussion Despite high EDSS for this group, all but one patients were discharged after initial Cyclophosphamide priming. Overall, the mobilisation protocol was well tolerated and all patients proceeded to ASCT. Significantly almost a third of patients experienced emergency readmission with neutropenic sepsis or haematuria between priming and harvesting. However, as a result of patient education, they sought appropriate and timely medical advice when unwell. As a consequence of this audit, we additionally inform patients of the readmission rate and reinforce the importance of the advice given.

**Disclosure of conflict of interest:** None.

#### NP016

### Improving the quality and consistency of patient education on discharge post autologous stem cell transplant

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The intensive nature of Autologous Haemopoietic Stem Cell Transplant (AHSCT) profoundly affects psychological and physical well-being of patients, making provision of clear information and effective supportive care particularly important. The pathway of discharge advice in Sheffield was provision pre admission of an ASCT information booklet written by the BMT Nurse Coordinators (BMTN) and a 'face-to-

Figure 1 (NP016)

Post Autologous Transplant Discharge Checklist		
Date:		
Time:		
In-patient discharge or Ambulatory?		
Name/s Nurse undertaking discharge discussion with the patient:		
Post-transplant discharge discussion with the patient included the following:	Initials:	Date:
Check patient has a copy of 'Autologous Stem cell Transplant' booklet (provide a copy if not)		
Diet, including food hygiene & fluids		
Risk of infection & socialising		
Contact with an imab		
Bruising & bleeding		
Dental treatment		
Fatigue (Anthony Nolan information booklet)		
Sexuality		
Exercise (Haematology rehabilitation programme)		
Returning to work & holidays		
TTO's received on ward & checked; TTO's given to & explained to patient; discussed with carer if relevant.		
Hickman line care (including providing with equipment and additional TTO's)		
Follow up appointment provided/discussed with patient?		
Transport booked as required & patient notified?		
Patient advised to contact O2 Day Ward 8-8pm Mon – Fri, 8-4pm Sat or P3/4 out of hours, weekends & BH's for any of the following:		
<ul style="list-style-type: none"> <li>• Temperature 38°C &amp; over</li> <li>• Bruising &amp;/or bleeding</li> <li>• Diarrhoea</li> <li>• Coryzal or flu symptoms</li> <li>• Contact leaflet given</li> <li>• Alert card given</li> </ul>		
Patient aware of psychological care – Cavendish Centre?		
Other issues – please record.		
<small>Q Pulse reference: Lab 418. Version: 1 Issue date: 04/05/2016 Review date: 04/05/2018</small>		

face' meeting with a BMTC on the day of discharge. However an increasing number of patients were being discharged without a pre discharge consultation with the BMTC, this was due to their lack of availability caused by an increased workload. The impact of this was a concern that patients would delay seeking medical advice due to lack of knowledge and increase stress and anxiety for patients post discharge home. The ward staff were felt to be the appropriate people to deliver this advice to encourage a more timely and effective discharge process, and to provide an associated opportunity to empower and educate the staff regarding post-transplant care and issues to be recognised. The audit aimed to evaluate the effectiveness of a patient ASCT discharge checklist sticker (PADCS) to improve the quality of discharge information and thus providing documented evidence in patient records. A PADCS itemising 17 discussion points was devised for ward based nurses to sign and stick in the medical notes once a discharge interview had been conducted. An audit of a random 20 patients' medical notes (January–June 2016) was done to assess documentation that advice had been given on discharge pre introduction of the PADCS using the same categories of advice. Staff education re discharge advice and use of the PADCS alongside its formal introduction was conducted July–August 2016. A series of 10 medical notes were reviewed in September 2016 to assess evidence of use of the PADCS. Pre introduction of PADCS, 15/20 medical notes had documentation regarding 'take home medication' advice, 15/20 follow-up appointment, 4/20 transport issues, 4/20 contact telephone numbers and 3/20 had documentation re CVC line care advice. No other advice was recorded as being discussed. Post introduction of PADCS, 4/10 medical notes had the PADCS included at discharge. Whilst the uptake of this new initiative appears disappointing, the ward staff have welcomed the structure for advice post discharge that the PADCS provides and are keen to use the PADCS which is encouraging. Staff training was limited due to staff shortages of those conducting training and peak annual leave time due to summer months. This affected awareness that the PADCS

was being introduced and in hindsight this could have been promoted more aggressively. Staff training is on-going, and there are plans to devise a similar initiative for patients undergoing allogeneic stem cell transplant.  
**Disclosure of conflict of interest:** None.

**NP017**  
**Think VOD: early detection—life-saving**

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Severe veno-occlusive disease of the liver (VOD) is one of the most devastating complications of hepatic endothelial origin, in hematopoietic stem cell transplantation (SCT). It can appear as early as 21 days, and up to 2 months after SCT and is a potentially life threatening complication. Most cases of mild VOD resolve spontaneously. Severe VOD that evolves to multi-organ failure has a mortality rate higher than 80% and represent one of the major clinical problems at SCT. Patients receiving pre transplant conditioning with Cytarabine, Cyclophosphamide, Busulphan and or TBI are at higher risk for VOD. The aim of this study was to introduce the clinical entity of VOD to the nursing staff. Knowing the clinical signs and symptoms as well as the laboratory findings which can help an early detection of VOD. Defibrotide, a drug that is effective for the treatment of the VOD in Europe and USA, can be considered sooner. Questionnaires were distributed to 80 nurses of the bone marrow transplant (BMT) and Hemato-oncology departments in Tel Hashomer hospital. The questionnaires examined the level of knowledge and skills of the nursing staff regarding VOD, such as risk factors, signs, symptoms and treatments, as well as the acquaintance with Defibrotide. 75% of the nurses were familiar with the clinical profile of a patient with VOD but only 68% of them knew the values of bilirubin that indicated the level of VOD. Furthermore only 61% of the nurses knew the bilirubin level recommended to start treatment with Defibrotide. 59% of the nurses were



Figure 1 [NP017]

### The next death that you can prevent – look for VOD

**Patient after BMT**  
Look for:

Weight gain  
Ascites  
Hepatomegaly  
Jaundice  
Increased bilirubin  
Right upper quadrant pain  
(Symptoms usually present within first 3–4 weeks but can occur up until two months)

OR

Differential diagnosis with:  
Fluid overload  
Right heart failure  
Hepatic GvHD  
Constrictive pericarditis  
Hepatitis (viral, fungal)  
Renal failure  
Other ascites (pancreatic, chylous)  
Haemolysis

↓  
Suspicion VOD

maintenance of an adequate fluid and sodium balance  
avoidance of hepato or nephrotoxic drugs

↓  
weight-gain progresses

carefully used diuretics

↓  
Worsening symptoms (severe VOD)

**DEFIBROTIDE**

Dose is 6.25 mg/kg every 6 hours (25 mg/kg/day), administered by slow intravenous infusion over 2 hours, diluted with 5% glucose solution for infusion or sodium chloride 9 mg/mL (0.9%) solution for infusion. final concentration of defibrotide should be in the range of 4–20 mg/mL.  
Treatment should continue until complete resolution of all the signs and symptoms of VOD.  
Common adverse reactions: Haemorrhage, Hypotension, Coagulopathy, Vomiting

What's going on?  
damage to the hepatic sinusoidal endothelium as a result of conditioning regimen before BMT, production of toxic metabolites by the hepatocytes in the liver.  
Increased thrombosis and decreased fibrinolysis. Sinusoidal damage and narrowing. Inflammation.  
narrowing of the sinusoids which may ultimately result in an obstruction of the hepatic sinusoids, Prothrombotic changes and clot formation

Severe VOD is associated with MOF and a high mortality rate (>80%)

DEFIBROTIDE: The exact mechanism of action of DF is not yet well understood, but it is probable that anti-inflammatory, anti-thrombotic and anti-apoptotic effects on endothelial cells are the main mechanisms of its beneficial effect

	Mild	Moderate	Severe	Very severe-MOD/MOF
Time since first clinical symptoms of SOS/VOD	> 7 days	5-7 days	≤ 4 days	Any time
Bilirubin (mg/dL) Bilirubin (µmol/L)	≥ 2 and < 3 ≥ 34 and < 51	≥ 3 and < 5 ≥ 51 and < 85	≥ 5 and < 8 ≥ 85 and < 136	≥ 8 ≥ 136
Transaminases	≤ 2 × normal	> 2 and ≤ 5 × normal	> 5 and ≤ 8 × normal	> 8 × normal
Weight increase	< 5%	≥ 5 % and <10%	≥ 5 % and <10%	≥ 10 %
Renal function	<1.2 × Baseline at transplant	≥ 1.2 and < 1.5 × baseline at transplant	≥ 1.5 and < 2 × baseline at transplant	≥ 2 × baseline at transplant or others signs of MOD/MOF

not aware that VOD could appear even 52 days after SCT. 67% of the nurses did not know that VOD affects the endothelial cells. 29% were not aware of the transplant related factors including the risk of certain types of chemotherapy. 37% of the nurses did not appreciate the high mortality rate. Therefore, a meeting was scheduled with a multidisciplinary team. They reviewed the disease process, its complications, the clinical signs and symptoms. Finally they introduced to the nursing staff the new VOD guidelines and the implications of early treatment, with emphasis in detecting early signs, symptoms, and current available treatments. After the staff meeting the level of knowledge was evaluated, and a significant improvement was found. An internal informative tool based on the new classification criteria was developed, so every nurse could use. High mortality rate caused by a severe VOD can be lowered effectively by greater attention and knowledge of the nursing staff. For this reason, daily monitoring should be maintained to detect early symptoms and signs of VOD. Updating the nursing staff regarding the new guidelines and innovations can help detecting the patients at risk and start treatment earlier.

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**Disclosure of conflict of interest:** None.

**NP018**

**A survey to examine the effects of a new electronic prescribing and notes system within a large stem cell transplant unit**

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A new electronic prescribing and notes system has recently been launched within a stem cell transplant centre in North West London. This study will survey nursing and clinical staff to find their opinions of potential improvements that the new system has had over incumbent paper based notes and prescribing. A 10-point questionnaire was developed that probed areas of expected improvement over paper systems that were identified after analysis of relevant literature. The areas included; quality of documentation, time savings, communication improvements and patient safety. The questionnaire was presented as a series of statements requiring the respondent to indicate how much they agreed or disagreed on a five point scale (1 agree strongly, 5 disagree strongly). The area of expected improvement (such as 'quality of documentation' for example) was not indicated to reduce bias in answering. This questionnaire was given to all Nursing and Medical staff within the department and recorded the profession of the respondent for further analysis. Comments fields are included after all of the 10 questions. The survey is ongoing and is expected to include 30–50 nursing and 10 medical staff as respondents within a two month period. However, some results are available at present which enable some initial findings with the strong caveat that the small sample size at this stage precludes detailed analysis. Preliminary results from six questionnaires show that respondents feel that electronic notes and prescribing has improved patient safety and quality of documentation (median answer of 2, s.d. 0.75). However the statements regarding time savings

(median answer 2 s.d. 1.10) show that some respondents do not necessarily find the new system more efficient. Furthermore communication improvements (median answer 2.5 s.d. 1.24) are not reported by respondents. Further analysis will be available when more data has been collected. In addition, comments fields have been utilised to provide some additional qualitative analysis of opinions. Electronic notes and prescribing systems are expected to improve key areas of healthcare provision. This study provides first hand evidence of the views of nurses and clinicians that are experiencing this change and so can provide insight into what areas of improvement should be examined to utilise these new systems to their full potential and promote improved productivity, safety and quality of care.

**Disclosure of conflict of interest:** None.

#### NP019

##### **Systemic sclerosis and cardiotoxicity in hematopoietic stem cell transplantation: a reported case**

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<sup>2</sup>Hospital das Clínicas, Ribeirão Preto Medical School, University of São Paulo

Autologous Hematopoietic Stem Cell Transplantation has been applied to autoimmune diseases. This treatment is non-myeloablative and includes high-dose cyclophosphamide (Cy), which is an immunosuppressive drug that suppresses and modulates lymphocytes through the alkylation of cellular components. This drug has hepatic metabolism and crosses the hematoencephalic barrier. It is also cardiotoxic and can lead to cardiac failure and potentially fatal myocardial hemorrhage. We report a 28-year-old female patient who started Raynaud's phenomenon and bilateral arthralgia of knees and elbows two years before admission for transplant. She evolved with thickening of the skin in upper limbs and had a diagnosis of systemic sclerosis established after 3 months. She was treated with methotrexate and azathioprine but had worsening of the skin involvement, with digital ulcerations. Before transplantation, an echocardiogram indicated an ejection fraction of 64%, without abnormalities. Electrocardiography and ergospirometry also did not evidence any abnormalities. Pre-transplant conditioning regimen included 200 mg/kg Cy and antithymocyte globulin (ATG). On the first day of Cy infusion she presented weight gain and increased central venous pressure. According to institution protocol, water and electrolyte balance were assessed every four hours by the nursing team, and identified excess fluid retention. Despite diuretics administration, the patient still presented volume overload in the first five days after conditioning, and saturation drop requiring oxygen support. On D-2 patient had crepitations in the lower 2/3 of the lungs. At this time point, a new echocardiogram evidenced an ejection fraction of approximately 30%, associated with global hypokinesia of the myocardium. There was worsening of saturation levels, regardless of oxygen support and intravenous nitroglycerin. Hematopoietic stem cells infusion occurred on D0. There was further decline of oxygen saturation and tachycardia, and the patient was admitted to the coronary unit for intensive cardiac care for two days. Cardiac-specific treatment enabled partial recovery and clinical stabilization. Hospital discharge occurred on D+15. The heart function was normal after three months of transplant. We observed, in this case, that strict monitoring of fluid balance associated with systematic physical examination allowed the early identification of cyclophosphamide-associated cardiotoxicity. Thus, nurses have a fundamental role in assisting patients undergoing autologous transplantation, especially in patients with systemic sclerosis.

**Disclosure of conflict of interest:** None.

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#### NP020

##### **Implementing patient self administration of subcutaneous granulocyte-colony stimulating factor (G-CSF)**

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Patients attending the Clinical Apheresis Unit (CAU) in Edinburgh Royal Infirmary have always had the evening District Nurse Team visit them at home to administer their lenograstim (G-CSF) injection prior to attending for haematopoietic progenitor cell collection. This was previously arranged by the transplant coordinator from their referring hospital. However due to staffing issues this arrangement was not sustainable and staff from CAU were asked to arrange the district nurse (D/N). Various issues then emerged such as communicating with the D/N due to it being an out of hours service, variable injection timings depending on the D/N workload, patients having to wait in for the visit and the feeling of uncertainty around the visits. Therefore consideration was given to the possibility of CAU staff teaching the patients (or relatives) to administer these injections. A plan was drawn up as to the best way forward. Discussions took place with the referring clinicians and teaching materials were obtained from the lenograstim supplier such as demonstration DVDs and time expired product for practical demonstration of reconstitution. Relevant literature was read and advice sought from other health professionals providing similar services and a check list was developed. All patients were to be offered the DVD pack and drug reconstitution demonstration and practise. It would be documented if any patients declined to self-administer their G-CSF and the reasons noted for audit purposes. The patients already attend for assessment and an explanation of the forthcoming procedure (haematopoietic progenitor cell collection) so it was decided that a teaching session should be included in the visit. As the teaching progressed the checklist and teaching vocabulary were adapted to become more appropriate and streamlined. Patients were given emergency out of hours contact telephone numbers should they have any immediate concerns and their initial visit was then followed up with a phone call to offer support on the day after the first injection to ensure no problems had been encountered.

