Blood cancer UK

Clinical Nurse Specialist Workforce Training and Support:

Research Project Report

Dr Julie Armoogum[*1], Rachael Simms-Moore[*1],
Professor Fiona Cramp[*1], Dr Karen Campbell[*2], Dr Alison Llewellyn[*1]

[*1] University of the West of England, Bristol, England, UK. [*2] Edinburgh Napier University, Scotland, UK.

Contents

This project has been funded by Roche, Amgen, Kyowa Kirin, Novartis and Eli Lilly. The companies provided funding but no input into the content or direction of the project.

Blood cancer UK

UWE Bristol | University of the West of England

Executive summary

This report collates insights from published literature, blood cancer Clinical Nurse Specialists (CNSs) and people with lived experience of blood cancer, to provide a deeper understanding of the training and support needs of the blood cancer CNS community and develop a set of training and support recommendations.

To meet this aim, we:

1. Established a study review group to guide and steer the project.
2. Reviewed the literature to describe current research, policy and guidelines on the training and support needs of cancer CNSs.
3. Conducted a nationwide survey with blood cancer CNSs to identify training and support needs and clarify what good training and support means to CNSs.
4. Used insights gathered from the literature review, data from the survey and discussions with the Study Review Group to develop a draft set of recommendations for training and support for blood cancer CNSs.
5. Discussed, refined and prioritised the recommendations in online workshop with relevant stakeholders.
6. Developed a final set of recommendations for training and support for blood cancer CNSs.

Stakeholder consultation

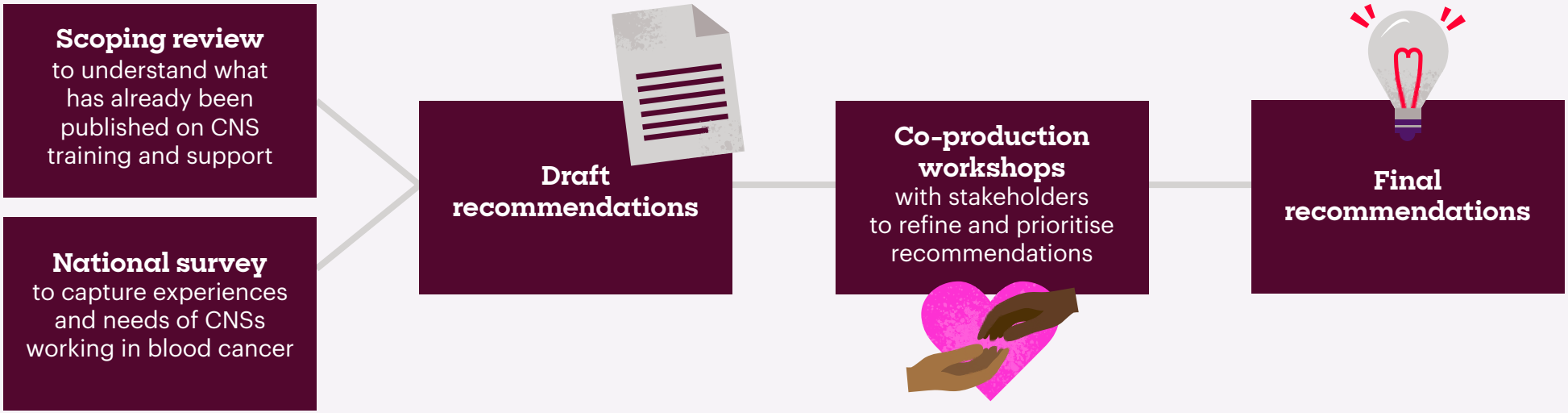


Figure 1: Project methodology

Stakeholder consultation

Consultation with blood cancer CNSs, people affected by blood cancer, and other stakeholders was central to this project. A Study Review Group of 12 members was established, including two blood cancer CNSs, two cancer practice educators, two people affected by blood cancer, a representative from Blood Cancer UK, and the research team. The group met three times during the project.

Additional engagement included piloting the survey with ten blood cancer nurses and two people affected by blood cancer, and running stakeholder workshops with nine CNSs and two people affected by blood cancer. We also worked closely with Blood Cancer UK stakeholders throughout the project.

This collaborative approach has enabled the findings and recommendations to be grounded in the needs of blood cancer CNSs working in clinical practice.

Key project findings and recommendations

Findings that align across the scoping review, survey with CNSs and workshops with stakeholders identified that:

- CNSs require ongoing, disease and therapy specific education, with emphasis on survivorship care, psychosocial support, advanced communication, research, and leadership development.
- There is a strong demand for clear, CNS-specific development frameworks and progression routes to support career advancement.
- Securing dedicated time and financial support for continuing education remains a major challenge, limiting opportunities for external courses and professional growth.
- Education must be accessible and adapted to CNS roles, clinical settings, and varying levels of experience.
- Structured mentoring, supervision, and peer networks are essential to help CNSs manage the emotional intensity of their work.
- CNS roles are highly valued but often under-resourced, with inconsistent professional titles and grouping alongside other nursing roles.
- Partnerships with charities, NHS Cancer Academies/ Education centres, and universities are key enablers for professional and personal development.

Recommendations to improve the training and support of blood cancer CNSs include:

1 Implement Structured Development Pathways:

Develop and embed clear induction and progression frameworks, incorporating education and capabilities in clinical knowledge and skills, leadership, and research.

2 Secure Protected Learning Time:

Advocate for inclusion of study leave and backfill in job plans to enable CNSs to attend training.

3 Expand Access to Specialist Education:

Increase funding for accredited haemato-oncology courses and conferences, leveraging partnerships with charities and universities.