[NP020]

No. of patients (June–October 2016)	Self administering	District nurse required
24 (100%)	18 (75%)	6 (25%)

There was a good uptake by patients and their relatives with only a small percentage declining to self administer (due to lack of confidence, needle phobia or other reasons). The patients demonstrated a good understanding of the process and were very positive about the experience. Staff were confident that the injections were being given at regular times and, as patients mobilised as expected, that the injections were being administered correctly. Financial costs and work load in relation to district nurse attendances have also been reduced.

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**Disclosure of conflict of interest:** None.

## NP021

### Developing the role of the inpatient advanced nurse practitioner

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It has been noted within the Cancer Care Centre in Southampton that continuity of patient care and patient experience on the inpatient wards was being adversely affected by the impact that the European working time directive has had on availability of junior doctors on the wards. The planned reduction in junior doctor training posts and changes to their training is also likely to further compound this. To improve patient experience and continuity of care a case of need for developing advanced nurse practitioners (ANPs) in the inpatient setting was developed and jointly funded by Macmillan Cancer Support and University Hospital Southampton NHS Foundation Trust. To ensure that the planned benefits of this project could be monitored and targets met, a monthly operation group and three monthly steering group were set up. Feedback has been sought throughout the project from colleagues of all levels, the trainees, and the patients. A robust 2-year training programme was developed in conjunction with the Divisional and Cancer Care Education team, along with a detailed competency document. Each nurse has been enrolled on the Masters in Advanced Clinical Practice. They have been assigned to a consultant supervisor, who has supported and supervised their learning needs throughout the programme. They have been supervised in practice by registrars and speciality doctors, clinical nurse specialists, consultant nurses. Training has included the management of cancer care emergencies, history taking and physical assessment, and non medical prescribing. A bespoke course was also developed for the non medical authorisation of blood products. The trainees have undertaken projects to improve patient experience, changes made to elective inpatient pathways, ensuring that treatment is delivered in a timely fashion, reducing length of stay, and that discharge planning is implemented on admission. They have been key to the introduction of the twilight service to improve support for patients in the evenings on the wards. Feedback from patients and colleagues has been uniformly positive. Patients are routinely rating their care from the ANP's as excellent. Colleagues are reporting back on the direct impact they are having throughout the wards, with nurses particularly feeling the benefit of the support and education they provide to patients and themselves. The trainees have now completed the 2-year programme and are working as ANPs throughout cancer care including the haematology/blood and marrow transplant unit, based on the wards and the day unit. Their core role involves admission clerking, discharging of patients, procedures including bone marrow biopsies, line removals, ascitic drain insertions, prescribing, assisting on ward rounds, booking tests for patients, informing patients, teaching nursing colleagues, providing skilled nursing care, improving the skills and knowledge of the ward based nurses. This has demonstrated the value of having a highly trained and skilled nursing workforce which improves patient experience. Following the success of this pilot a further three trainees have been recruited and a business case for further posts has been developed to ensure succession planning.

**Disclosure of conflict of interest:** None.

## NP022

### How do you define safe staffing levels on a blood and marrow transplant unit?

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According to the Joint Accreditation Committee for ISCT.EBMT (JACIE), 'There should be a nurse/patient ratio satisfactory to manage the severity of the patient's clinical status' (JACIE 2015 v6 B3.7.6). Over the years at University Hospitals Southampton NHS Foundation Trust (UHS) different models have been used to gather patient data to inform staffing levels. The acuity and dependency scoring tool (Harrison, 2005) was used three times a year to provide a snapshot view of these levels. This tool consisted of 5 levels—0, 1a, 1b, 2 and 3. Level 0 indicated patients requiring hospitalisation but needs were met through normal ward care. Level 1a indicated acutely ill patients who were unstable and had an increased potential to deteriorate. Level 1b indicated stable patients who were dependent on an increased level of nursing support. Level 2 indicated patients requiring the support of a high dependency unit, and level 3 indicated patients requiring an intensive care unit. By measuring only three times a year, this snapshot only allowed a limited understanding of patients' ongoing acuity and dependency. However from the results of these audits UHS received a £3 million investment. The blood and marrow transplant unit (BMT) gained not only an increase in numbers but also in seniority of staff. The next stage of data collection has been the use of the Safer Nursing Safecare tool (Shelford Group, 2014). It is hoped that this tool will reveal a more accurate picture of patients' needs and hence staffing levels required. This differs from previous tools by measuring acuity and dependency three times a day every day and includes additional levels. Level 1c indicates patients that are not able to be left alone either due to their mental capacity or risk of falls. Level 1d indicates patients that require intensive trained nursing care. The tool also includes a 1:1 level which is similar to the 1d level highlighting the possible difference in interpretation and application of the levels. The tool also enables the scorer to record specific generic tasks such as on site escorts and turning patients that require more than three staff. In addition notes can be added about specific care not identified in the task list which could include patients receiving cellular therapy or chemotherapy. Currently the use of notes is under-utilised. The challenges of using this tool is subjective and does not always take into account the specific needs of the patient group, e.g. on a BMT unit all patients are nursed in isolation which demands a greater nursing input. There will always be challenges when using generic tools in the BMT setting, including how the wider audience interprets all of the data and relates it to a specialist area. Will the use of the Safer Nursing Safecare tool, which is better understood each year, in conjunction with Care Hours per Patient Day, enable us to categorically demonstrate the staffing numbers and skill mix needed on a BMT unit?

**Disclosure of conflict of interest:** None.

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### NP023

#### **Innovative ways of delivering a triage service to provide haematology and renal patients direct access to specialist services**

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In August 2016, a new joint triage unit for Haematology and Renal services was launched at Hammersmith Hospital (HH) to provide direct access to specialist beds for those patients requiring emergency admission. The new treatment pathway was developed following the reconfiguration of acute medicine services within Imperial College Healthcare NHS Trust (ICHNT) that included the closure of the specialist medicine assessment centre (SMAC). This followed the closure of the Accident and Emergency (A&E) department in 2014 on the HH site, which was in line with the Shaping a Healthier Future programme for North West London to reshape healthcare services in and out of hospital. Part of this strategy included developing HH into a site for haematology, renal and cardiac specialist services. The challenge of this service reconfiguration was ensuring that there remained a suitable clinical pathway in place for emergency admissions that resulted in the development of a joint haematology and renal triage unit. In response to the A&E closure haematology services had already in place a combined Triage and Assessment (T&A) unit and helpline for the haematopoietic stem cell transplant (HSCT) and general haematology population, as well as, a day pain service for sickle cell patients. A passport was issued to haematology patients receiving active treatment. Initially, the operating hours were set up to provide assessment facilities for walk-in patients and/or those patients who had been triaged over the helpline. The unit was set up to provide a 7-day service during day time hours. With the subsequent closure of SMAC earlier this year the remaining services were faced with the challenge of providing emergency care with direct access to specialist services. A decision was taken that the most sustainable and safe option was for haematology and renal services to develop a joint working model. The project was complex for several reasons including the significant pressure of working to a very quick turnaround from Trust approval to implementation, cross divisional working that had not been attempted at ICHNT before, identifying a suitable location to receive patients, recruiting/integrating appropriately skilled nurses, agreeing suitable medical cover and ensuring the area was adequately equipped and resourced. It was agreed that this new triage unit providing 24/7 care would be co-located on a general haematology ward providing eight trolley spaces with the haematology senior nursing team assuming overall responsibility for managing the area. Since the unit was launched providing direct access to emergency care there have been ~500 patients that have been treated, with 60% being haematology patients. The aim is for patients in this area to be reviewed/assessed by their specialist team and a decision taken to treat/admit or discharge within 4–6 h. Currently, 50% of presenting patients are discharged back home from the triage unit. Regardless of how well these operational changes are planned, there are always issues which arise during implementation. A collaborative team approach has been key to the successful implementation of this project.

**Disclosure of conflict of interest:** None.

### NP024

#### **Risk factors for hematopoietic stem cell infusion related toxicity in children: the search for a safe procedure**

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Infusion of hematopoietic stem cells (HSC) is performed by nurses following standard operating procedures together with

physicians at the inpatient setting. Infusion related toxicity represents an important clinical issue that may lead to severe complications. The main objectives are to describe and analyze adverse events (AE) during and after HSC infusion, analyze associated risk factors and to look for improvement areas for safe infusions. A retrospective analysis of HSC infusions between January 2013 and December 2015 was carried out. A total of 126 infusions were reviewed, 33 infusions for autologous peripheral blood stem cell (PBSC) transplant, 12 infusions for allogeneic bone marrow (BM) transplant (2 cryopreserved BM products), 16 infusions for allogeneic cord blood (CB) transplant, and 65 infusions for allogeneic PBSC transplant. The median age of our patients was 7. Diagnosis was divided in non-malignant diseases (25%), solid tumors (21%), malignant diseases (50%) and lymphoma (4%). One or more AE were registered in 67 (53%) of the total infusions. The frequency of AE was higher with infusion of cryopreserved products containing dimethyl sulfoxide (DMSO) ( $P=0.029$ ). Stem cell source, in our case BM, was also related to more AE ( $P<0.05$ ). With multivariate logistic regression, HSC source, DMSO and graft manipulation, we found that the risk of AE when infusion of non-manipulated products is significant ( $P=0.005$ ). Including variables of DMSO and source of HSC, the significant variable is DMSO product infusions ( $P=0.031$ ). This study allows us identify that pediatric patients receiving cryopreserved products and bone marrow are special risk factors for AE after HSC infusion. We still find room for improving safety practices. Infusion of cryopreserved products containing DMSO is related with more AE; this practice may be avoided using techniques that allows washing thawed products before infusion. SC source, BM, is also related to more AE. The reason of this is not clear, but the use of non-cryopreserved PBSC seems to be related to less AE.

**Disclosure of conflict of interest:** None.

### NP025

#### **An island of coexistence in the pediatric bone marrow transplantation unit: the role of the social worker**

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For years, at Rambam Medical Center patients from Palestinian authority (West Bank and Gaza strip) are treating with a wide range of diseases. The pediatric Hematology Oncology division recruits about 120 new patients per year, mostly from the North of Israel, 10 to 20% are Palestinian children. The cancer diagnosis of a child puts an enormous mental, physical and economic burden on the parents and changes the family routine. For the Palestinian children, dealing with cancer and bone marrow transplantation is particularly difficult when treatment involves traveling to hospitals in Israel, being far away from their family and living environment, which requires them to adapt to far-reaching changes. In addition, the sick child and his family during the bone marrow transplantation have to cope with the illness, prolonged hospitalization and treatment in a state of isolation, while extreme detachment from the rest of the family and familiar world. From 2005 to 2016, 116 Palestinian children were admitted, aged range from 4 to 26 years, 80% come from the West bank, 20% from Gaza strip. From 2015 till today, 67 children are still on treatment or close follow up. All patients from the West Bank get an entry permit for both parents, but families from the Gaza Strip receive an entry permit for only one person. The children who are 2 years from end of therapy are not admitted to come for follow up in our institutions, excepted if they developed relapse. Forty one children came for hematological diseases mainly thalassemia, 30 (73%) underwent allogenic bone marrow transplantation (BMT), 23 children with oncological diseases (3 underwent BMT). Children admitted for chemotherapy may stay in hospitalization for days to several

months depending on the treatment protocol. A dedicated Arabic spoken social worker is employed only for the Palestinian population; her intervention starts before the arriving of the children with the organization of the treatment plan together with the medical staff. Then, the social worker supports the child and his family during the treatments, the processing of medical information provided to the child and parent, identifying and strengthening of internal resources (optimism, resilience, sense of coherence, hope). The Palestinian Families cope also with the financial burden of the hospitalizations; the social worker helps the child and his family financially (looking after fundraising, community associations and volunteer organizations). She also coordinates and directs the transport of the families traveling from the border checkpoint to the hospital and back home. The dedicated social worker is the case manager for the social intervention with families coming from the Palestinian Authority. The social worker role is to help improving the adaptation of these patients before, during and after the treatments together with the multidisciplinary team, accordingly to the needs of the child and the family.

**Disclosure of conflict of interest:** None.

#### NP026

##### **Comparison of levels of hope, hopelessness, depression, and the factors affecting them between the patients scheduled and those undergoing hematopoietic stem cell transplantation**

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The present study was conducted as a cross-sectional one with purpose of reviewing the levels of hope, hopelessness, depression, and the factors affecting them in the patients scheduled and those undergoing hematopoietic stem cell transplantation. The present study included a total of 499 patients who were scheduled to have and undergoing stem cell transplantation between May 2013 and November 2016 in Bone Marrow Transplantation Center of Hospital of Private Anadolu Health Center. Of them, 286 patients were cases of autologous, 128 allogenic, 42 haploidentical hematopoietic stem cell transplantation, and 43 were cases of hematopoietic stem cell transplantation from non-relatives. And 168 of the patients were pretransplantation and 331 were posttransplantation patients. In collecting data Demographic Characteristics Form, Beck's Hopelessness Scale (BHS) and Beck's Depression Inventory (BDI) were used. Dependent variables included levels of hope and hopelessness in the patients scheduled and undergoing stem cell transplantation. Beck's Hopelessness Scale (BHS) is a clinical scale developed by Beck and colleagues (1974) consisting of 20 items with purpose of determining the individual's pessimism level toward the future. Beck and Steer (1988) divided the subjects in 4 groups based on their responses; scores between 0 and 3 indicate absence of hopelessness at all, those between 4 and 8 indicate presence of mild hopelessness, those between 9 and 14 indicate intermediate hopelessness, and the scores between 15 and 20 indicate presence of severe hopelessness. Based on the respective scores, the scale indicate normal situation for the scores 1 to 10, intermediate affective disorder for those 11–16, clinical depression for those 17–20, intermediate depression for those 21–30, serious depression for those 31–40, and severe depression for the scores 41–63. The data were analyzed by percentage, Shapiro–Wilks, Mann–Whitney's U-test, and Kruskal–Wallis tests and other statistical tests. No significant difference was found between age, sex, marital status, educational level, comorbidities, number of transplantations, use of antidepressant medications, and pre and posttransplantation hopelessness level of the patients ( $P > 0.05$ ). No statistically significant difference was found

between the patients scheduled and undergoing at least two mismatched allogenic hematopoietic stem cell transplantation or transplantation from nonrelatives ( $P = 0.730$ ,  $P > 0.05$ ). In regard to sex, depression scores were higher in the women than in men ( $P > 0.05$ ) ( $P = 0.000$ ,  $P < 0.01$ ). The subjects with co-morbidities had higher depression scores than those without co-morbidities ( $P = 0.022$ ,  $P < 0.05$ ). The subjects using antidepressant medication had higher scores than those not using them ( $P = 0.002$ ;  $P < 0.01$ ). Based on results of the present study, it may be suggested that the patients scheduled and undergoing hematopoietic stem cell transplantation had high level of hope. Type of transplantation (autologous or allogenic) seems not to affect hopelessness and depression scores of the patients. Evaluating the patients psychologically prior to treatment and starting antidepressant medication or psychotherapy on time in those requiring treatment may improve quality of life of the patients. For the patients to have hope and good morale may improve compliance to the treatment.

**Disclosure of conflict of interest:** None.

#### NP027

##### **Nausea and emesis management in patients undergoing allogeneic stem cell transplantation: a GITMO survey on 54 Italian transplant centers**

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Nausea and emesis represent two of the most disturbing adverse events, which negatively affect the quality of life (QoL) of patients undergoing conditioning regimen for allogeneic stem cell transplantation (alloSCT).<sup>1,2</sup> With the aim to evaluate the medical and nursing management of nausea and emesis, on behalf of GITMO (Gruppo Italiano Trapianto di Midollo Osseo), we conducted a survey on 54 Italian Transplant Units. Six cognitive areas were investigated: (1) presence of procedures and protocols, (2) pharmacological approach, (3) data recording, (4) utilization of scales, (5) non-pharmacological approach and (6) single-center experience. (1) **Procedures and protocols.** Overall, 70% and 50% out of 54 centers had a protocol or a procedure for the management of nausea and emesis after chemotherapy and radiotherapy, respectively. An informative form with emetic activity of each drug is available in 72% centers. (2) **Pharmacological approach.** Ninety-four percent of the centers utilize antiemetics for vomiting (mainly serotonin antagonists 76%, steroids 52%, prokinetic agents 36%). Sixty-eight percent of centers uses both, venous and oral administration; drugs for anticipatory nausea (benzodiazepines 57%, serotonin antagonists 36%, prokinetic agents 20%, others 21%) are employed in 68% of centers. (3) **Nausea and emesis recording.** Overall, 74% and 96% of the centers records nausea and vomiting episodes, respectively. Also, episodes of retching were registered in 39% centers. (4) **Utilization of scales.** Only 13% and 15% of the interviewed centers utilizes nausea and emesis evaluation scales. The most common utilized scale resulted CTCAE (Common Terminology Criteria for Adverse Events) in 71% of cases. Only 2 centers

(NP026) Table 1

TABLE 1									
Demographic Characteristics									
Age	Demographic Characteristics	Hopelessness scores			P Value	Depression Scores			P Value
		Median	Min	Max		Median	Min	Max	
	18-45	2	0	16	0,439	8	0	40	0,201
	46-65	2	0	14		8	0	41	
	65+	2	0	7		7,46	0	22	
TABLE 2									

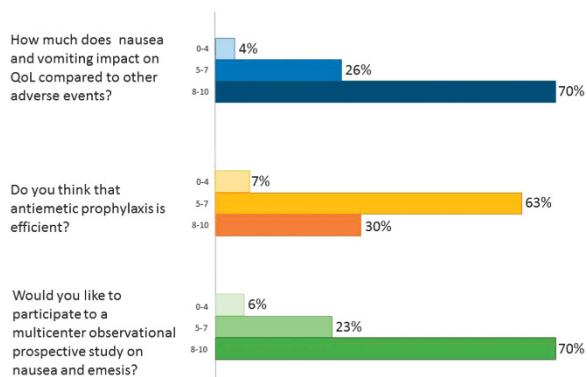
Hopelessness-Depression scores of the patients by their demographic characteristics									
Sex	Demographic Characteristics	Hopelessness scores			P Value	Depression Scores			P Value
		Median	Min	Max		Median	Min	Max	
	Female	2	0	16	0,359	9	0	41	0
	Male	2	0	14		6	0	40	
	Marital Status				0,79				0,587
	Married	2	0	14		8	0	41	
	Single	2	0	16		7	0	26	
	Educational Level				0,256				0,301
	Literate	2	0	8		7	0	30	
	Primary School	2	0	14		8	0	34	
	Secondary School	2	0	13		9	0	41	
	High School	2	0	15		8	0	40	
	University	2	0	16	7	0	27		
TABLE 3									

Hopelessness-Depression scores of the patients by their co-morbidities									
Diagnosis		Hopelessness scores			P Value	Depression Scores			P Value
		Median	Min	Max		Median	Min	Max	
	Multiple Myeloma	2	0	14	0,443	6	0	30	0,257
	Lymphoma	2	0	16		8	0	41	
	AML	2	0	15		7	0	31	
	ALL	2	0	9		8	0	34	
	CML	2	0	5		10	0	22	
	MDS	2	0	7		8	1	28	
	Aplastic Anemia	2	1	11		10	0	23	
	CLL	1,5	0	2		7	1	27	
	Solid Organ Tumors	2	1	7		12	2	21	
	CMPD	4,5	1	6		14	7	18	

utilize functional living index-emesis (FLIE) and visual analog scale (VAS) tools. Nurses and physicians cooperate in evaluation of antiemetic prophylaxis in 85% of Transplant Units. (5) **Non-pharmacological approach.** In 28% of cases, a non-pharmacological approach is usually utilized (mainly, psychological 63% and nutritional support 36%, music therapy 27%). In 61% of the centers, educational and informative interventions are offered at the moment of admission, with particular attention to oral care, body care and nutrition (73% of cases). (6) **Single-center experience.** Nausea and emesis

are considered as highly affecting the QoL by 70% of the centers; even though, only 30% consider antiemetic prophylaxis effective in nausea and vomiting control (Figure 1). The data show that many procedures and treatments against nausea and vomiting are used in different Transplant Centers; thus, a common approach appears to be strongly warranted. The nurses expert panel suggests the creation of a position statement for the correct assessment, monitoring and management of nausea and emesis in patients undergoing allo-SCT.

[NP027]



**Disclosure of conflict of interest:** None.

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**NP028**

**Nutritional status and quality of life perceived by oncohematologic patients**

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The nutritional status deterioration is a complication in oncohematologic patients with negative impact on prognosis and quality of life. **Objectives:** To assess the perceived quality of life related to nutritional status in oncohematologic patient of five hospitals. To assess the relationship between perceived quality of life, the Body Mass Index (BMI), and albumin on admission, discharge and three months follow up. Observational multicenter study in oncohematology units of five high complexity hospitals of Madrid, performed in 2015, including oncohematological patients with a minimum hospital stay of 5 days. We analyzed perceived quality of life related to nutritional status, socio-demographic and clinical variables. We used validated questionnaire for Spanish population, quality of life related to nutritional status (CaVEN) and medical history. Data were collected on admission, discharge and three months follow up. Ethics committee approved the project. Statistical analysis included quantitative variables like mean and standard deviation. The inferential analysis was performed using Pearson's correlation when we use the CaVEN as a continuous variable or Spearman rho in the case of ranges. 182 patients were included. The main diagnosis (31.3%) was non-Hodgkin lymphoma. 56.6% were men. The average age was 51.8 (±14.2). 66.5% had a primary carer. 43.6% of them were admitted for chemotherapy treatment. 39.7% of total were admitted for hematopoietic stem cell transplantation (autologous one was the most frequent—47.3%). On admission and discharge 68.9% perceived low quality of life related to nutritional status. After three months follow up was 70.5%.

Figure 1 [NP028]

		Admission	Discharge	Three months
CaVEN (ranges)	High quality of life	3,9	4,3	2,2
	Medium quality of life	27,2	26,7	27,3
	Poor quality of life	68,9	68,9	70,5
BMI Average/(DS)		26,32 (5,6)	25,11 (5,9)	25,67 (5,6)
Albumin Average/(DS)		3,67 (0,7)	3,40 (0,5)	3,73 (0,6)

Around 27% referred medium quality of life at the three data collection points. Related with Nutrition Risk Screening, 19.3% of patients had an affected nutritional status on admission, 30.6% on discharge, and 27.2% at three months follow up. Mean BMI values indicated absence of risk of malnutrition. A statistically significant relationship between BMI and CaVEN on admission ( $P = 0.037$ ) was observed; not on discharge neither on three months follow up. As a continuous variable no correlation was observed. Low negative correlation values between albumin and CaVEN were found. Patients perceived poor quality of life. Their perception related to nutritional status was worse than the objectified with parameters such as BMI. We questioned the usefulness of BMI as an indicator of nutritional status because weight gain could be associated with edema and also it indicates a punctual estimation of weight. Albumin values referred the discomfort patients perception related to nutritional status. The discharge time had mild malnutrition status. In order to improve clinical practice with the purpose of prevent or reverse malnutrition status we propose: systematize the dietary recommendations, improve the registration of daily dietary patients' intake and reevaluate their necessities.

**Disclosure of conflict of interest:** None.

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**NP029**

**Pilot study investigating sexual dysfunction in patients after allogeneic stem cell transplantation in Croatia**

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Sexual functioning is an important aspect of quality of life (QoL). However, it is frequently neglected and seldom discussed with patients. A cross-sectional study was designed as a pilot study in order to determine the frequency and depth of this problem in our population, with the aim, based on these results, to design a future prospective and interventional study. Consecutive patients seen in outpatient clinic were asked to participate by answering a questionnaire regarding their sexual habits pre- and post-transplantation. Total of 19 patients participated, 10 female and 9 male. Median age was 38 years (21–61). Median time from transplant to the study was 131 day (37–1229). Study was approved by hospital Ethics committee and all patients signed informed consent prior to inclusion. All 19 patients had regular sexual life prior to illness, but only 12 (63.2%) claimed regular sexual life in the period prior to transplantation. At the time of the study 2 patients (10.5%) claimed to have regular sexual life, seventeen patients (89.5%) were in stable relationship. When asked what was the leading cause of their sexual inactivity, 5 out of 17 patients (29.4%) that answered the question identified lack of strength,

5 (29.4%) fear of harm during intercourse, 4 (23.5%) lack of interest, and 3 (17.6%) physical problems (2 vaginal dryness and 1 erectile dysfunction). Four out of thirteen patients (30.7%) that answered the question of how sexual issues influenced overall QoL answered 'moderately,' 5 (38.5%) 'somewhat' and 4 (30.7%) 'not at all.' Twelve out of seventeen patients (70.6%) that answered the question find themselves physically desirable. Five patients (26.3%) reported not thinking of sex with interest during the week before the interview, 3 (15.8%) thought of sex once a week, 6 (31.6%) at least twice a week, and 5 (26.3%) at least once a day. When asked whether they discussed their issues with anyone, 7 patients (36.8%) patients did, but mainly with spouse or a friend; one patient with issues with vaginal dryness discussed the problem with gynecologist. Those patients that did not discuss their issues mainly did so because they either thought 'it did not matter much' or that 'it will get better with time.' Majority of patients 15 (78.9%) thought it was important to discuss this issue prior to discharge after transplantation. Eleven patients (57.9%) think transplant physician, 2 (10.5%) nurse, 2 (10.5%) psychologist and one (5.2%) spouse should be the person discussing the issue with. Even though this study is done on a limited number of patients, it revealed some important aspects of sexual dysfunction in our patient population. Even though most of them had a stable relationship, only 10% had a regular sexual life, and none of them thought that that diminishes their overall QoL significantly. Furthermore, patients with issues did not seek help or advice from physicians, but almost all of them thought that some information and guidance should be provided prior to discharge from transplant physicians. Sexual dysfunction occurs both early after transplantation as well as at later time points. Since this study served as a pilot in order to plan a prospective and interventional study, we conclude that a more detailed consultation or written material might improve sexual functioning in our patients and it should be a focus of further investigation.

**Disclosure of conflict of interest:** None.

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#### NP030

##### **The Nurses' Group of GITMO was curious to know if Italian patients do have a chance to maintain their physical performance during hospitalisation for haematopoietic stem cell transplantation**

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Haematopoietic stem cell transplantation (HSCT) can be very stressful on the body due to high dose chemotherapy, preconditioning therapy, isolation, graft versus host disease or infection, and often leaves patients weakened and quite debilitated. Fatigue has been rated as having a greater negative impact on quality of life than other cancer-related symptoms such as pain, depression, and nausea, therefore do supportive care measures as physical medicine and rehabilitation gaining increased attention. The Board of Nursing Referents Section of 'Italian Group of Bone Marrow Transplant'

(GITMO) sent in December 2015 a questionnaire to all 100 Italian Bone Marrow Transplant (BMT) centres in order to get an overview when and how physical maintenance through rehabilitation is possible in the BMT units. The principal nurse of each centre was asked to answer 34 questions: 26 yes or no, 7 multiple choice and 1 to fill out. Fifty-two of 100 centres shared their local experience; 71% were adult centres, 15% paediatrics and 14% mixed. In 33 units, Haematology and BMT are located on the same floor, 19 centres are just BMT units. The first group of questions concerned about the actors of physical rehabilitation: in 70% of cases it is performed by the department of rehabilitation, in 19% by physiotherapists with experience in BMT units and in 11% by dedicated physiotherapists in BMT. Nurses evaluate patient's physical or respiratory failures in 62% of cases, but the needs of physical rehabilitation are estimated by a physiatrist in 46% of units, by a physiotherapist alone, and physiotherapist in team with a physiatrist in 31% of cases respectively and by a haematologist in 19% of Italian units. The second group of questions was about the physical activity (PA); 83% of patients have the possibility to make physical exercise during isolation. Seventy per cent of HSCT recipients perform PA 16 to 30 minutes a day; 35% of the patients have the possibility to exercise 5 days a week, 13% for 6 days/week and 18% every day. The most common typologies of exercises are: active exercise in bed 77%, active exercise in the room 58%, walking, gym bike and respiratory exercises in 40% of cases respectively. The third group of questions regarded structural and organizational management. Eighty-five per cent of centres do not have educational materials for PA. In the patient's rooms, 11% of centres have a gym bike in each HSCT room, 27% has a gym bike in some rooms, 2% has a treadmill and 44% has no gymnastic tools. Specific activity programs for chronic graft versus host disease are performed by one centre and for respiratory failures by 8 centres. On discharge, in 32% of centres HSCT patients get information about physical activity, in 38% of cases they get information just if there are respiratory or physical difficulties and in 30% of units, patients get none information. Conclusion The goal to maintain the physical performance is not really achievable due to the results of the survey. Many organizational and structural hindrances are hardly to sidestep. The need of a shared physical exercise booklet, the recognized importance of a dedicated physiotherapist for HSCT patients are just two examples for an improvement of life quality during hospitalisation of HSCT recipients.

**Disclosure of conflict of interest:** None.

#### NP031

##### **Central line associated blood stream infection (CLABSI) zero target in adult BMT and hematology patient**

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Central Line Associated Blood Stream Infection (CLABSI) is a common issue in hospitals all over the world. These infections can be differentiated from other infections not associated with central lines by a certain criteria. In this paper, the authors will try to provide a brief description of the CLABSI and provide KFSH&RC experience to better understand the issue of CLABSI and the way to reduce the number of CLABSI cases among adult hematology and bone marrow transplant units. Hematology and BMT patients are expected to have one kind of central line as part of treatment plan which include (PICC lines, Hickman Lines, perm Cath and, Porta Cath), presence of central increase the risk of infection rate and, this rate become higher in BMT and Hematology patient, because of disease process, low immunity and complication of medication they take. To reduce the incidence of CLABSI below Magnet 50th percentile according to benchmarking; to improve compliance of RNs with standards of care related to caring of central lines; and to check off all staff for competency in handling and managing Central lines in Adult Hematology/BMT units. Procedures Team



of (primary nurses, nurses managers, physician representative, infection control coordinator, IV nurse and quality coordinator) formed committee to develop plan to reduce CLABSI rate among hematology/BMT patients and they decided to use (PDCA) as a quality tool for improvement. The data were collected in collaboration with Infection Control Report (NDNQI Quarterly Report, QRM, HH compliance report and, internal audit tool). This quantifies the rate of CLABSI among adult BMT/Hematology patients. Then, they started to search for the best evidence-based practice guidelines, policy to prevent CLABSI, five (5) interventions that were supported by strong evidence were chosen, with the intent to convert them into behaviors. This intervention 'bundle' consisted of the following: (1) hand hygiene; (2) use of full barrier precautions; (3) chlorhexidine (CHG) skin preparation; (4) avoiding insertion of lines into the femoral vein; (5) prompt removal of CVCs. Result Team created new guidelines for handling central lines and all unit staff nurse were trained and checked off to be competent of central line care. In addition to that, each unit assigned group of expert nurses to audit staff taking care of CVC to make sure that the practice is at the level of standard. Moreover, quality team take the accountability to do toughly root cause analysis whenever new CLABSI event reported to know what went right or wrong with nurses practices and identify what should be done to prevent such occurrences. The incidence rate of CLABSI within adult hematology/BMT patient was reduced by 50% on 2015. CLABSI is a very serious issue among immunocompromised patients (BMT, Hematology). It increases patient comorbidities and increase patient hospital length of stay which increases the cost of care. This need collaborative joint team to control and prevent CLABSI is not limited to nurses but to physicians, Infection Control and IV nurses. Having a robust system with clear guidelines and IPP, follow up by Education team and audit by Quality Management Department, helps dramatically in CLABSI rate re-education.