4 Strengthen Emotional and Peer Support:

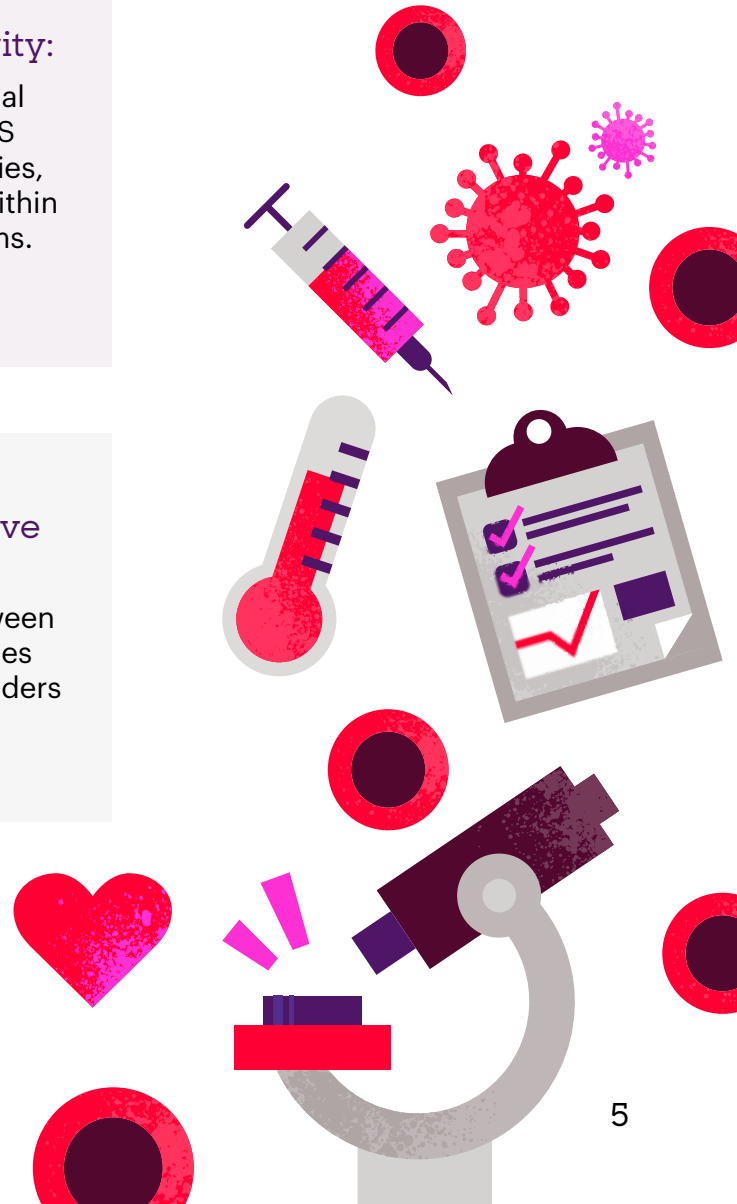
Establish regular clinical supervision, mentoring schemes, and regional CNS networks.

5 Enhance Role Clarity:

Work with professional bodies to define CNS titles and responsibilities, ensuring recognition within multidisciplinary teams.

6 Foster Collaborative Partnerships:

Coordinate efforts between NHS, charities, societies and key education providers to share resources and best practice.



These steps will help ensure CNSs are equipped to deliver high-quality care to patients and families and will support the recruitment and retention of the blood cancer CNS workforce for the future.

Introduction

This report collates insights from published literature, blood cancer CNSs and people with lived experience of blood cancer, to provide a deeper understanding of the training and support needs of the blood cancer CNS community and develop a set of training and support recommendations.

The report is divided into four sections:

1. The scoping review
2. The blood cancer CNS survey
3. Development and prioritisation of recommendations
4. Conclusions and suggested next steps

Throughout the report we have highlighted:

- The training and support needs of UK blood cancer CNSs when establishing themselves in the role during and beyond the onboarding process.
- How UK blood cancer CNSs can continuously develop their skills and experiences sufficiently to want to remain in the role/service.
- What current support is available for CNSs within the NHS and externally.
- What type of support CNSs would value from a cancer charity.

The scoping review

Aim

To map and describe existing evidence on the training and support needs of CNSs working in blood cancer care across the UK and comparable healthcare systems.

Methods

A scoping review was conducted following JBI methodology and reported in line with PRISMA-ScR. Searches were conducted across CENTRAL (Cochrane Central Register of Controlled Trials), MEDLINE, PubMed, Embase, PsycINFO, CINAHL, and the British Education Index, alongside targeted searches of professional societies, policy documents, and charity resources. The search strategy is available in appendix 1. Eligible sources included empirical research, reports, guidelines, competency frameworks, and educational standards. Identified records were uploaded into Rayyan software and screened against the following inclusion and exclusion criteria:

Table 1: CNS Inclusion and Exclusion Criteria

Inclusion	Exclusion
Types of participants: clinical nurse specialists (or equivalent)	Not available in English.
Concepts: Blood cancer, clinical nurse specialists, training and support needs.	Policy/guideline proposals or consultation documents.
Context: UK and equivalent Health Care Systems*1	Sources not focused on blood cancer (solely or with distinct section)
Timeframe: 2004 – 2025 (September)*2	

Following screening, data were extracted from included records. Qualitative data were analysed using descriptive content analysis and quantitative data were analysed using descriptive statistics.

*1 Countries with healthcare systems comparable to the UK's universal NHS model, including Ireland, Canada, Australia, New Zealand, Sweden, Norway, Denmark, Finland, the Netherlands, Belgium, France and Germany (The King's Fund, 2023; OECD, 2023).

*2 This timeframe reflects the expansion of specialist nursing roles following key national policy developments (Department of Health, 2004; National Institute for Health and Care Excellence (NICE), 2004)

Scope of Evidence

The review identified 2,975 records, with 212 full-text records screened (appendix 2). Twenty-six records, representing 25 studies were included (appendix 3). Evidence originated from studies in the United Kingdom (n=7), multi-country European studies (n=6), individual European countries (n= 5), North America and Canada (n = 3), and Australia (n=2), and two included multiple international countries.

The evidence base consisted mainly of peer-reviewed primary research articles (n=16), supported by literature reviews (n=6) and conference abstracts (n=3). Most studies were conducted in hospital-based specialist haematology/oncology, transplant services or cancer centres (n=20) five were a combination of hospital, community and outreach services and one study did not report setting.

Findings

Participant Demographics

Demographic reporting within the included studies was limited and inconsistently presented. Where reported, CNSs were typically mid-career (30–50 years) and predominantly female, although gender and age were rarely reported separately for CNSs rather than wider nursing groups. Ethnicity and other socio-demographic characteristics were almost never reported, preventing meaningful assessment of workforce diversity.

Professional titles varied considerably, with CNSs often grouped together with Advanced Nurse Practitioners, Specialist Nurses, or broader haematology/oncology nursing roles, limiting role comparability. Where experience data were available, most CNSs were highly experienced, often with more than 10 years in haematology/oncology practice, though time specifically in CNS blood cancer roles was rarely reported and ranged from newly implemented posts (of less than 12 months) to long-established roles of up to 30–40 years.

Blood cancer CNS training needs

Specialist clinical knowledge (disease, therapies)

Several studies identified deeper disease and therapy specific knowledge, including acute complications and survivorship effects, as training priorities. Specialist clinical education covering both core haematology knowledge and emerging therapies was seen as important. Priority areas included the management of treatment-related toxicities (e.g., neutropenia, anaemia, infection risk) and new and complex treatments such as CAR-T therapy, monoclonal antibodies, and immunotherapies.

Training in late effects, survivorship care, and psychosocial impacts was also frequently highlighted as important, particularly relating to fertility, employment, and emotional wellbeing.

Advanced procedures and clinical skills

The literature identified a need for competency-based training in invasive or advanced clinical procedures, most commonly bone marrow biopsy and chemotherapy administration, alongside clear legal, professional, and documentation requirements. In addition to clinical competencies, the literature highlighted the need for enhanced communication and psychological support skills, enabling CNSs to manage distress, uncertainty, and complex decision-making conversations.

Research, leadership, teaching and supporting junior staff

Multiple studies highlighted that blood cancer CNSs seek training in research and leadership skills. CNSs were often required to teach and support junior colleagues and the wider multidisciplinary team yet identified a need for greater knowledge about different methods and styles of teaching and how best to support and mentor others.

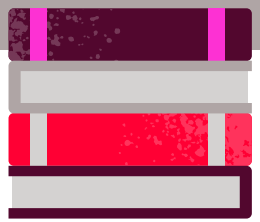
Blood cancer CNS training needs

Structured supervision, mentoring, peer support and role clarity

Findings from the studies highlighted a recurrent need for blood cancer CNSs to manage uncertainty, distress, and decision-making.

Studies suggested structured supervision, mentoring, and peer support would be beneficial to help CNSs manage the emotional intensity of the work, prevent burnout, and maintain confidence in complex care decision-making. When available, opportunities for reflective practice, facilitated networks, and psychologically safe learning environments were particularly valued.

Clear role definition and organisational recognition were also reported as important, especially where CNSs worked across multiple services or alongside advanced/ extended roles.



Career pathways and opportunities for development

Several studies emphasised the importance of structured, staged training programmes, from early-career foundations to advanced/ advanced nurse practitioner (ANP)-level development, including prescribing, assessment, and leadership skills. Access to tailored educational resources was variable, and many CNSs in the studies reported difficulty securing protected time, funding, and opportunities to attend external courses.

Protected time and accessible continuing education

The literature highlighted a consistent need for protected time and accessible continuing education that is tailored to the CNS role, clinical setting, and level of experience. Barriers such as workload, staffing shortages, and limited funding were frequently reported, restricting access to training. Institutional and managerial support are therefore essential for sustaining professional development.

Conclusion

- CNSs in blood cancer care need specialist education in core haematology and emerging therapies.
- Key training priorities:
  - Treatment-related toxicities.
  - Complex and novel therapies.
  - Late effects, survivorship, fertility and psycho-social issues (including employment and emotional well-being)
- CNSs also require competency-based training in advanced procedures and stronger communication and psychological support skills.
- Access to tailored education is inconsistent, with limited protected time, funding, and external training opportunities.
- Structured, staged development pathways from early career to advanced/ANP level are recommended.

Key messages from the scoping review include:

- Specialist clinical knowledge and skills are a training priority for blood cancer CNSs, including core haematology, emerging therapies (CAR-T, immunotherapies), management of treatment-related toxicities, survivorship issues and communication skills.
- Research, leadership, and teaching skills are important to enable CNSs to lead, mentor and develop.
- Protected time and accessible continuing education are critical, with institutional support needed to overcome barriers such as workload and funding.
- Structured supervision, mentoring, and peer support should be available to help CNSs manage emotional intensity, prevent burnout, and maintain confidence in complex decision-making.
- Clear career pathways and staged development opportunities are viewed as vital for retention and progression.

The blood cancer CNS survey

Aim

To identify the training and support needs of CNSs working in blood cancer care across the UK, and to explore factors that enable or constrain access to professional development.

Methods

The study adopted a cross-sectional survey design. No standardised, validated surveys existed to explore training and support needs of CNSs so a new survey was developed. The survey was developed in the online platform, Qualtrics. Based on the aims of the project and published literature, initial survey domains and questions were drafted. These were reviewed, discussed and amended following discussion with the Study Review Group. The draft survey was piloted using a 'think aloud' technique (Wolcott & Lobczowski, 2021) with ten blood cancer nurses and two people affected by blood cancer and amended accordingly based on their feedback.

The final survey asked participants to provide demographic information and proceeded to ask 12 questions across three domains:

1. Training and support received
2. Perceived priorities for onboarding and retention
3. Barriers and enablers to development.

Questions included Likert Scale, multiple choice and ranking questions along with free text questions. The final question offered participants an opportunity to comment on anything else they wanted to share with the researchers. Ethical approval was obtained from the University of the West of England College of Health Science and Society Research Ethics Committee (reference number 14709180).

The survey was distributed to CNSs working with blood cancer populations across the UK via professional networks including UK Oncology Nursing Society, Blood Cancer UK, European Bone Marrow Transplant Nurses Group and social media channels.

The survey was open for six weeks between August and September 2025, after which time survey data were collated into IMB SPSS Statistics for analysis. Data were cleaned and responses without consent or with a completion rate of less than 75% of questions were removed. Descriptive analyses were conducted, generating frequency tables, and descriptive statistics. Free text comments were analysed using qualitative content analysis and grouped into categories.

Results

Table 1: Survey Response Overview

Item	Number
Total responses included	176
Fully completed surveys	146
Partially completed surveys (≥75% complete)*	30

Partial completers had broadly similar response to full survey completers. *

Table 2. Participant Demographics (n = 176)

Variable	Category	n (%)
Gender	Female	165 (94%)
Age	35-64 years	133 (76%)
Ethnicity	White	152 (86%)
Healthcare experience	>10 years	142 (81%)
Experience with blood cancer patients	6+ years	155 (88%)
Employment sector	NHS	169 (96%)
Employment band	Band 7	113 (64%)
Working pattern	Fulltime	129 (73%)

Table 3: Cancer Types Supported

Cancer type	n (%)
Leukaemia	128 (73%)
Lymphoma	127 (72%)
Myeloma	119 (68%)

Table 4: Geographic Distribution

Location	n (%)
England	157 (89%)
Scotland	9 (5%)
Wales	8 (5%)
Northern Ireland	2 (1%)

Table 5. Care Settings

(Participants could select multiple settings)

Setting	n (%)
Specialist cancer centre – Outpatient/ambulatory	97 (55%)
Specialist cancer centre – Inpatient	87 (49%)
General hospital – Outpatient/ambulatory	74 (42%)
General hospital – Inpatient	65 (37%)

Key findings

176 participants replied to training and support provisions questions

80% received education from clinical departments

73% from charities

69% from universities

For those who had received training, the most helpful format of training provisions were:

1. Study days (99.4% scored as somewhat or very helpful)
2. Conferences (98.7% scored as somewhat or very helpful)
3. University accredited CPD (97.7% scored as somewhat or very helpful)

Attendance to industry led training was generally well received with 87% reported attending. However training offered by NHS Cancer Academies/Education centres, was less well accessed, though valued by those who participated.