**Disclosure of conflict of interest:** None.

**NP032**

**Impact of early enteral nutrition in high dose chemotherapy with autologous stem cell support in children, adolescent and young adult with solid tumor or lymphoma**

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Malnutrition is frequent in children and adolescent with cancer and increases the treatments toxicity especially with high dose

chemotherapy (HDC). The main objective of this prospective monocentric observational study was to evaluate the impact of early enteral nutrition in children adolescent and young adults treated with HDC and autologous stem cell support. According to local recommendations, enteral nutrition (EN) was proposed on the first day of high dose chemotherapy to all patients between 0 and 25 years old with pediatric solid tumor or lymphoma. Body weight and height were measured and percentage of weight-for-height and food intake were calculated. Patients were evaluated at hospital discharge (T1), 2 weeks (T2) and 8 weeks (T3). Eighty HDC had been evaluated between April 2014 and July 2016 (which corresponded to 56 patients). Mean age of the cohort was 7 (0.5–22), sex ratio was 1.08. Two groups were defined according to enteral nutrition energy intake: Fifty-four out of 80 were undergoing EN representing more than 25% of the total energy intake needed (EN TEI > 25%) for at least 7 days. Twenty-six out of 80 received EN representing less than 25% TEI needed. Of note, 11 patients refused EN and were analyzed in EN TEI < 25% group (mean age 13 years old). At discharge, no patient had a percentage of weight-for-height under 80% in EN TEI > 25% group compare to 3 (12%) ( $P=0,03$ ) in EN TEI < 25% group. There was no significant difference at 2 and 8 weeks after discharge. There was less weight loss in EN TEI > 25% group than in the other group at discharge, respectively  $-0.9\%$  ( $+/- 4.1$ ) vs  $-2.6$  ( $+/- 3.1$ ),  $P=0.039$  but the difference was no more significant at 2 weeks after discharge (Fig. 1). Fifty-eight patients had been interviewed 7 days after stem cell infusion about EN experience, 22 had a good or very good experience, 27 were indifferent and 9 had bad or very bad experience. No severe adverse effect had been reported. Enteral nutrition is feasible and well tolerated during high dose chemotherapy. It has a positive impact on weight loss during HDC. More studies are needed to explore its impact on toxicity and mortality.

**Disclosure of conflict of interest:** None.

**NP033**

**Imperial college healthcare NHS trust's apheresis unit experience of performing combined plasma exchange and erythrocytapheresis (RBCX) for treatment of multiple organ failure due to suspected fat embolism in sickle cell disease**

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Fat embolism syndrome (FES) is a consequence of bone marrow necrosis during a vaso-occlusive crisis that occurs when embolic fat macroglobules are released into the small vessels of the lungs and other organs. This can result in a systemic inflammatory cascade that can lead to multi-organ

Figure 1 (NP032)

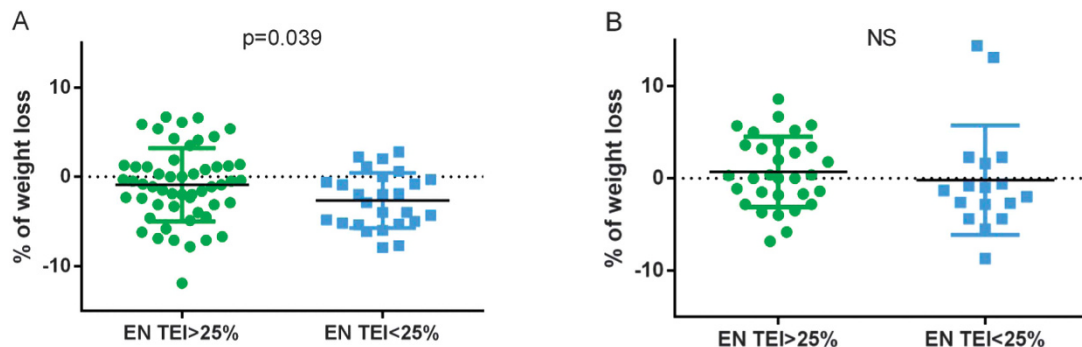


Figure 1: Percentage of weight loss between beginning of high dose chemotherapy, discharge (A) and 2 weeks after discharge (B).

failure. It is a devastating complication of sickle cell disease (SCD) that affects all age groups and phenotypes and is associated with a high mortality rate. Evidence-based recommendations indicate that automated red cell exchange (auto-RBCX) transfusion is an effective treatment modality (emergency and prophylactic) for patients with sickle cell disease. However, the use of therapeutic plasma exchange (TPE) in the management of potentially life-threatening complications, such as FES, in patients with sickle cell disease is less well known. This case study presents the potential benefit of auto-RBCX and TPE as a combination therapy in the treatment of an adult SCD patient who developed multiple organ failure (MOF) as a result of FES. A 48 year old female with known SCD was admitted to ICHNT presenting with sickle cell chest crisis in December 2015. An auto-RBCX was performed using the Spectra Optia Apheresis System according to our standard operating procedure with a target HCT of 32% with 8 units of packed red cells. The patient's clinical condition did not stabilise and due to a worsening clinical picture that included increased confusion, chest pain, tachycardia and cardinal signs of MOF the patient was transferred to the Intensive Care Unit (ICU). This presentation was consistent with features of multi-organ failure and a likely diagnosis of FES. A clinical decision to perform a TPE was made and performed the same day and a further 2 procedures were carried out. The TPE procedure was performed using 3 L of Octaplas. The average total plasma exchange volume was 1 × patients' plasma volume. Rapid improvement in neurological status was seen with normalisation of Glasgow Coma Scale within 24 h of completing combined RBCX and TPE therapies. Other clinical parameters stabilised in response to treatment. The patient was transferred back to the ward after 1 day and following a prolonged recovery period was successfully discharged home 8 weeks later with no associated further complications. This case study demonstrates the potential therapeutic benefit of auto-RBCX and TPE as a combination treatment option for treating sickle cell patients presenting with symptoms consistent with FES/MOF.

**Disclosure of conflict of interest:** None.

#### NP034

##### **Improving the compliance of bisphosphonate therapy in patients with multiple myeloma**

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The benefits of treatment with bisphosphonates (BP) are widely recognized as multiple societies including the European Society of Medical Oncology (ESMO) have published guidelines for the use of BP in Multiple Myeloma (MM). It was the objective of this quality improvement project to increase the compliance of BP therapy in our institution's MM patients as recommended by these guidelines. This project was undertaken with the hope that the benefits of BP therapy (i.e. reduced skeletal morbidity) demonstrated in the literature would be realized by our patients. The FOCUS-PDA paradigm was applied for this project. All adult active MM patients (31 patients) were identified and included for assessment. Exclusion criteria were: chronic renal failure defined as CrCl < 35 mL/min, a history of adverse event(s) related to BP, patients undergoing dental procedures (6 weeks before and 6 weeks after), pregnant women, hypocalcemia, osteomalacia, and vitamin D deficiency. The electronic medication administration records for all qualified patients ( $n=29$ ) were examined retrospectively from January 1, 2015–December 31, 2015 and the monthly compliance of BP therapy was found to be 56%. A target of 85% compliance was set for this project. A multi-disciplinary team consisting of oncology nurses, physicians and a clinical pharmacy specialist was formed.

The team conducted a brain storming session with process mapping to help identify the causes for the poor compliance. The major defects noted by the team were the lack of a standardized approach in offering and following up on BP treatment. A physician was assigned as MM Site Leader to champion the project. All patients were counselled on the benefits and risks of BP therapy and provided with a calendar tool to remind them of their appointments. A process which consisted of flagging BP eligible MM patients and assigning responsibilities to team members for follow-up was designed. Electronic tracking sheets, one for each individual patient and a collective sheet were developed and updated regularly to measure compliance. A standardized MM physician progress note was developed to standardize and optimize patient care. A compliance rate of 89% was realized for the first 3 quarters of this project. A quarterly meeting was regularly scheduled to review the project and identify further areas for improvement. Bisphosphonate treatment is a key component in the management of MM patients and is widely recommended in appropriately selected patients. The objective of this quality improvement project, to increase the compliance of BP therapy in our institution's MM patients, was successfully achieved by a multi-disciplinary team making use of the FOCUS-PDA paradigm. Key initiatives were: patient and health care provider education, standardizing the process, assigning clear responsibilities to members of the health care team, and the development and implementation of an electronic tracking tool. Regularly scheduled follow-up of the project is critical to ensure continued success and continual quality improvement. The initiatives that made this project successful can be applied to other disease states where compliance and patient follow-up are essential.

**Disclosure of conflict of interest:** None.

#### NP035

##### **Knowledge and practices of haematology nurses in preventing central venous catheter related infection**

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Central venous catheters (CVC) is an indwelling intravenous device that is inserted into a vein of the central vasculature. CVCs facilitate the long term delivery of chemotherapy, parenteral fluids and nutrition, blood products, and intravenous medications. CVC may cause a lot of complications including haemorrhage and thrombosis but the most common complication is infection. Such complications worsen patient's health, prolong hospital stay and increase the cost of care. The management of CVC is a speciality performed by nurses that requires skill and experience to ensure minimum risk of contamination. The aim of the study is to assess the knowledge and practices of haematology nurses in preventing central venous catheter related infection. We performed a cross-sectional study in the Department of Haematology, Hospital Ampang which is the national tertiary haematology referral centre. A total of 100 qualified registered nurses working in haematology wards were selected by simple random sampling as the subjects of this study from October 2015 till August 2016. A structured questionnaires using five point Likert Scale and divided to four sections were utilized as study tool. The section A were demographic data, Section B were the questions about the knowledge of nurses in preventing CVC related infection, Section C were questions about the practices of nurses in preventing complications and Section D, the questions about the strategies to improve the care of CVC. 82% ( $n=82$ ) respondents were agreed on understanding of the importance of handwashing in preventing CVC related infection. 79% ( $n=79$ ) of respondents were agreed that they wash their hands before and after touching the patient.

Table 2. Knowledges and practices of haematology nurses in preventing central venous catheter infection (n = 100).

Item	SD % (n)	D % (n)	SA % (n)	A % (n)
Do you understand the importance of handwashing in preventing CVC-related infection?			18 (18)	82 (82)
Do you wash your hands before and after touching the patient?			21 (21)	79 (79)

A = agree; D = disagree; SA = strongly agree; SD = strongly disagree.

Our study showed that improvement is needed to increase knowledge and practices in CVC care, especially in handwashing, which is a basic requirement of good nursing care. The nurses need to understand the strategies and rationale of these important infection control measures as complications of CVC infection can bring harm to the patient. They should always look towards in self-development through CVC training or course in CVC care.

**Disclosure of conflict of interest:** None.

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#### NP036

##### Nursing management of peripherally inserted central catheter (PICC) and the incidence of PICC-related thrombosis in patients undergoing hematopoietic stem cell transplantation

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Patients with hematological disorders and those who were undergone to hematopoietic stem cell transplantation (HSCT) needs prolonged intravenous treatments, transfusion support and routine analytical extractions. So, peripherally inserted central catheters (PICC) are extremely useful although they are

not exempt of complications. Objectives: (a) to analyze the incidence of catheter-related thrombosis (CRT) in all patients and mainly in HSCT patients and (b) to describe the nursery, supportive care and medical management of CRT. We retrospectively reviewed 165 patients, 43 of whom were HSCT patients. All were carriers of 4th generation polyurethane PICC (PowerPICC), with one or two lights and, long-lasting material (more than 30 days) indicated for intravenous treatments and infusions of hematopoietic progenitors. All were channeled by a group of 8 nurses experienced and with the appropriate training to insert, manipulate and extract these devices with the Seldinger technique of blind channeling from May/2010 to 2014 as well as with the eco-guided from 2015 until May/2016. CRT was defined as the presence of non-compressible venous segment by Doppler ultrasonography. Statistical analysis was performed using the SPSS program (v.20). RESULTS The overall incidence of CRT was 7.9% (n = 13) and 4.7% (n = 2) in the group of HSCT patients (n = 43). The median onset of CRT was 35 days, with 7 of them (53.85%) in the first 30 days after insertion. None of the CRT patients had complications during the channeling. A higher incidence of CRT was observed with the eco-guided technique (69.2%) and when the catheter tip was located distal to the right atrium (RA). The lowest incidence was observed in RA (n=3). In the subanalysis population of HSCT patients, CRT were detected in 2 patients: the first was undergone to autologous HSCT and the latter was undergone from unrelated donor HSCT; in addition, he showed chronic graft versus host disease (GVHD), phlebitis and infusion of parenteral nutrition. Characteristics related to CRT were described in figure 1. No relationship between HSCT and CRT was found. Nursing care from the time of insertion is gathered in the protocols of our unit: use of sterile technique for insertion, skin antiseptis with chlorhexidine 2% in maintenance; the first dressing removal and cure at 24 hours and every 7 days thereafter using chlorhexidine 1% and semipermeable and transparent dressings to the insertion point. We also use a device for fixing and stabilizing the catheter (StatLock) preventing movement of the catheter and the vein avoiding a possible accidental extraction with manipulation. A cause for alarm is the onset of pain or inflammation of the arm, shoulder or neck. The therapeutic strategy involves removal of the catheter within 72 hours of CRT and treatment with low molecular weight heparin to a median of 3 months. No patient had progression of CRT, re-thrombosis or pulmonary embolism. The management of PICC and its complications in hematologic and HSCT patients is a challenge. An interdisciplinary team is useful for detection and reduction.

**Disclosure of conflict of interest:** None.

#### NP037

##### Patients' experience undergoing a stem cell transplant as outpatients

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Ensuring patients have a good experience is a key quality within the National Health Service (NHS) in the UK. This is also important for an expanding haematology outpatient department such as the Ambulatory Care Unit at Hammersmith Hospital. This unit over the last year has treated twenty patients undergoing autologous stem cell transplants as an outpatient. Our aim is to ensure patients are confident, safe and have a good understanding of their treatment pathway thereby enhancing their experience of undergoing stem cell transplant. The nurses work closely with the patients and their relatives, Clinical Nurse Specialists and Stem Cell Transplant co-ordinators to prepare patients for the treatment and its side effects. Part of this entails providing the patient with adequate information that should be tailor made for each patient and adjusted to their individual needs. Determining the right level, amount and mode of information can be difficult and nurses

Figure 1 [NP036]

Characteristic	NO TVP: 152 (92.1%)	YES TVP: 13 (7.9%)	p-value
HSCT:			HSCT YES vs NO 0.29
NO: 122 (73.9%)	111 (91%)	11 (9%)	
YES: 43 (28.2%)	41 (95.3%)	2 (4.7%)	
Allogeneic 30(16.1%)	29 (96.7%)	1 (3.3%)	
- Unrelated donor 15 (8.05%)	14 (93.3%)	1 (6.7%)	
- Related donor 11 (5.9%)	11 (100%)	0(0%)	
- Haploidentical donor 4 (2.05%)	4 (100%)	0 (0%)	
Autologous 13 (7.3%)	12 (91.7%)	1 (8.3%)	Alo vs Auto 0.50
PICC factors:			
- Channeling technique:			
Seldinger: 90 (54.5%)	86 (95.6%)	4 (4.4%)	
Eco-guided: 75 (45.5%)	66 (88%)	9 (12%)	0.08
- Channeling complications:			
Yes: 27 (16.4%)	27 (100%)	0 (0%)	0.1
No: 135(81.8%)	123 (91.1%)	12 (8.9%)	
- Central catheter tip location:			
Cavo-atrial: 72 (43.6%)	66 (91.7%)	6 (8.3%)	
Right atrium: 44 (26.7%)	41 (93.2%)	3 (6.8%)	0.31
Superior vein cava: 28 (17%)	24 (85.7%)	4 (14.3%)	

need to be mindful that not everyone has the same requirement or expectations, but at the same time nurses must recognise the important role they play in this process. To assess the quality of the service and information given to the patients prior to undergoing the ambulatory stem cell transplant, patients were given a semi-structured questionnaire to complete as well as an interview a week after they were discharged. The feedback given by the patients is used to identify areas for improvement within the department, and how the patients' experience can be further improved. To date the patients' feedback has indicated that the information given has been of a good standard with patients reporting the level of information about the procedure and related side effects were clearly explained. Patients also reported that there was always someone available with whom they could discuss their worries and concerns. The patients' feedback has also indicated some areas of concern relating to hospital transport, insufficient variety in menus and some variable levels of staff knowledge. The way people experience health care is an important component of quality care. We evaluated the quality of service for patients undergoing stem cell transplant in an outpatient setting using a semi-structured questionnaire. We found that most of the patients received sufficient information about transplant and related side effects and they were generally happy with the care they received at Hammersmith Hospital. There is an on-going commitment to develop and improve this evolving treatment pathway for patients through collaborative working with patients and staff to ensure a responsive approach to the needs of our patients.