Topics where training was least commonly provided during the CNS role included:

- Education planning and delivery (52% not received)
- Clinical trials (45% not received)
- Service improvement (45% not received)
- Late effects and survivorship (44% not received)
- Your own wellbeing (43% not received)

Free text comments were received from 151 respondents with regard to training. The most frequently described helpful training were: advanced and simulation-based communication skills, blood cancer specific conferences and study days, and postgraduate modules in prescribing and advanced clinical practice. Charity-organised training, mentorship, and university-accredited haematology courses were identified as helpful and there was emphasis on the benefits of combining theoretical learning, workplace-based experience, and peer networking.

Participants were asked to rank their personal training priorities. For the onboarding process for blood cancer CNSs and to help with retention, training in communication skills and clinical knowledge of blood cancer and its treatment were ranked as the top priorities.

% Helpful (Somewhat + Very) by Training Topic

Figure 2: Helpfulness of training topic (of those who received training as a blood cancer CNS)

Respondents rated how helpful different types of training and support had been for their blood cancer CNSs role.

These findings suggest core clinical and communication training are well embedded, whereas mentorship, service development and some programme areas like education planning and late effects are limited during the CNSs role.

Access to training and support

146 participants responded to the questions about enablers and barriers to accessing training and support.

Survey respondent said these are the biggest enablers:

- Management support (reported by 86% of respondents)
- Funding (86%)
- Study leave (86%)
- Personal motivation (81%)

The main barriers include:

- Clinical workload (reported by 91% of respondents)
- Limited study leave (81%)

Respondents described challenges accessing funding, and balancing workload with CPD time.

Charity support and learning preferences

61% of participants gave detailed responses within the free text comments about how training and support from a charity would be most helpful.

The most common requests focused on funding and access to education, including financial support to attend conferences, study days, and university-accredited courses (including modules, MSc funding and PhD funding) as well as funded specialist training in haematology and blood cancer care. Many participants highlighted the value of online and flexible learning formats, such as webinars, podcasts, and e-learning modules, to fit around busy workloads.

Respondents also expressed a strong interest in networking and peer support opportunities, including platforms to connect with other CNSs, share best practice, and collaborate across organisations. Additional themes included the need for leadership, service development, and psychological skills training, and for educational resources to help CNSs stay updated with advances in blood cancer treatments, survivorship, and patient communication. Overall, respondents viewed charities as key partners in supporting continuing professional development and helping to build a connected, well-informed CNS workforce. All comments are listed in appendix 4.

36 respondents provided detailed reflections in response to a question asking if there was anything else they wanted to share. Key themes included the need for protected time and funding for training and development, and supportive management. There was a desire for CNS-specific development pathways and career progression and a recognition that CNS roles are highly valued but under-resourced.

% of respondents by training/support type

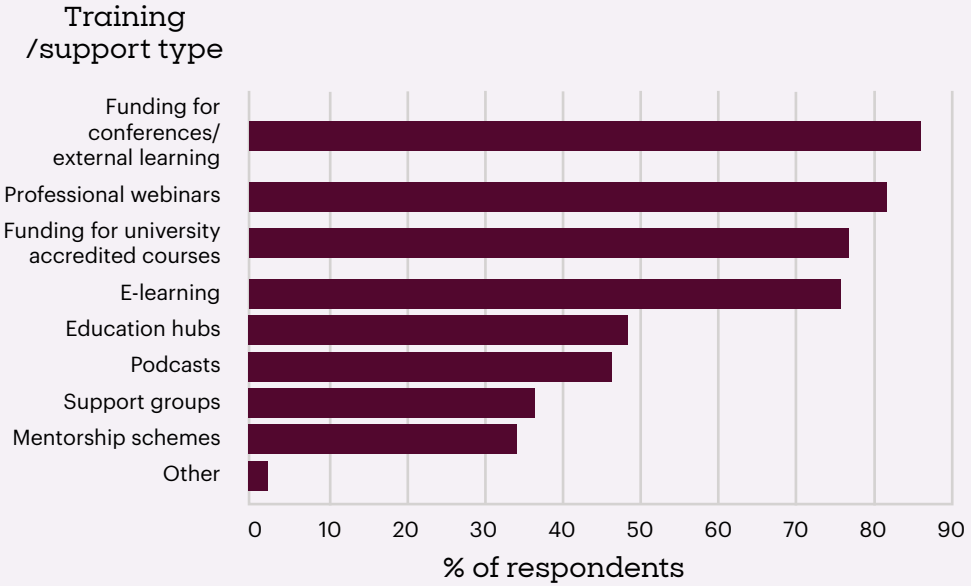


Figure 3: Training and support most valued from a charity

In response to questions how best charity can support blood cancer CNSs, out of 146 respondents the most highly valued propositions were funding for conferences/external learning and provision of professional webinars.

Conclusion:

Clinical knowledge, communication skills and core clinical skills were rated as the most helpful when training was provided during the CNS role. However, training in education delivery, clinical trials, service improvement, survivorship, and wellbeing were frequently not provided, indicating key development gaps.

Across both onboarding and retention contexts, communication skills and blood cancer–specific clinical knowledge were consistently ranked as the highest-priority training needs. Assessment, care planning, and core clinical skills followed. Workload pressures, limited backfill, and funding constraints were the main barriers to accessing training, while managerial support, protected study time, and funding were key enablers. Charities were viewed as important partners in supporting training and professional networking.

CNSs demonstrated strong motivation for continued development, but access was inconsistent and often dependent on local organisational support. Structured development pathways and protected learning time were identified as vital to sustain and retain the CNS workforce in blood cancer care.

Key Messages

- Strong appetite for continued professional development among CNSs.
- Communication and disease-specific clinical skills were clear training priorities.
- Heavy clinical workloads and funding barriers limited training access.
- Charities played a critical role in supporting education, networking, and CPD.
- There was a clear call for structured CNS career pathways and improved resource support

Development and prioritisation of recommendations

Aim

To develop, draft, refine and prioritise recommendation with stakeholders.

Method:

The recommendations were developed, drafted and refined in two phases:

1) Development of evidence-based recommendations and refinement by Study Review Group.

The key findings, generated by combination of evidence from the scoping literature review and national survey, were drawn together and recommendations for the training and support needs of blood cancer CNSs were drafted. The draft recommendations were discussed within and refined by the Study Review Group. There was agreement within the Study Review Group that the recommendations reflected the project findings and were comprehensive. Specific feedback from Study Review Group members who worked in clinical practice and those affected by blood cancer, confirmed that the findings resonated with their experiences.

2) Further refinements and prioritisation of recommendations within online stakeholder workshops.

Workshops were conducted with CNSs (n= 9) and people affected by blood cancer (n= 2) to firstly refine the recommendations to ensure they reflected the authenticity of clinical practice and secondly to prioritise the recommendations. Prospective participants were informed about the workshops within the national survey.

All survey respondents were offered opportunity to join the workshops by contacting the researchers. Workshops were delivered online via Microsoft Teams to maximise accessibility and participation from CNSs across the UK. Ethical approval was obtained from the University of the West of England College of Health Science and Society Research Ethics Committee (reference number 14709180). All participants gave informed consent.

Recommendations were prioritised using a consensus methodology (modified nominal group technique) to seek agreement between participants during the workshops. Participants had been sent the draft recommendations in advance. Each workshop session followed a standardised format and included:

- Semi-structured discussion to refine the draft recommendations
- Prioritisation exercise using Mentimeter in which each participant was asked to rank the recommendations in order of priority from most important to least important, firstly in an ‘ideal’ world (with no budgetary or system restrictions) and secondly in the ‘real’ world in which the NHS operates.

Two facilitators led each workshop to ensure consistency and smooth running. Data were captured through Teams audio/video recordings and automated transcripts (subsequently checked for accuracy), facilitator notes, and Mentimeter outputs. Scores were aggregated across all workshop participants, with mean ranking scores calculated separately for the ideal-world and real-world scenarios.

Key findings and recommendations

Four 90-minute workshops were held over two weeks. A total of 11 participants took part across the four workshops, comprising nine CNSs and two people affected by blood cancer. Participants represented a mix of experience levels and regions across the UK. There was consensus among stakeholders that the recommendations reflected the lived realities of clinical practice. The final recommendations are presented in table 1.

Combined Priority Rankings (All Nursing Workshops): Average Scores Real World

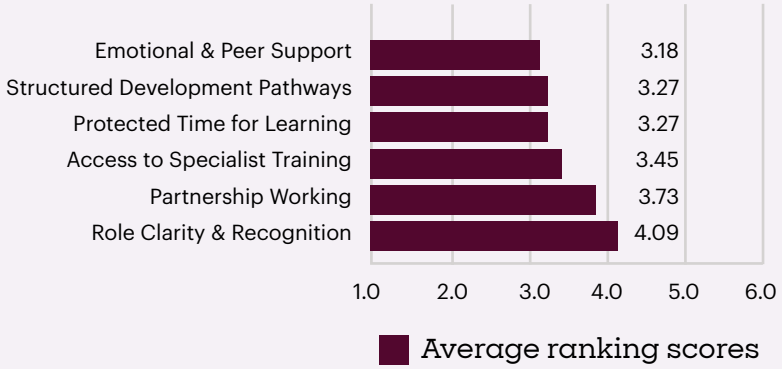


Figure 4: Prioritised CNS Training and Support Recommendations in the Real World: Average Rankings Across All Workshops

Aggregated ideal-world and real-world priority rankings are presented in this graph

1 = most important, 6 = least important.

In the real-world context participants identified Emotional & Peer Support as the highest priority followed by Structured Development Pathways and Protected Time for Learning. Access to Specialist Training and Partnership Working were ranked next, with Role clarity & Recognition ranking lowest.

Importantly, none of them were viewed as very low priority, suggesting that CNSs perceive all six areas as relevant and necessary for CNS training and support.

Table 1: Recommendations for training and support of blood cancer CNSs

Key findings	Clinical recommendation	Evidence
CNSs need ongoing, disease- and therapy-specific clinical education and skill development, particularly in survivorship care, psychosocial impacts, advanced communication skills, research and leadership. CNS-specific are seeking structured pathways for development and career progression.	**Structured Development Pathways**, Embed clear induction and progression pathway, including disease-specific knowledge, procedure training, advanced communication skills, leadership, research and teaching skills.	Scoping review Survey
Many CNSs reported difficulty securing protected time, funding, and opportunities to attend external courses. Management support is one of the biggest enablers to development alongside study leave and personal motivation. The main barriers included clinical workload and limited study leave.	**Protected Time for Learning**, Nurture professional culture for learning, development and research. Build protected study leave into job plans and provide backfill where possible to support attendance at training.	Scoping review Survey
CNSs need for protected time and accessible continuing education that is tailored to the CNS role, clinical setting, and level of experience. Access to funding enables CNS development.	**Access to Specialist Training**, expand availability and funding to accredited haematology/oncology education and specialist professional conferences; maintain and enhance collaboration with charities, universities, and NHS education providers.	Scoping review Survey
CNSs require structured supervision, mentoring, and peer support to manage the emotional intensity of their work.	**Emotional & Peer Support,** offer regular clinical supervision / reflective practice and strengthen regional CNS networks and mentoring opportunities.	Scoping review Survey
Professional titles varied considerably, with CNSs often grouped together with Advanced Nurse Practitioners, Specialist Nurses, or broader haematology/oncology nursing roles. There is a recognition that CNS roles are highly valued but under-resourced.	**Role Clarity & Recognition**, Standardise CNS titles and expectations and ensure CNSs are involved in MDT decision-making and service development.	Scoping review
Collaboration with charities, professional bodies, and other specialist centres plays a key role in enabling access to resources, peer learning, and leadership development opportunities.	Partnership Working, work collaboratively with charities and professional bodies to coordinate training opportunities and share resources and good practice across services.	Survey

Average priority rankings (ideal world)

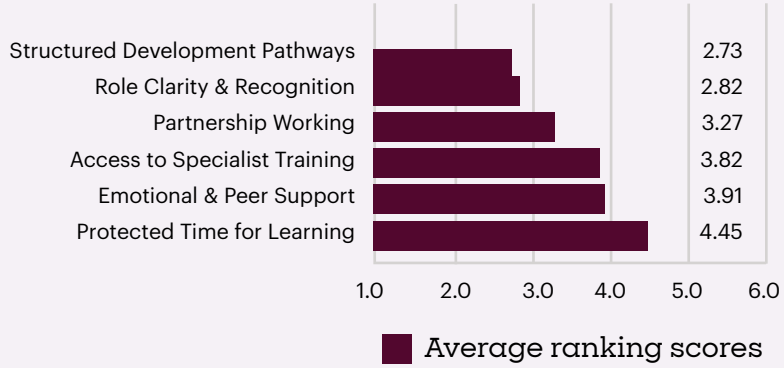


Figure 5: Prioritised CNS Training and Support Recommendations in the Ideal World: Average Rankings Across All Workshops

In the ideal-world scenario (Figure 5), CNSs prioritised Structured Development Pathways as the most important (Mean = 2.73), followed closely by Role clarity & Recognition (Mean = 2.82) and Partnership Working (Mean = 3.27). Access to Specialist Training (Mean = 3.82) and Emotional & Peer Support (Mean = 3.91) were mid-level priorities, while Protected Time for Learning ranked lowest (Mean = 4.45). However similarly to the real-world ranking, none were ranked as very low priority.