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1. NHS National Quality Board. NHS Patient Experience Framework (2011).

**Disclosure of conflict of interest:** None.

#### NP038

##### Plasmapheresis as rescue therapy in immune thrombocytopenia (ITP)

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Immune thrombocytopenia (ITP) is a condition in which the immune system destroys platelets, which are necessary for normal blood clotting. ITP is defined by a low platelet count and an increased risk of bleeding. Fatal bleeding is rare but occurs more frequently in elderly patients and in those with severe thrombocytopenia. Treatment for ITP is strictly individualised. ITP is a diagnosis of exclusion as there are no specific lab tests to confirm diagnosis. Treatment for ITP is highly individualised depending on the platelet count and severity of bleeding. Another important consideration is that for some patients the morbidity from side effects of therapy may exceed any problems caused by thrombocytopenia. Clinical management of this condition is therefore based on the patient's age, severity of the illness, and the anticipated natural history. Treatment for ITP is considered appropriate for symptomatic patients and for those at significant risk of bleeding. Patients' response to various treatment lines differ from patient to patient, making the choice of management extremely difficult in this area of practice. Isolated thrombocytopenia with a platelet count of  $< 100 \times 10^9/L$  with exclusion of other causes of thrombocytopenia is considered as ITP. ITP can be classified into these subgroups: Newly diagnosed: within 0 to 3 months of diagnosis; Persistent ITP: between 3 to 12 months of diagnosis; Chronic ITP: more than 12 months from diagnosis. Case study 1 40 yr old female was diagnosed with ITP following delivery of her second child. Her ITP refractory to immunomodulatory agents, steroids, Thrombopoietin-RA & Rituximab. It was difficult to stable count due to cyclical nature of platelet counts ranging from less than 5 to 800 every month. As part of clinical evaluation, bone marrow biopsy (BM) was attempted twice, but failed due to 'hard bones.' A bone density scan showed progressive

osteosclerosis. A BM biopsy under general anaesthesia was arranged, but was unable to achieve safe platelet count for the procedure. As a trial, plasmapheresis was performed using Optia<sup>®</sup> according to our standard operating procedures. Case study 2 62yr old male presented to emergency with platelets 1. With a working diagnosis of ITP, he was treated with immunomodulatory agents. Further investigation showed a concurrent diagnosis of plasmacytoma and high Immunoglobulin A levels. Management with chemotherapy was delayed due to persistent and profound thrombocytopenia and profuse bleeding despite various management lines. Plasmapheresis performed with Octaplas<sup>®</sup> to preserve coagulation factors. In both cases, plasmapheresis resulted in a rapid recovery in platelet count, which was consistently above 60. Patient was able to have bone marrow biopsy and the 2<sup>nd</sup> patient was started on chemotherapy. No adverse effects from the plasma exchange were reported at one month follow up. Although plasmapheresis has been used in the treatment of ITP by various centres, the success rates have been variable. The general consensus is that plasmapheresis as an isolated approach is not warranted in the treatment of ITP. However in our experience with these patients, plasmapheresis was a potentially life-saving treatment option in acute ITP.

**Disclosure of conflict of interest:** None.

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#### NP039

##### Productive Ward implementation with focus on central venous catheter care

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Central line associated blood stream infections (CLABSI) rate is an important indicator on a hematology transplant ward. A major goal for the hematology ward at the University Hospital Antwerp (UZA) was to improve this rate by Productive Ward methodology implementation. Within the UZA nursing department lean management is operationalized by the program 'Productive Ward – Releasing Time to Care'. This program aims to translate organization-wide lean management principles into a step-by-step team-based approach aiming at patient outcomes improvement. The nursing care team started to map and optimize the central catheter care by the Productive Ward methodology. The Deming cycle, Plan-Do-Check-Act (PDCA), has been followed to improve the central venous catheter care process. The team started with weekly quality & patient safety gatherings in a tight group, to strategize and motivate. In order to optimize the work environment, these huddles were written down on an improvement board where key indicators like the CLABSI rate were visualized and actions were planned. The team started in November 2014 because they noticed an increase in the CLABSI rate that month from 4.76 up to 9.52 with a target range set at 1.77 CLABSI/1000 catheter days. By using hospital-wide data, the team decided that the current CLABSI rate on the haematology ward was a candidate for improvement. The current situation of the catheter bandage on the ward was documented by using Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and fishbone diagram (Plan). The procedure method was changed (timing 1x/ 7 days and changing the type of bandage and infusion line replacement each 72h) according to evidence-based nursing care guidelines and recommendations by the hospital infectious disease working committee (Do). The weekly huddles resulted in a better patient outcome and less work load. Reevaluation showed an improvement of the CLABSI rate (Check). The CLABSI rate is still decreasing in August and September 2016 we reached 2.86 and in October 2016 2.47. The target range is now set at 1.20 CLABSI/1000 catheter days. There is still need for improvement in central venous catheter specific care like a

change in type of infusion lines into spiral infusion lines (Act). Productive Ward implementation on a hematology transplant unit improves patient outcomes by creating better team work environment resulting in a high quality and patient safety care. **Disclosure of conflict of interest:** None.

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**NP040**

**Reduction in malnutrition with enteral feeding: the efficiency of collaboration between a Hematology Intensive Care Unit (ICU) and a Transversal Nutrition Support Unit (TNSU)**

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Nutritional support is recommended for all patients receiving hematopoietic stem cells. Guidelines on how and when enteral nutrition should be initiated were published in 2012<sup>1</sup>. The main challenges lie in communication of the care plan to patients and obtaining their consent. The objective of a TNSU is to provide improved, consistent initiation and management of nutritional care and reduce complications related to malnutrition. The TNSU supported the clinical hematology team of Montpellier University Hospital in this approach. An assessment of existing nutritional practices was conducted in 2014 by TNSU. 97 patients hospitalised in ICU with leukemia or requiring an autologous hematopoietic stem cell, were evaluated. 39% were malnourished of which in 73% this was acquired during hospital stay (treatment related, iatrogenic, etc.). Parenteral nutrition accounted for 100% of nutritional support. The TNSU team subsequently collaborated with the hematology team to optimize nutritional care including the choice of approach, setting energy and protein targets, nasogastric tube placement and maintenance. The TNSU team accompanied the hematology team for 2 months (2015) and provided training and information, practical workshops on installing nasogastric tubes, screening and care protocols and daily presence in unit to support the team. An assessment of the impact of these two months of intervention, was conducted a year later (March 2016). In March 2016,

55 patients were evaluated, 12.8% were suffering from malnutrition (versus 39% in 2014). Enteral nutrition was initiated as first line nutrition in 59% of cases when artificial feeding was recommended, compared to 100% parenteral nutrition in 2014. The introduction of a personalised care plan and support of this by the TNSU team improved nutritional support, in particular the introduction of enteral nutrition as first line support and decreased the percentage of malnourished patients. This supports the existing data advocating this. Impact on this intervention on infectious complications and length of hospital stay will be assessed in the future.

**Disclosure of conflict of interest:** Vincent Attalin and Antoine Avignon, owners of Aviitam®.

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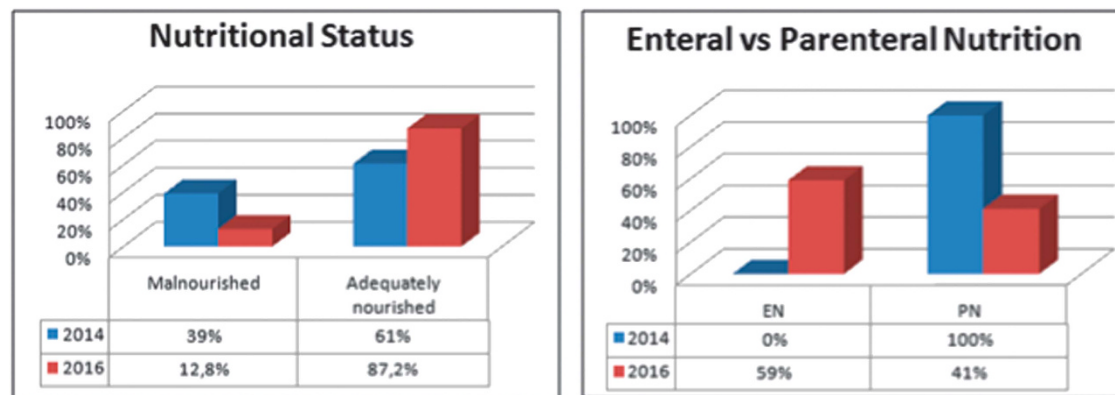
**NP041**

**Systemic Inflammatory Response Syndrome (SIRS) to needle on palatine: a reflection on antibiotic management when patients trigger SIRS**

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Following National identification of insufficiencies in treatment response to episodes of sepsis, the need to improve patient clinical outcomes was apparent. Consequently The Christie NHS Trust initiated a 1 hour antibiotic policy when triggering SIRS, to increase cancer patients' chances of recovery from sepsis. The Haematology and Transplant Team took lead in initiating Patient Group Directions (PGD) intravenous antibiotic administration by nurses to a predefined group of patients that met SIRS criteria. To evaluate whether intravenous antibiotics were not only indicated but also justified for SIRS; all inpatient admissions to 'Palatine Ward' were examined across a four month period via electronic capture. This initial analysis highlighted poor documentation and compliance of implementing the 1 hour antibiotic policy. Non-timely administration of antibiotics in the event of acute sepsis is potentially fatal. Therefore a full audit was undertaken with the aim to improve delivery of services. An audit template was devised to assess by what means admissions triggered SIRS; how these patients were managed in terms of antibiotic choice, timing, review, and identifying whether they were initiated following medical prescription or PGD. Septic screening results were documented to assess whether selection followed National guidance and the length of continuation. Medical notes, observation charts, drug kardex, laboratory results and electronic nursing care plans were all sources of documentation reviewed to obtain results. The denominator of risk for

Figure 1 [NP040]



sepsis in the Haematology-Oncology cancer patients confirmed 83% of SIRS incidents occurred within 6 weeks of patients' having Systemic Anti-Cancer Therapy. The data captured 204 admissions to the Palatine Ward between April and August 2016. 15% of these admissions resulted in triggering SIRS; 30 individual patients experienced 36 episodes of sepsis and 5 patients had multiple episodes. The dominant SIRS trigger indicated a pyrexia of  $38^{\circ}\text{C} >$  or more (81%). 74% followed National first line antibiotic guidance when initially commencing treatment. Septic screening detected 19% had bacteraemia. All SIRS incidents initially received some form of antibiotics and were reviewed by a doctor. All 14 PDG patients were then reviewed within 8. All infections detected did continue on IV antibiotics administration between 3 and 15 days. The results strongly indicate fever is a common indicator for sepsis. The need to administer timely antibiotics when first triggering SIRS was supported by the majority of patients deteriorating if the guidelines were not followed. Specific first line intravenous antibiotics are the preferred treatment until a source of infection is identified. Our results suggest this is an area in need of improvement. The audit also highlighted the benefits to clearer documentation and provided a springboard for areas of future education relating to improved care for sepsis.

**Disclosure of conflict of interest:** None.

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#### NP042

##### Implementing and improving the holistic needs assessment for autologous stem cell patients

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The Great Western Hospital (GWH) has been working with Macmillan to provide an electronic version of Holistic Needs Assessment (e-HNA) for cancer patients. The e-HNA enables the patient with cancer to complete a questionnaire identifying their physical, emotional, practical, financial and spiritual concerns on a touch-screen tablet. The information generated prompts a discussion between the patient and their Clinical Nurse Specialist which initiates the process of planning support and care through the patient journey. Concerns are initially identified in terms of scores from 0 to 10 with 10 being of 'highest concern.' As part of the pre-autologous stem cell transplant 'work-up' process, we have for many years carried out e-HNA. These were typically completed when the patient was admitted for an autologous Stem Cell Transplant. In 2015 a stem cell patient admitted for a transplant undertook the e-HNA two days before planned reinfusion. As an inpatient at the time, they were identified as having significant concerns (scoring 10 in multiple sections); three days later this patient self-discharged from hospital prior to re-infusion of the cells! It was retrospectively thought that the e-HNA was carried out too late in the treatment pathway. Earlier identification could have addressed concerns sooner, thereby alleviating some of the concern, or perhaps postponing the treatment entirely. The incident prompted a review of all patients that were offered a pre transplant e-HNA in 2015. In addition to this, the provision of e-HNA at various time points throughout the Transplant process was to be reviewed and implemented (Time points included: Pre transplant, prior to inpatient discharge, 100 days post-transplant and annually for 3 years).

Literature searches were carried out to ascertain whether there was existing guidance available supporting this type of service provision. Local Data collected via the e-HNA report along with the local Patient Satisfaction feedback from patients who underwent a stem cell transplant in 2015/16 was reviewed and assessed. Alongside this, patients were asked for anonymised feedback following their experience of e-HNA. From the review carried out significant issues were raised: E-HNA needed to be carried out pre transplant at a defined interval, to ensure that a psychological care package was implemented in a timely manner. Different concerns were highlighted by patients in the pre and post-transplant periods. Key concerns identified pre transplant were: fear/worry/anxiety. Key concerns identified post-transplant were: Tired/exhausted or fatigued and fear/worry/anxiety. Patient consensus confirmed benefits of using e-HNA. Patients had different concerns at different time points and this was not previously considered. The enormity of the Transplant process affects patients far greater than the team had envisaged. We have a better understanding and insight into the severe level of stress encountered by some of the patients. In turn this allows us to ensure a comprehensive and individualised package of care is implemented for each patient.

**Disclosure of conflict of interest:** None.

#### NP043

##### Live births after hematopoietic stem cell transplantation

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Gonadal dysfunction was quite common among patients who received hematopoietic stem cell transplantation (HSCT). Recovery of gonadal function was extremely low, especially when the patients received TBI-based conditioning regimens. With the continuous improvement of HSCT outcome, the number of long-term survivors after HSCT is increasing, therefore, fertility issue becomes more and more important for the care of these long-term survivors. We initiate this retrospective study to investigate live births from long-term survivors after HSCT at National Taiwan University Hospital. Between 1983 and 2016, there were 2121 patients receiving HSCT at our institute. The inclusion criteria were (1) survived over 2 years, and (2) the age at transplant were lower than 50 years old for female patients because the median age of menopause in Taiwan was 50. Although some patients were lost to follow, there were 967 cases enrolled in this study, including 219 male with autologous, 360 male with allogeneic, 97 female with autologous, and 291 female with allogeneic transplantation. Some female patients with artificially aborted pregnancies were not included in this analysis. Thirteen patients reproduced offspring successfully, all full term and healthy. The crude rate of live births is 0.95% for autologous HSCT (male versus female, 0.46% versus 2.06%, respectively) and 1.54% after allogeneic HSCT (male versus female, 1.94% versus 1.03%, respectively). All patients received myeloablative conditioning, and most of them had none or only mild chronic graft-versus-host disease post allogeneic HSCT. Ten patients, 8 male and 2 female, had pregnancy naturally, while 1 male and 2 female patients had pregnancy through in vitro fertilization using patient's own cryopreserved sperm or donated oocytes, respectively. The details were given in table 1. Although the live birth rate is extremely low after HSCT, we would like to share these successful cases in order to raise awareness of better care for these long survivors. Nurses need to educate patients about potential fertility preservation before HSCT, and provide family-building options, psychological and psychosocial support after HSCT.