Participants ranked Structured Development Pathways as the highest priority, followed by Role Clarity & Recognition and Partnership Working. Access to Specialist Training and Emotional & Peer Support were mid-level priorities, while Protected Time for Learning ranked lowest.

Key findings from the stakeholder workshops:

- Stakeholders agreed the recommendations reflected the training and support needs of blood cancer CNSs
- Peer and emotional support was viewed as top priority in the ‘real’ world and structured pathways were considered top priority by stakeholders in an ‘ideal’ world, however, there was acknowledgement that all recommendations were important.

Conclusions and suggested next steps

This project has provided a comprehensive understanding of the training and support needs of CNSs working in blood cancer care across the UK. Evidence from the scoping review, national survey, and stakeholder workshops highlighted a strong appetite for continued professional development among CNSs, alongside significant barriers to accessing training. Core priorities include disease- and therapy-specific clinical education and advanced communication skills. CNSs also identified the need for structured career pathways, emotional support, and opportunities for leadership and research development.

Despite clear motivation, access to training was inconsistent, often constrained by workload pressures, limited funding, and lack of protected time. Managerial support and collaboration with charities and professional societies emerged as key enablers. Charities were viewed as critical partners in providing flexible learning formats, funding for accredited courses and professional conferences, and networking opportunities. Without targeted interventions, there is a risk of workforce attrition, which could impact patient care and service sustainability.

Suggested next steps include:

These steps will help ensure CNSs are equipped to deliver high-quality, patient-centred care and remain motivated and supported within their roles.

1 Implement Structured Development Pathways:

Develop and embed clear induction and progression frameworks, incorporating education and capabilities in clinical knowledge and skills, leadership, and research.

2 Secure Protected Learning Time:

Advocate for inclusion of study leave and backfill in job plans to enable CNSs to attend training.

3 Expand Access to Specialist Education:

Increase funding for accredited haemato-oncology courses and conferences, leveraging partnerships with charities and universities.

4 Strengthen Emotional and Peer Support:

Establish regular clinical supervision, mentoring schemes, and regional CNS networks.

5 Enhance Role Clarity:

Work with professional bodies to define CNS titles and responsibilities, ensuring recognition within multidisciplinary teams.

6 Foster Collaborative Partnerships:

Coordinate efforts between NHS, charities, societies and key education providers to share resources and best practice.

References

- NHS, England. (2004). Handbook for the national cancer peer review process, 2004–2007. Department of Health, [online]. Available from: https://data.parliament.uk/DepositedPapers/Files/DEP2008-1205/DEP2008-1205.pdf
- NICE. (2004). Improving supportive and palliative care for adults with cancer. In: (Ed.)^(Eds.), Cancer service guideline. National Institute for Health and Care Excellence, [online]. Available from: https://www.nice.org.uk/guidance/csg4
- OECD (2023). OECD indicators. Health at a Glance. OECD [online]. Available from: https://www.oecd.org/en/publications/health-at-a-glance-2019_4dd50c09-en/full-report/indicator-overview-comparative-performance-of-countries-and-major-trends_4becb389.html#chapter-d1e844
- The Kings Fund. (2023). How does the NHS compare to the health care systems of other countries?. The Kings Fund [online]. Available from: https://www.kingsfund.org.uk/insight-and-analysis/blogs/comparing-nhs-to-health-care-systems-other-countries
- Wolcott, M. D., & Lobczowski, N. G. (2021). Using cognitive interviews and think-aloud protocols to understand thought processes. In Currents in Pharmacy Teaching and Learning (Vol. 13, Issue 2, pp. 181–188). Elsevier Inc. https://doi.org/10.1016/j.cptl.2020.09.005

Appendices

Appendices

Appendix 1: Scoping review search strategy

Appendix 2: Prisma ScR diagram

Appendix 3: Summary of papers (n=29)

Appendix 4: Free text comments in response to ‘As a blood cancer CNS,x what training and support would be most helpful to you from a charity?’

Appendix 1: Scoping review search strategy

Database	Platform	Date searched	Search strategy used	Limits applied
MEDLINE/ Embase	Ovid	14/07/25	Ovid MEDLINE Search Strategy 1. exp Hematologic Neoplasms/ OR hematolog*.tw. OR haematolog*.tw. OR leukaemi*.tw. OR leukemia*.tw. OR lymphoma*.tw. OR myeloma.tw. OR Hodgkin*.tw. OR "non-Hodgkin*".tw. OR MDS.tw. OR "myelodysplastic syndrome*".tw. OR MPN.tw. OR "myeloproliferative neoplasm*".tw. OR MGUS.tw. OR histiocytosis.tw. OR mastocytosis.tw. » *Blood cancer terms* 2. (clinical nurse specialist* OR CNS OR specialist nurse* OR nurse specialist* OR advanced nurse practitioner* OR nurse practitioner*).tw. » *Clinical nurse specialist terms* 3. (train* OR support OR education OR capability OR learning OR development OR skill* OR knowledge OR understanding OR mentor* OR competenc*).tw. » *Training and support terms* 4. 1 AND 2 AND 3 » *Combined core concepts* 5. exp United Kingdom/ OR exp Europe/ OR exp Australia/ OR exp Canada/ 6. exp United Kingdom/ OR exp Scandinavia/ OR exp Canada/ OR exp Australia/ 7. (UK OR "United Kingdom" OR NHS OR Ireland OR Canada OR Australia OR "New Zealand" OR Sweden OR Denmark OR Norway OR Finland OR Netherlands OR Belgium OR "Western Europe").ti,ab. » *Geographic filter for NHS-equivalent systems* 8. 5 AND 6 AND 7 » *Geographic set intersection* 9. 4 AND 8 » *Final combined set (concepts + geography)* 10. Remove duplicates from 9 » *Final deduplicated set for screening: n = 253)* NOTE: Deduplication was available in OVID as was screening via geographical location and language.	English only