**Disclosure of conflict of interest:** None.

[NP043] Table 1. Details of patients with live births.

HSCT	Regimens	Diagnosis	Gender	Age at Transplant	aGVHD	cGVHD	Live births	Natural Pregnancy	In vitro fertilization
Allo (n=10)	TBI+Cy	CML	M	16	Skin & GI Grade 1	none	1	Yes	No
			M	22	none	none	1	Yes	No
			M	34	none	limited	Twin	No	Yes (cryo sperm)
		SAA	M	28	unknow	unknow	1	Yes	No
		AML	F	21	Skin Grade 1	none	Twin	No	Yes (donated oocytes)
	BuCy	AML	M	27	none	limited	1	Yes	No
			M	35	none	none	1	Yes	No
			F	7	none	none	1	Yes	No
			F	22	Skin/ Liver/GI Grade 2	Ext.	2	No	Yes (donated oocytes)
	Cy+ATG	SAA	M	26	none	none	1	Yes	No
Auto (n=3)	BCNU+Cy +Etoposide	NHL	M	19	n.a.	n.a.	1	Yes	No
	BEAM		F	15	n.a.	n.a.	1	Yes	No
			F	29	n.a.	n.a.	1	Yes	No

#### NP044

##### The impact of Anthony Nolan transplant specialist nurse for improving access to and the provision of late-effects services

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There are over 300,000 transplants performed worldwide each year, a figure that increases each year. Advances in pre and post-transplant care have led to a growing population of transplant survivors, many of whom are living with the long-term, debilitating late effects and other complex needs that require life-long intervention and follow up. The development of late effects services must be an essential part of the routine post-transplant pathway. This abstract aims to report on the value of establishing an Anthony Nolan Post-Transplant (ANPT) CNS to implement a late effects clinic. The introduction of the ANPT CNS was over 2 sites, one in the south and one in the north of England. A late effects pathway was written to identify suitable referral, frequency of visits, referral back to the appropriate team in case of relapse, falling chimerism and development of secondary cancers. Site 1 has a clinic that is run by an ANPT CNS and Consultant while site 2 is CNS led. Both ANPT CNS's had their own appointment list established and were able to review the medically stable patients. Follow up of blood results and referrals both internally and externally were overseen by the ANPT CNS and all patients attending the

clinic were given the ANPT CNS contact details and were identified as their keyworker. The introduction of the National Institute for Health (NIH) criteria for measuring chronic GvHD and FACT BMT for measuring quality of life were also implemented. ANPT CNS led late-effects clinics have improved consistency in the referral process and follow up services. This has ensured a systematic approach to follow up and data collection. Clinic capacity has increased, allowing consultants to spend more time with patients with complex needs. Site 1 increase capacity from 260 patients seen a year to ~360 a year, site 2 has seen over 300 patients in 2 years. Identification of the ANPT CNS as the keyworker for this cohort of patients has provided a direct resource for patients and their relatives for advice and support that is life-long. Patients report that the new service allows them access to a clinic that has the time to address both their physical and psycho-social needs. Provision of late-effects services across the UK continues to be sporadic and inconsistent. There are no national guidelines on access to and provision of services and there is no method of data collection that is used to identify patient need and guide us in the requirements of a late effects service. The introduction of a ANPT CNS's to the late-effects clinics have allowed initiatives to be put in place that have promoted consistency and improved patient experience. Further development of nurse-led late-effects clinics along with collaboration with transplant centres is needed to increase consistency across the UK. This would result in more equal access to late-effects services, enhance patient experience post-transplant and comparable collection of data to guide future improvements in practice.

**Disclosure of conflict of interest:** None.

**NP045****Effect of three different solutions used in patients with hematological malignancy on oral mucositis**M Harman<sup>1</sup>, N Ovaryolu<sup>1</sup> and O Ovaryolu<sup>1</sup><sup>1</sup>Medipol University Hospital Bone Marrow Transplant Unit

The purpose of this study was to evaluate the effect of different solutions administered on patients with hematological malignancy on oral mucositis. The study was conducted as randomized, controlled, and experimental. Before the study, permission was received from the ethics committee, institution and the patients. Power analysis was made in order to determine the number of patients and it was found that at least 21 people should be involved in each group. Chlorhexidine gluconate and benzydamine chloride were administered (on 29 patients) to the first group; whereas, calcium and phosphate were administered (on 28 patients) to the second group, and a solution containing black mulberry syrup was administered (on 24 patients) to the third group. These solutions were given in the form of mouthwash four times a day before eating and sleeping at night. The administration was initiated before the treatments started and it continued until the patients recovered from neutropenia. The data of the study were collected by using a questionnaire and 'Mucositis Grading Scale' of the World Health Organization. In this scale, grade '0' signifies no mucositis, while grade '4' is severe level. The mucositis levels of the patients were evaluated and recorded every day and the obtained data were analyzed by using chi-square test. It was found that in all groups on the 7th day, no grade 3 or 4 mucositis was observed and there was no difference in terms of grades 0, 1 and 2. On the 14th day; grade 2 mucositis was observed at the rate of 8.0% in the third group; whereas, this rate was 17.9% in the second group, and 16.7% in the first group; Grade 3 mucositis was observed at the rate of 6.7% in the first group; whereas, this was not observed in the second and third groups. On the 21st day; Grade 0 mucositis was at the rate of 80.0% in the third group, whereas this rate was 60.7% in the second group and 50.0% in the first group; Grade 1 mucositis was also 4.0% in the third group; on the other hand, this rate was 25.0% in the second group and 16.7% in the first group; Grade 2 mucositis was observed at the rate of 8.0% in the third group and this rate was 7.1% in the second group and 20.0% in the first group; Grade 3 mucositis was at the rate of 8.0% in the third group, and this rate was 7.1% in the second group and 13.3% in the first group ( $P > 0.05$ ). Despite the fact that there was no significant difference among all groups in terms of the prevalence of mucositis, it was found that frequency of mucositis was low in patients in the second and third groups compared to the first group. Therefore, it could be recommended to use solutions containing especially black mulberry and calcium phosphate.

**Disclosure of conflict of interest:** None.**NP046****Patient symptom assessment using the Edmonton Symptom Assessment Scale (ESAS) during autologous stem cell preparation, mobilization and after collection**HS Snorraddottir<sup>1</sup> and B Hauksdottir<sup>1</sup><sup>1</sup>Outpatient Hematology/Oncology Department, Reykjavik, The National University Hospital of Iceland

Systematic screening is necessary to improve the management of cancer- and treatment related symptoms. Regular symptom assessment was implemented for all patients undergoing autologous stem cell collection process at the National University Hospital of Iceland in 2016. The aim of this project was to explore what symptoms patients were experiencing and to what degree. In addition, it explored whether there was a correlation between symptoms experienced and demographic factors like gender and age groups. The ESAS tool assesses nine common symptoms experienced by cancer patients on a 0–10 scale and has been proven to be

a valid and reliable tool for symptom assessment. Symptoms assessed are: pain, fatigue, nausea, depression, anxiety, drowsiness, lack of appetite, shortness of breath and well-being. Regular assessment started in January 2016. All patients were asked to complete the ESAS assessment at three time points during the stem cell collection period, i.e. upon admission to the stem cell collection program (T1), a week after chemotherapy mobilization treatment (T2) and the day after stem cell collection had finished (T3). A total of 24 patients completed the ESAS assessment during their stem cell mobilization and harvesting period. Median age was 57 years (range = 33–74), with 64% women and 36% men. Cancer diagnoses were myeloma (58%), lymphoma (33%) and other diagnosis (8%). Fatigue was the most predominant and persistent symptom experienced by patients during the stem cell process, with combined mean score of all three time points of 3.72. Mean fatigue scores increased from 3.09 at admission to the stem cell program (T1) to 4.61 on the day after stem cell collection had finished (T3). Anxiety and shortness of breath ranked number two and three after fatigue. Patients assessed their overall wellbeing during the stem cell collection process as rather good with combined mean score of all three time points of 2.79. But looking at results from T1 to T3 revealed that patients' wellbeing gradually decreased. Although most patients assessed their symptoms as low (0–3) on the scale 0–10, a few participants experienced median (4–6) or severe symptoms (7–10) that needed to be addressed during the mobilization and harvesting process. These results emphasize the importance of regular assessment of symptoms not only during the transplant period but also during the collection process for best quality of patient care.

**Disclosure of conflict of interest:** None.**NP047****A narrative-based medicine experience as a tool to assess the health care in hematopoietic stem cell transplantation**G Gianpaolo<sup>1</sup>, S Vincenza<sup>2</sup>, IC Grazia<sup>3</sup>, G Assunta<sup>3</sup>, R Teresa<sup>3</sup> and S Silvio<sup>3</sup><sup>1</sup>Hematology and BMT Center, University Hospital Federico II, Naples, Italy; <sup>2</sup>GITMO Nurses Group Italy; <sup>3</sup>Pediatric Intensive Care Unit, University Hospital of Padoa, Italy and <sup>3</sup>Nursing Research Group, University Hospital Federico II, Naples, Italy

This study aimed to assess whether Narrative Based Medicine might be a valid approach to learn about organizational, clinical - health care, psychological, social and communication problems experienced by patients undergoing hematopoietic stem cell transplantation (HSCT). From July to December 2014, 13 patients receiving treatment for the follow-up post-transplant period at the HSCT Day—Hospital of the University Hospital Federico II of Naples, were included in the study. Nine patients underwent to HSCT at the University Hospital Federico II Napoli, three patients at the San Martino Hospital of Genova (Italy), and one at the Microcitemic Hospital of Cagliari (Italy). Inclusion criteria were: age  $\geq 18$ , HSCT in the last 5 years, speak and understand Italian, give and sign a permission for audio-recording. All patients were asked to relate freely their disease's experience during deeply unstructured interviews, which were recorded. Each recording was entirely verbatim, divided into short periods and classified into the following areas: organizational, clinical care, psychological, social and communicative. An identification code was assigned to each period. The repetition of the different codes and the count of the most repeated words were carried out for each narrative. The method was useful for the analysis of the entire treatment's period and 814 items were counted. The more common topics of the recorded stories were about psychological issues (250 items, 30.71%), communication to nurses and physicians (150 items, 18.43%), organizational issues (148 items, 18.18%), clinical and health-care issues (135 items, 16.6%). In terms of Word Counter Analysis, the most frequent words were 'transplant' (138 times), 'well' (114),



'person' 107, 'day' (103). The majority of the interviewed patients narrated about their psychological problems due to HSCT and the hematological disease. Patients who underwent to HSCT long time ago succeeded in relating easily their experience. Patients undergoing HSCT in another hospital detected all the organizational and structural differences between the centers. It was possible to achieve a holistic approach to the patient, studying and analyzing issues that went beyond the psychological and clinical aspects. The results helped us to understand the different dynamics wherewith patients perceive the organizational and structural problems in health care facilities and how these factors can influence the outcome. This study was useful to define the validity of the research methodology and analysis methods, although it is necessary to promote a multi-centric study to inquire further the patient's experience in a larger sample.

**Disclosure of conflict of interest:** None.

**NP048**

**Assessment of body weight in children with hematological malignancy and non-malignant disorders after BMT and chemotherapy**

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An important index in patients treated with chemotherapy and HSCT is body weight, which is used to calculate surface of the body, dose of chemotherapy agents, amount of hematopoietic stem cells, antimicrobial drugs and nutritional support. HSCT and chemotherapy often negatively implement nutritional status leading to malnutrition. The main marker in the assessment of nutritional status is body weight. 20 patients (13 boys and 7 girls) were included to the study. Age ranged from 11 months to 13 years old, median—7. 15 patients were with hematology malignancy: ALL—30% (n=6), AML—40% (n=8), JMML—5% (n=1). Five were with non-malignant diseases: AA—10% (n=2), Hurler syndrome—10% (n=2), β-thalassemia—5% (n=1). 10 patients have received allogeneic HSCT (alloHSCT) with myeloablative conditioning (n=7) and reduced intensity conditioning (n=3). 8 patients had high dose chemotherapy and 2—immunosuppressive therapy. In patients who enrolled to the study, body weight control was 2 times a day, before starting induction therapy and on D+29. Children were weighed two times a day: in the morning before breakfast and in the evening. In the case of HSCT body weight was measured before conditioning and on D+24. The follow up period was

[NP048]

Table 1 Complications frequency after HSCT and HD chemotherapy

Complication frequency	Patients with alloHSCT, n = 10	Patients with HD chemotherapy, n = 6
Body weight changes, %	1–14, 5 (D+24)	0, 5–13 (D+29)
Complications		
Mucositis II–III	0	3
Mucositis II–IV	7	0
Toxicity	3	1
Infections	5	4
aGvHD	3	—
Duration of parenteral nutrition, days	13–120, median 66.5	12–37, median 24.5

30–120 days (median—75 days). After HSCT different complications were observed in 10 patients and in 6 patients after HD chemotherapy/immunosuppressive therapy (Table 1). In the first group body weight decrease was 1–14% on D+24 and in second group—0.5–13% on D+29. All patients after HSCT are in need of nutritional support. Mucositis, transplant-related toxicity and infection complications were registered in all groups of patients. 3 children after HSCT have had acute graft versus host disease.

Daily and regular body weight control is necessary for assessment of nutritional status and prevention of malnutrition in children with non-malignant and hematological malignancy after alloHSCT and chemotherapy. Patients after alloHSCT often require long-term parenteral nutrition. The main causes of body weight loss in children after alloHSCT are aGvHD, infection complications and mucositis grade III–IV. Malnutrition may lead to life-threatening complications, electrolyte abnormalities, dehydration, cachexia. The nurse should regularly monitor water balance, body weight and patient's enteral nutrition to prevent serious complications and thereby reduce the duration of hospitalization.

**Disclosure of conflict of interest:** None.

**NP049**

**Challenges in a tunneled central venous catheter care in Pediatric cancer ward**

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Our Pediatric cancer ward in Helsinki has had a long history of using and taking care of tunneled central venous catheters (Broviac), all the way from the 80's. In our ward, we take care of patients who have different kinds of blood or cancer diseases, or need a stem cell transplant. Treatments are long, and in order to treat these diseases, we need patients to have a long term and trustable blood vessel contact. Most of the patients get a tunneled central venous catheter at the beginning of the treatment. The assumption is that the same catheter lasts until active treatment is over, so catheters proper care is a key issue to succeed at this goal. To prevent catheter infections, which could lead to removal of catheter, we take care of catheters by using very careful and accurate aseptic techniques to keep these catheters clean. We have the impression that in most of the hospitals around the world, catheters are being taken care of using sterile techniques. The number of infections in our ward is not any higher compared to other countries, and hence why we want to examine this subject. Introduction to topic and theoretical background. In 2015, we had in our ward a high spike in intravascular catheter-related infections. In total there were 38 infections. We started to examine our procedure more closely because of this sudden change. In this work we observed tunneled central venous catheters (TCVC) care in Pediatric cancer ward. We disclose techniques how to keep catheters clean, how we direct parents and patients, and how the techniques are evolved in our ward. We have solid 30 year experience, and so little has changed. Nowadays attachment materials are more skin-friendly but otherwise techniques are the same. In our work we have a small emphasis on current challenges in taking care of TCVCs, like rising amount of catheter-related infections, patients sufficient directing and new SecurA cath-anchor, and how this may affect proper cleansing. We show that aseptic cleansing is as affective and adequate as sterile technique. The data has been collected from the ward's own materials and the hospital's infection reports, also from scientific databases, development projects for the Pediatric cancer ward and from colleagues whom have long career at the ward. The evidence was collected from Finnish databases for example Duodecim and English databases like PubMed. We used as keywords like 'central venous catheter' and 'aseptic.' Sometimes it is important to stop and think about routines in the ward. Over 30 years of experience has shown that the sufficient aseptic

cleansing is as good as a sterile cleansing. We also teaching aseptic cleansing to patients parents. Parents are cleansing catheters at the home. Current challenges in taking care of TVCVs are a new Secur-Acath-anchor and intravascular catheter-related infections. Secur-Acath-anchor sets challenges in cleansing properly TVCVs because of its size and location. Moving the anchor might cause pain for a child, especially when patient has received a new TVCV. Intravascular catheter-related infections are also a challenge. In 2016, by the end of September there were found eleven intravascular catheter-related infections in our ward. There has not been found distinct factor for positive results of intravascular catheters.

**Disclosure of conflict of interest:** None.

#### NP050

##### **Exploring predictors of workplace violence and its effect on oncology nurses**

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Currently, violence against a health care professional, particularly nurses, is a major concern in every hospital around the world. Oncology nurses face a variety of daily challenges to provide effective quality of care for patients with cancer. These challenges may include a shortage of staff, patient acuity, workload, and work environment. The objective of this study is to explore the workplace violence predictors and its effect on oncology nurses. A descriptive cross sectional and correlation method was used to analyze the responses of 250 nurses to a questionnaire which consists of five domains, demographic characteristics, workplace violence, job satisfaction, reporting violence and perception of sources and predictors of violence. The overall result of the study demonstrated that the prevalence of workplace violence among nurses was (58.1%), verbal violence was the most common type (55.7%), of which shouting was the most prevalent type (57%), and spitting was the lowest (1.4%). On the other hand, physical violence was (6.2%), of which grabbed and kicked the most prevalent type (3.8%) and using instrument was the lowest (0.5%). 68.8% of staff exposed to violence expressed satisfaction on the job, however (38.6%) of staff exposed to violence expressed their intention to leave current job. 54.3% of staff exposed to violence did not document the incidence, (45.2%) of nurses stated that reporting incidence is useless and not important, and (30.5%) expressed fear and concern from the consequences. The most common perpetrators were patients' families and sitters (53.3%).. 41% of nurses perceived the predictors of violence was long waiting time and (23.8%) was due to language barrier. A significant statistical correlation between nurses' working hours and nurses' experience of resources of violence ( $P=0.008$ ), as well as a significant correlation ( $R=0.18$ ) between nurses' specialty and the nurses' experience of workplace violence ( $P=0.009$ ). However, there is no significant relationship between violence occurrence and staff level of satisfaction ( $P=0.67$ ). The finding of this study showed that high prevalence of workplace violence in oncology units against nurses. Nurses perceived that the most common cause of violence was patients' families and the most predictors were long waiting time and language barrier. This study stresses the importance of having an antiviolence policy on workplace and well trained nurses in managing violent behavior. Moreover, policy makers should implement strategies to improve security in the health facilities in order to prevent violence for nurses and all other workers.

**Keywords:** Workplace violence, predictors, perpetrators

**Disclosure of conflict of interest:** None.

#### NP051

Previously Published

#### NP052

##### **Incidence of culture positive infectious episodes and outcomes after auto-SCT in lymphoma patients: a retrospective observational study**

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Microbial infections are a major cause of morbidity and mortality during the first 100 days after auto-SCT. Factors increasing vulnerability to infections include profound immune suppression, indwelling catheters, and mucosal disruption. Nursing care, hand hygiene, as well as precautions against spread of infections are also relevant. Our aim was to identify frequency of documented infections in patients undergoing auto-SCT and their effect on eventual outcomes i.e. delay in discharge, death etc. We also planned to compare infections in different hematological malignancies during HDC auto-SCT. This is a retrospective observational study. All patients with relapsed or refractory Hodgkin and non-Hodgkin lymphoma who underwent HDC auto-SCT from January 2013 till September 2016 were included. Medical, laboratory, and pharmacy records were reviewed. All patients were admitted in negative pressure rooms. Beginning two days prior to stem cell infusion, all patients received prophylactic fluconazole, acyclovir and ciprofloxacin till engraftment according to institutional guidelines. Any patients with a temperature of greater than 38.3 °C once or 38 °C twice 1 h apart was considered to be febrile. All such patients underwent peripheral as well as central venous catheter (CVC) cultures and site, sputum, urine and stools were carried out where indicated according to institutional guidelines. Variables like presence of multiple infections, causative organisms and infection outcome like sepsis and death post auto-SCT due to infection were also captured. 105 patients (male 70, female 35) underwent HDC and auto-SCT at our institution for relapsed or refractory Hodgkin and non-Hodgkin lymphoma during study period. Median age at auto-SCT was 31 years (15–68 years). 85 (81%) out of 105 patients developed fever. 37 (43.5%) had at least one positive cultures. Overall, 49 total microorganisms were identified (19 Gram-negative, 15 Gram-positive, 8 viral and 7 fungal infections were isolated). Nine patients (24%) had *Escherichia coli*, 10 patients (27%) had multiple microorganisms, while 4 each (11% each) had *Clostridium difficile*, and *Candida albicans*. 16 patients (43%) had other microorganisms (Table 1). The most common clinical infectious complications were Pneumonia, neutropenic enterocolitis and fungal lung infection. 11/37 patients (30%) had CVC associated bloodstream infection that required CVC removal. Females had twice the risk of developing infection compared to males with an Odd's ratio = 2.2 (0.9, 4.9) and  $P$ -value = 0.005. 6/10 patients (60%) with multiple microorganisms had sepsis and all 6 of them went to ICU vs 0/27 with single organism had sepsis and no one went to ICU ( $P$ -value < 0.001). 5/10 patients (50%) with multiple microorganisms died due to infection vs 0/27 with single organism ( $P$ -value = 0.001). Documented infections but not febrile episodes post auto-SCT are associated with increased morbidity and mortality. In order to reduce risk of infections and adverse outcomes post-auto-SCT, aseptic techniques and hand hygiene by nurses and other care providers are mandatory. Polymicrobial infections carry a particularly increased risk of sepsis, ICU transfer and death.

**Disclosure of conflict of interest:** None.

#### NP053

##### **Oral mucositis during melphalan conditioning for autologous transplantation in multiple myeloma: can local cryotherapy help?**

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Oral mucositis is a serious clinical condition that involves inflammation of oral mucosa resulting from chemotherapeutic agents or ionizing radiation that typically manifests as erythema or ulcerations and may be exacerbated by local factors. Erythematous mucositis appears 7–10 days after initiation of high-dose chemotherapy, such as that used in the hematopoietic stem cell transplant regimens, Mucositis is self-limited when uncomplicated by infection and usually heals within 2–4 weeks after cessation of cytotoxic chemotherapy. Aim: Our intention was to investigate if the local cryotherapy added to the standard oral care protocol significantly decreases the clinical symptoms of the oral mucositis during autologous setting for multiple myeloma (MM). Our study includes 75 patients with MM that received melphalan 200 mg/m<sup>2</sup> conditioning for autologous transplantation. All patients were only locally treated with a solution containing hexetidine, sodium bicarbonate, nistatine, dexamethasone and/or lidocaine (depending on the stadium of the disease). The material was divided into two groups: one group of 35 patients that received oral cryotherapy (ice cubes) and the other one group of 40 patients not receiving cryotherapy. 27 out of 35 patients (78.6%) that received oral cryotherapy had an enormous overall clinical improvement, presented with alleviation of pain, normalization of alimentation and clear tendency of diminishment of oral mucosa lesions compared with the group of patients not receiving cryotherapy. Our study revealed significant improvement in the clinical manifestation of the oral mucositis in patients treated with local cryotherapy.

**Disclosure of conflict of interest:** None.

**NP054**

**Patients with graft versus host disease after allogenic stem cell transplantation and their quality of life after eight treatment cycles with extracorporeal photopheresis**

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From 1985 to 2012, 734 adult patients have undergone allogenic stem cell transplantation (ASCT) at the department of haematology, Rikshospitalet, Oslo university hospital. 46% developed acute GvHD, of the 602 patients who lived over 100 days after ASCT, 46.5% developed chronic GvHD.<sup>1</sup> GvHD can reduce the patient's quality of life considerably. Method When including the patients for this paper, we chose all nine patients who were the first to receive ECP treatment at our department, and who had not received ECP treatment at any other hospital previously. We reviewed medical records and interviewed the patients to assess if their quality of life had changed after they started the ECP treatment. We used a scale from 1 to 10, to assess the patients QoL, 1 being the worst imaginable QoL and 10 the best imaginable QoL (Table 1). After ECP treatment, two of the patients have reduced their steroid doses, two have discontinued their steroid treatment, two of the patients have increased their steroid dosage and two dies before completing eight cycles of ECP. Discussion Patient numbers 1 and 5 was hospitalized with increasing GvHD symptoms and we were not able to interview them. As for the remaining five patients, all reported a subjective improvement of their GvHD and scored higher on QoL after receiving eight cycles of ECP. An improvement of QoL may also be a related to the placebo effect. Other studies have mentioned this as well.<sup>2</sup> The medical staff in contact with the patients have also observed an improvement of skin GvHD, as documented in the medical records. Since we started the ECP treatment only in May this year we have not been able to evaluate patients who have received ECP for a longer period of time. We have only treated our patients for 16 weeks and this is a very short period of time to see a proper therapeutic response. Similarly, we have only included seven patients, which is too few to conclude that ECP treatment has a positive outcome on the patients QoL. We found out that ECP treatment has an impact on the patients QoL mostly in a positive way. 71.4% of our patients show response to the

treatment with reduction of steroid doses, signs of improvement in their GvHD symptoms and better QoL after eight cycles. The remaining patients had experienced a worsening in GvHD symptoms and the steroids doses were increased. Our results have shown that an improvement in QoL was noted in 5 of 7 patients, and 4 of these 5 reduced their steroids, which may have contributed to improve their QoL.

**Disclosure of conflict of interest:** None.

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[NP054]

Patient	Sex	Age	Diagnosis	Type of tx	GVHD status before ECP treatment	GVHD status after 8 cycles of ECP treatment	QoL before ECP	QoL after ECP
1	F	64	Mantel cell lymphoma	Allo tx RIC-2014	GVHD skin and mucous, severe affection of the skin in both hands and mucous in mouth.	Worsening of the GVHD in skin and mucous after eight treatment cycles.	The patient is not able to answer.	The patient is not able to answer
2	M	41	AML	Allo tx x2MAC/RIC + DLI – 2014, 2015	GVHD skin and mucous, pigment changes in the skin, dry eyes, liver GVHD	Subjective improvement, no worsening of the GVHD, discontinued prednisolone after eight cycles.	3	5
3	M	55	AML	Allo tx RIC - 2015	GVHD lungs, mucous and skin, dyspnoe and dry eyes	Improvement in eyes, no need of eye drops anymore. Improvement in lungs, better lung capacity, reduction of prednisolon	5	8
4	F	53	Follicular lymphoma	Allo tx RIC 2013	GVHD skin and mucous, sclerodermic skin with wounds, dry eyes and mouth	Subjective improvement in eyes, a bit less rigid skin. Discontinued prednisolon. No worsening of the GVHD	2-3	4
5	F	63	AML	Allo tx RIC 2014	GVHD skin, mucous, lungs. Dyspnoe in activity, dry eyes, sore mouth	Worsening of the GVHD skin, lungs. No subjective improvement	The patient is not able to answer.	The patient is not able to answer
6	M	68	AML	Allo tx 2010	GVHD skin, rash over large parts of the body, wounds, significant itching and dandruff. Was not on steroids when ECP treatment started.	Subjective improvement, no itching, the skin changes are better. Better wound healing and no more dandruff.	4	7
7	M	51	Mantel cell lymphoma	Allo tx - 2015	GVHD lungs, skin, mucous	Subjective improvement of lungs, skin and mucous in mouth. Reduction of prednisolon	4	6

#### NP055

##### **Pilot study into short synacthen tests on GvHD patients receiving ECP after stopping long term steroids**

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Patients who have chronic Graft-versus-Host Disease (cGvHD) who have been taking corticosteroids for extended periods of time are at a higher risk of developing adrenocortical insufficiency. The aim of ECP is to reduce and stop the patients steroid intake. To ascertain the number of patients that are affected a pilot study was performed by the Photopheresis Unit. The pilot covered the period May to October 2016 and utilised the short Synacthen test (SST) for screening the appropriate patients. Synacthen is a synthetic analogue of ACTH which stimulates the adrenal cortex to produce cortisol. Patients are clinically assessed by the Clinical Lead for Photopheresis, if it is determined that corticosteroids should be stopped, the short synacthen screening test is planned for the patient's next visit. This usually occurs in 4 weeks' time. Under trust protocol, a baseline serum sample was taken for cortisol measurement. Then 250 µg Synacthen in 1ml (adult dose) was administered via peripheral cannula by slow intravenous injection (over 2–3 minutes) by a registered nurse. Two further blood samples were then taken for cortisol analysis at 30 minutes and then 60 minutes following administration of the drug. SST should always use cut-offs derived for the specific assay in use in the laboratory. For the assay currently in use at Trust the 30 minute cortisol cut-off is 470 nmol/L. The 60 minute sample is used to look for a delayed response to the Synacthen. Over a time period of 6 months, 11 patients were tested. In this time two patients were found to have an inadequate response to the SST and were subsequently referred to the endocrine team for further investigation. In addition one patient was found to have a delayed response to the test. Whilst only a small number of patients were included within this pilot study, it has highlighted the importance of testing the adrenal reserves of patients with cGvHD whose steroids are being discontinued whilst undergoing Photopheresis treatment. Twenty percent of patients in this study potentially have decreased cortisol production in times of stress which if unidentified leaves them vulnerable to hypoadrenal crisis. On the basis of these results the pilot is being rolled out so all future patients will be tested. **Disclosure of conflict of interest:** None.