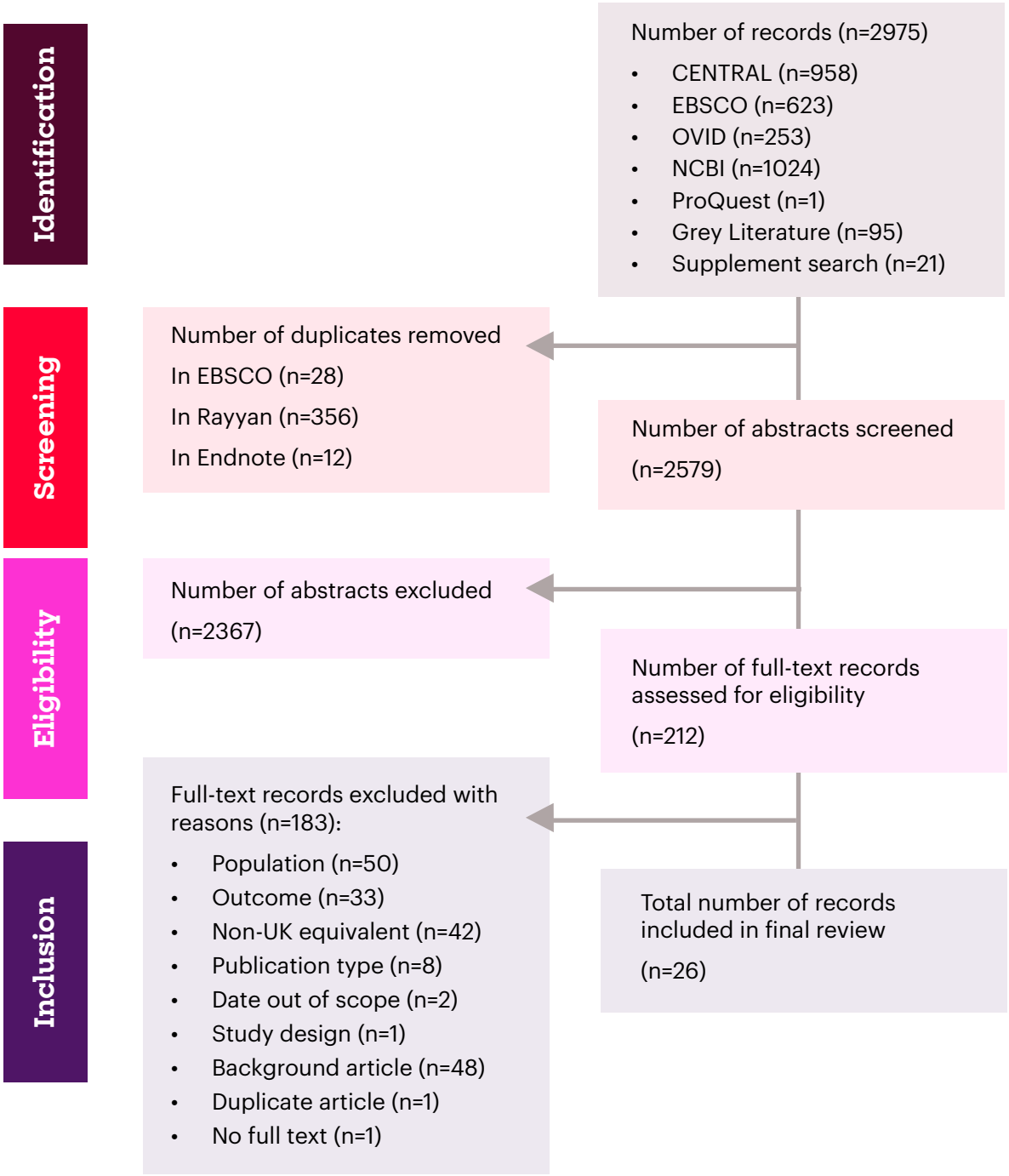
Database	Platform	Date searched	Search strategy used	Limits applied
CINAHL/ PsycINFO/ British Education Index/ Amed	EBSCO	14/07/25	The following Boolean search string was used across title, abstract, and keyword fields: (hematolog* OR haematolog* OR leukaemi* OR leukemia OR lymphoma OR myeloma OR "hodgkin disease" OR "non-hodgkin" OR MDS OR MPN OR MGUS OR histiocytosis OR mastocytosis) AND ("clinical nurse specialist" OR CNS OR "specialist nurse" OR "specialised nurse" OR "nurse specialist" OR "advanced nurse practitioner" OR "nurse practitioner") AND (train* OR education OR support OR learning OR development OR skill* OR knowledge OR mentor* OR competenc* OR capabilit* OR understanding) Country limits were not applied within the EBSCOhost platform, as database indexing for geographic location can be inconsistent across sources such as CINAHL, PsycInfo, AMED, and the British Education Index. To avoid missing relevant UK or UK-comparable studies, geographic relevance was instead assessed during the screening phase in Rayyan.	English only
Cochrane CENTRAL	Cochrane Library	14/07/25	ID Search Hits #1 (hematolog* OR haematolog* OR leukaemi* OR leukemia OR lymphoma OR myeloma OR "hodgkin disease" OR "non-hodgkin" OR MDS OR MPN) AND ("clinical nurse specialist" OR CNS OR "specialist nurse" OR "specialised nurse" OR "nurse specialist" OR "advanced nurse practitioner" OR "nurse practitioner") AND (train* OR education OR support OR learning OR development OR skill* OR knowledge OR mentor* OR competenc* OR capabilit* OR understanding) 441 #2 MeSH descriptor: [Hematologic Neoplasms] explode all trees 968 #3 MeSH descriptor: [Leukemia] explode all trees 6676 #4 MeSH descriptor: [Lymphoma] explode all trees 4680 #5 MeSH descriptor: [Myelodysplastic Syndromes] explode all trees 1023 #6 MeSH descriptor: [Multiple Myeloma] explode all trees 2503 #7 MeSH descriptor: [Myeloproliferative Disorders] explode all trees 1186 #8 MeSH descriptor: [Hodgkin Disease] explode all trees 1053 #9 #2 or #3 or #4 or #5 or #6 or #7 or #8 14638 #10 MeSH descriptor: [Nurse Specialists] explode all trees 422 #11 MeSH descriptor: [Nurse Clinicians] explode all trees 184	English only