#### NP056

##### **Quality indicators in the quality program for a clinical and apheresis unit**

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Since 2012, Antwerp Hospital Network (ZNA) is accredited by JACIE. Accreditation was achieved for apheresis, storage and administration of autologous and allogeneic stem cells and bone marrow in adults. In the initial inspection report the quality program for haematological stem cell transplant (HSCT) was described as young. Further expansion was needed. After several years, quality indicators become an important part of the ZNA HSCT program. This abstract describes the various quality indicators of ZNA HSCT program for a clinical and apheresis unit. In accordance with the JACIE standards, various initiatives were performed in the past to integrate quality throughout the entire process of HSCT. We started with the drafting of HSCT quality manuals, multifarious standard operating procedures (SOPs), performing several audits and comprehensive training was provided to staff of the HSCT unit. The reporting of adverse events (AEs) is done through an electronic reporting system. These initiatives were good but unfortunately insufficient to measure the quality. Therefore, more specific actions were needed. The results of the measurements must be analyzed and interpreted at regular intervals. For the apheresis unit, each apheresis the efficiency

of CD34 + cells was measured. After a first analysis, the result was suboptimal. It was necessary to adapt the software of the apheresis device. The efficiency of CD34+ cells is now higher and results in less apheresis days. To reduce complications of apheresis through central line, the number of central lines were limited attempted to puncture through more peripheral vein. Also, environmental factors such as ambient temperature, humidity, air particle measurement and surface contamination were recorded and analyzed in the apheresis unit, in order to ensure the safety of the patient. Apheresis devices went half-yearly in maintenance. For clinical unit additional quality indicators were also determined. The measurement of survival after 100 days HSCT is the most important. Furthermore, number of graft failures, transplant related mortality and recovery of blood values such as ANC and platelets measured in days are recorded. For local staff training days were held and attendance was mandatory. Also external meetings are encouraged and financially supported. The number of participants of ZNA are a quality indicator. Vaccination of employees for seasonal influenza is not mandatory in Belgium but was promoted maximum. Vaccinated number of employees at the HSCT unit was measured annually. The target is 70%. Both departments processed each AE individually and via software was a trend analysis of all AE reports annually performed. Targeted improvement actions were undertaken to topics with the highest number of notifications. After setting an improvement action, these were audited and checked. Therefore, the PDCA of Deming was used. Quality Initiatives have a multipotent benefit and ensure a reduction in hospital stay and complications, reduce the workload of employees but are most important cost-effective for the hospital and healthcare. **Disclosure of conflict of interest:** None.

#### NP057

##### **Reviewing the feasibility of chronic GvHD patients completing FACT BMT quality of life forms in photopheresis unit**

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FACT-BMT is a valid and reliable measure of five dimensions of quality of life (QoL) in bone marrow transplant patients. The form is divided into 5 different aspects of QoL, Physical, Social/family, Emotional, Functional and any additional concerns. The 2015 National Institute of Health consensus paper, recommended using FACT BMT in the assessment of QoL in chronic graft versus host disease (cGvHD) patient, and so the Photopheresis unit commenced using the form in April 2015. The FACT BMT version 4 questionnaire was given to each patient every 3 months and the results were recorded. In October 2016 completion of the form was reviewed. The form has 50 questions in total, only 37 questions are currently used in scoring. FACT-BMT score was recorded for each patient on a local data-base. The review of the FACT-BMT form included proportion of patients that had completed all the form, the number of forms not completed, the number of questions not answered, and the areas not completed. For the purpose of this review the unit looked at the compliance of completing 100% of the form not weather the form was valid for scoring. Over the 18 month period 59 patients attended the Photopheresis unit and 217 forms were filed in the patients notes. 63% (n=137) forms had been fully completed with all 47 questions answered, 37% (n=80) forms were not fully completed. The question in the social/family well-being section relating to intermit relations, if the box 'prefer not to answer' was ticked, this was regarded as completed. Forms that were not completed, 43% (n=34) had only a single question not answered, 35% (n=28) did not answer between 2 and 9 questions, 11%(n=9) did not answer between 10 and 15 questions, 1% (n=1) did not answer between 16 and 20 questions and 10% (n=8) did not answer over 21 questions. Of the forms that were incomplete, 59% (n=47) only one of

the 5 sections was not completed, 41% ( $n = 33$ ) had more than one section which was not completed. The breakdown of sections not completed was as follows, 18% ( $n = 15$ ) did not fully complete physical well being section, 29% ( $n = 23$ ) did not fully complete social/family well being section, 24% ( $n = 19$ ) did not fully complete emotional well being section, 33% ( $n = 26$ ) did not fully complete functional well being section, 69% ( $n = 55$ ) did not fully complete the addition concerns section. Reviewing the data collected over the 18 months it was found that only 31% ( $n = 18$ ) of the patients had consistently completed (100%) the form on every visit. Therefore 69% ( $n = 41$ ) did not consistently complete the form. In addition to reviewing the compliance, the unit also reviewed how many forms had a valid score. For the form to have a valid score, the form needed to be completed by 80% and each given section needed to be 50% complete. 59% ( $n = 35$ ) of patients had a valid score on every visit, 41% ( $n = 24$ ) of patients did not have a valid score on every visit. Whilst FACT-BMT has been identified within the NIH guidance as an effective tool in the review of QoL in patients with cGvHD, the review has highlighted concerns in patient compliance. As missing data will result in an inaccurate record of quality of life, staff should actively encourage patients to fully complete the form allowing the collected data to be analysed and evaluated. It shows that patients may find it difficult to complete the form due to its length and finding some questions irrelevant to their life.

**Disclosure of conflict of interest:** None.

#### NP058

##### **A single-centre experience in the establishment of a pain management team**

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Multidisciplinary approach to patients with pain is applied in Raisa Gorbachev Memorial Institute of Children Oncology, Hematology and Transplantation. The aim of Pain Management Team (PMT) is pain control. In our Institute PMT consists of anesthesiologists, hematologists, psychologists, clinical pharmacologists, clinical nutritionists and nurses. Anesthesiologist in close cooperation with hematologist defines optimal pharmacological options for pain relief. Non-pharmacological methods of pain control are administered by psychologist if mild or moderate pain. In case of neuropathic pain clinical pharmacologist helps to indicate etiology and possible medicine responsible for the symptoms. Nurse assesses pain intensity, patient's daily activity, and adverse effects and documents all these data. **Aim:** To assess the duration of enteral feeding with liquid nutrition (inability to swallow solid foods) and to compare pain control before and after PMT establishment in Raisa Gorbachev Memorial Institute of Children Oncology, Hematology and Transplantation. Seventy three patients after autologous hematopoietic stem cell transplantation with median age of 14 (5–21) and oral mucositis Grades 2–3 (WHO Oral Mucositis Scale) were enrolled in the study. Study end points were the duration of enteral feeding with liquid nutrition (inability to swallow solid foods) and the duration of analgesia. All patients were divided in 2 groups. The first group comprised retrospective data on 42 patients that received treatment prior to PMT establishment. The second group comprised prospective data on 31 patients managed by PMT. Parenteral nutrition wasn't used in both groups as all patients possessed ability to drink liquid nutrition including balanced feeding formulas. The duration of analgesia in the first group was 7 days and the duration of inability to swallow solid foods was 5 days. Patients demanded adjuvant pain-relievers more frequently and compliance with non-pharmacological approaches was low. The duration of analgesia in the second group was 6 days and the duration of inability to swallow solid foods was 4 days. Compliance with

such non-pharmacological approaches as art therapy and media was higher. Multidisciplinary approach to pain control can result in early physical activation, pharmacotherapeutic optimization in pain relief and improved emotional status of the patient.

**Disclosure of conflict of interest:** None.

#### NP059

##### **Successful nursing experience for extreme grade IV toxic epidermal necrolysis skin detached graft-versus-host disease—cases and techniques sharing**

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Grade IV skin acute graft-versus-host disease (aGvHD) had high mortality rate and remained a medical challenge. Besides strong medical management, including strong corticosteroid and immunosuppressants, successful nursing care of the skin conditions and other physical and psychological problems is pivotal for a surviving. Here we report our successful labor-intensive nursing care experience on four cases with extreme skin grade IV aGvHD having generalized skin detachment (toxic epidermal necrolysis, TEN) for more than ninety percent of body surface area. We performed intensive burn care method, including: (a) cleaning of old debris and crusts gently by repetitive cotton swabs, wound covered by Vaseline gauzes mixed with antibiotics and corticosteroid, which keep a moisture, sterilization, and anti-inflammatory environment. Double covered with mesh cloths to make a non-skin touch fixation. (b) These patients in general ward who developed grade IV skin aGvHD would transferred back to transplant HEPA room for sterile environment and intensive nursing staff. (c) Heating lamp and pre-warmed cleaning saline during wound dressing care to decrease heat loss and patient chilling sensation and narcotic use if necessary. (d) Specialized air mattress bed to decrease skin pressure during high immobility period. (e) Frequent monitor (twice daily) the skin change and report to physician during actively changing aGvHD period for immunosuppressant guidance. (f) Total parental nutrition during frequent concurrent gastrointestinal (GI) aGvHD diarrhea period with intense nutritionist adjustment and evaluation. (g) Psychosocial: We quickly provide intensive psychological support to ameliorate the self-esteem breakdown for the sudden body image destruction shock during skin denudation, especially for young women, including listening skills, sharing the prior successful case, enhancing religious support and family interaction for positive energy. Financial problem was carefully assessed with prompt supports aided by social workers. There were one male and three female patients. The age was 42 (33–47), respectively, with one acute myeloid leukemia, one myelodysplastic syndrome RAEB-2, and two pre-B acute lymphoblastic leukemia. Besides TENS skin aGvHD, all had concurrent stage IV GI aGvHD. Two had stage II liver aGvHD, and two had stage IV liver aGvHD. The latter two patients died of aGvHD at 3rd week and 1 month post aGvHD; the previous two still survived (5 years and 1 month, respectively). All the patients had skin recovered and none died of skin related infection or complication. The long term 5-year survivor had been cared in transplant room for 1 month. She remains disease-free now but has extensive mild chronic GvHD with dry eye and mouth. No residual skin lesion could be found and she remained a beautiful lady. Grade IV skin aGvHD could still successfully cared by intensive nursing techniques. Experienced nurses play the important role in good skin wound healing, secondary infection prevention, guiding of physician decision making, patient psychosocial support and finally a possible survival chance for such patients.

**Disclosure of conflict of interest:** None.

## NP060

### The interactive educational approach in management of anxiety related to bone marrow transplantation

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Bone marrow transplantation (BMT) is a treatment options for hematologic malignancies, solid tumors, genetic and immunological diseases. During this treatment, some psychological complications may occur as an anxiety, sadness, ambivalence, childhood regression and deterioration of cognitive functions. These kind of problems have been proved clinically by some of studies. Although BMT nursing process has a common characteristics with other nursing branches (surgery, internal medicine, etc.), it has own specific criteria, like long term inpatient stay, social isolation and facing with high mortality risk. Therefore, patients should be evaluated, should be informed about issues that may arise during the treatment process. The study was designed to assess the effectiveness of the interactive educational approach in management of BMT related anxiety. 50 patients were attended to study. Their pre-transplant psychiatric and physical examinations were normal. Patients were divided into two equal groups. Intervention group received interactive educational interview; control group did not receive any education. Difference of this interactive educational approach was; sitting with the patient being in equal eye level and interactional position during the session. The anxiety of the patient were scored during the question and answer interview. Transplantation procedures (chemotherapy and stem cell transfusion) and materials which is used during transplantation (IV catheters, chemotherapy drugs and bags, imitated stem-cell solution bags, catheters extensions, oxygen system, motorization systems etc.) were physically demonstrated to the patient one by one, given opportunity to touch. Moreover, discharged BMT patients photographs and their stories were introduced for to feel they are not alone. Hamilton Anxiety Rating Scale (HAM-A) was used for the assessment of the patient's anxiety. Each interview was set at 30 minutes. HAM-A form was filled up during the educational intervention on the first day of admission, -1, and +1 days of transplantation. The descriptive statistics and  $\chi^2$  tests were used to assess the study results. Findings In this prospective study, 50 patients were enrolled. Of 50 patients, 25 (50%) were female. Educational status; no education (16%), primary school (28%), high school (28%) or college (28%). 50% of the patients had autologous, 50% allogeneic BMT. Major anxiety levels were significantly different between two groups ( $P < 0.05$ ). The decrease in the level of major anxiety have been observed between the first day of admission and 1st day of post-transplantation in interactive education group ( $P < 0.05$ ). The study shown that the interactive educational approach was effective in intervention group and it can be used to reduce to bone marrow transplantation related anxiety. These are pilot study results; we will continue to increase case number for advanced significance of our results.

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## NP061

### Previously published

## NP062

### Treatment adherence: a challenge for patients receiving allogeneic transplant. A nursing intervention

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Following HSCT, patients and their caregivers must manage a regimen. This regimen often includes the administration of numerous intravenous and/or oral medications with different dosing schedules as well as frequent dosing changes. The necessity to attend to the outpatient clinic in a higher frequency than expected is one of the reasons that patients and caregivers will feel tired and will be a nightmare to accept transplant complexity and follow up difficulties. Moreover, mistakes associated to medication schedules and doses could have unexpected consequences sometimes associated with severe complications. For all these reasons nurses play an important role helping the patient to understand and to manage all these problems and challenges making the postransplant easier to patients and relatives. The main objective of this project is to assess medication adherence of patients receiving an allogeneic stem cell transplant at our Unit since they are discharged from the Unit until day +100 post-transplant. At least two nurse interventions are planned for all the patients; moreover, the nurse will check treatment after doctor visit any time changes have been performed on medical orders. Patients: all the patients discharging from the Unit since September 2016 until December 2016 will be included in the study. As our Unit perform 75 allogeneic transplants per year, we expect to collect data from 20 patients. This adherence is being measured in three different ways: Objective measure: to check if patients have the appropriate medication they need according medical orders, considering doses and days between visits to the hospital. Subjective measure: to analyze patient adherence according the Morisky-Green test Assess the skills and knowledge of the patient following SACYL model. At this time 5 patients have been included in the study. In all except one no full treatment adherence were measured. Improvement were observed in all except one after the first visit. In summary these previous approach could improve postransplant follow up, including patients and caregivers satisfaction. If the results suggest the utility of this nurse approach it will be incorporated to our Transplant program and later on it will be offer to the Spanish Transplant Group (GETH).

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## NP063

### Wiskott–Aldrich syndrome: a nursing care challenge

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Wiskott–Aldrich Syndrome (WAS) is a primary immunodeficiency disease, that affects both T and B lymphocytes. It is characterized by the clinical triad of microthrombocytopenia, eczema and recurrent infections. WAS has a variable disease severity, depending on the genotype. The diagnosis is usually made during childhood. Hematopoietic Stem Cell Transplantation (HSCT) is, nowadays the only curative therapeutic option for WAS. This case study reports a 24 months old boy, diagnosed at 10 months of age who presented the typical manifestations of WAS. Also, due to important feeding problems (allergies, diarrhea, food refusal and weight loss), the use of continuous nasogastric tube feeding was necessary to maintaining an adequate nutrition. It's a description of the

clinical evolution of the patient, from the moment he was admitted on the Bone Marrow Transplant Unit up to 100 days after the transplant. During the first nursing consultation it was made clear that this child would require a multidisciplinary team due to his clinical condition and the severity of symptoms presented. The nurses took, from early stages, a central role on the preparation of the child and his parents to HSCT. The management of the child's chronic illness dictated a special family dynamics in which the dyad mother/child would have to be considered as a single element. The mother was immediately included in the multidisciplinary team, which was essential for the assessment of the child's condition and altered human responses. The team designed a nursing care plan that took in to consideration the situation of the patient and that was constantly being improved due to recurrent evaluation. The child was admitted to begin conditioning with high-dose chemotherapy, followed by infusion of unrelated donor cells. The severe clinical manifestations presented at the admission were aggravated by the aplasia period after the conditioning. The management of this sensitive situation was

done with the help of the mother, what allowed her to build a relationship of trust with the health professionals. This trust was manifested by sporadic absence of the mother of the unit, leaving the child in the care of nurses. During hospitalization the main problems identified by nurses were: infection and bleeding of skin lesions, risk of bleeding and infection, management of the pain and management of the mother's anxiety. On day +50 post-transplant, the child was discharged but continued to be followed in the Out Patient Clinic, daily. At this point, he presented a significant improvement of skin lesions and decreased itching. Regarding the child's nutrition, he started eating regular food, but still presented some allergies. The discharged process was also made with the mother, allowing a smooth transition from a controlled environment such as the In Patient Unit to the Out Patient Clinic. On day +100, the child is in follow-up period, still with daily visits to the Out Patient Clinic. He presents a proper development to his age and the parents are adapted to the situation.

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