Database	Platform	Date searched	Search strategy used	Limits applied
CINAHL/ PsycINFO/ British Education Index/ Amed	EBSCO	14/07/25	#12 #10 or #11 422 #13 MeSH descriptor: [Education] explode all trees 47049 #14 MeSH descriptor: [Health Personnel] explode all trees 16113 #15 MeSH descriptor: [Professional Competence] explode all trees5688 #16 MeSH descriptor: [Education, Continuing] explode all trees 1404 #17 MeSH descriptor: [Learning] explode all trees 23244 #18 #13 or #14 or #15 or #16 or #17 77685 #19 #9 and #12 and #18 0 #20 #9 and #12 0 #21 #9 AND #18 95 #22 #12 AND #18 422 In the Cochrane Library (CENTRAL), both Medical Subject Headings (MeSH) and free-text terms were used. The full MeSH combination of blood cancer, Clinical Nurse Specialists (CNSs), and training/support needs retrieved no results. However, a focused free-text search returned 441 records, which were included for screening. Additional paired MeSH combinations—blood cancer + education (95 results) and CNS + education (422 results)—were also screened to identify any supplementary studies not captured in the free-text search	English only
PubMed	NCBI	14/07/25	**Search strategy (title and abstract):** (hematolog*[tiab] OR haematolog*[tiab] OR leukaemi*[tiab] OR leukemia[tiab] OR lymphoma[tiab] OR myeloma[tiab] OR “hodgkin disease”[tiab] OR “non-hodgkin”[tiab] OR MDS[tiab] OR MPN[tiab]) AND (“clinical nurse specialist”[tiab] OR CNS[tiab] OR “specialist nurse”[tiab] OR “nurse specialist”[tiab] OR “advanced nurse practitioner”[tiab] OR “nurse practitioner”[tiab]) AND (train*[tiab] OR education[tiab] OR support[tiab] OR learning[tiab] OR development[tiab] OR skill*[tiab] OR knowledge[tiab] OR mentor*[tiab] OR competenc*[tiab]) A structured search was conducted in PubMed (NCBI) on 17 July 2025 using a combination of title and abstract terms relating to blood cancer, Clinical Nurse Specialists (CNSs), and training/support needs.	English only, human only

Database	Platform	Date searched	Search strategy used	Limits applied
British Education Index	ProQuest	16/07/25	Search Fields: "Anywhere except full text (NOFT)" Limits applied: English language Search Line: (hematolog* OR haematolog* OR leukaemi* OR leukemia OR lymphoma OR myeloma OR "hodgkin disease" OR "non-hodgkin" OR MDS OR MPN) AND ("clinical nurse specialist" OR CNS OR "specialist nurse" OR "nurse specialist" OR "advanced nurse practitioner" OR "nurse practitioner") AND (train* OR education OR support OR learning OR development OR skill* OR knowledge OR mentor* OR competenc*)	English only
key papers & citations	Web	16/07/25	10 Key papers identified by the research team, were uploaded to endnote to be included in the review and their reference lists were hand searched. Searches considered any references that included: Nursing workforce (especially CNSs, APNs, or oncology nurses). Covers training, education, role scope, support, competencies, service delivery. Specific to blood cancer, haematology, or general oncology where relevant.	English only,
Websites of Nursing Professional Organisa-tions	Websites	16/07/25	Royal College of Nursing (RCN) – https://www.rcn.org.uk, https://www.rcn.org.uk/professional-development/publications "clinical nurse specialist" AND "blood cancer" "haematology nurse" AND training "oncology nursing education" "CNS support" AND "haematology" 2. UK Oncology Nursing Society (UKONS) – https://www.ukons.org "CNS" AND "systemic anti-cancer therapy" "training" AND "oncology nurses" "haematology CNS" "SACT competency" AND "nursing"	English only

Database	Platform	Date searched	Search strategy used	Limits applied
			3. European Society for Blood and Marrow Transplantation (EBMT) – https://www.ebmt.org “nurse education” AND haematology “CNS” AND “nursing guidelines” AND “supportive care” 4. European Oncology Nursing Society (EONS) – https://cancernurse.eu “clinical nurse specialist” AND cancer “CNS” AND “haematological malignancy” “nurse training” AND haematology “education framework” AND “oncology nurses”	
Websites hosting governmen-tal policy documents/ guidance	Websites	14/07/25	Professional organisation websites were searched to identify relevant grey literature including guidance, frameworks, position statements, reports, or educational/training documents. Searches were conducted using internal site search functions. Only documents in English were considered. Search terms were tailored around the review concepts (e.g. CNS, blood cancer, training/support) and restricted to English language. The site: operator was used to limit searches to reputable UK-based or international domains, such as NHS, UK Government, professional bodies, and relevant charities. To ensure comprehensive coverage of grey literature, both internal site searches and Google Advanced Search (using site: operator) were used for key professional and governmental websites. This approach helped to identify indexed reports, position statements, training resources, and frameworks that may not be discoverable through internal search functions alone. For each search, the first three pages of results (approximately 30–40 links) were screened for relevance.	English only, human only
Charity websites:	Websites	14/02/25	Macmillan Blood Cancer UK:	English only

Appendix 2: Prisma SCr



Appendix 3: Summary of papers (n=26)

Study author	Study (aim/ population, Country)	Type of population	Workplace setting	CNS sample size	CNS training needs	CNS support needs
Aerts 2010	Scope of haematology nursing in Europe. Europe (25 countries)	Primary research: Peer-reviewed journal article	Hospital (specialist unit): Haematology units incl. BMT wards	271 nurses; 38% CNSs (103)	GvHD, late effects, infection management (interest higher among less experienced nurses)	Accessible CPE: address barriers (time, shortages, course availability), role recognition (esp. Eastern Europe)
Aerts 2010	Scope of haematology nursing in Europe. Europe (25 countries)	Primary research: Peer-reviewed journal article	Hospital (specialist unit): Haematology units incl. BMT wards	271 nurses; 38% CNSs (103)	GvHD, late effects, infection management (interest higher among less experienced nurses)	Accessible CPE: address barriers (time, shortages, course availability), role recognition (esp. Eastern Europe)
Amicucci 2024	Advanced practice in paediatric haematology-oncology. Western Europe	Secondary research: Scoping review (peer-reviewed journal article)	Hospital/community: Paediatric hospitals, outpatient clinics, research centres, community	Not specified (scoping review)	providing training and guidance for patients and fel	Advanced practice: supervision, training access, recognition, regulatory clarity
Blewitt 2010	Advanced practice nurse role in CTCL. Australia	Primary research: Conference abstract	Cancer centre: Peter MacCallum Cancer Centre, St. Vincent's Hospital, Melbourne; outreach across states	Single role: 1 Skin Lymphoma Nurse Consultant	Advanced role training: NP programme entry, national coordination role (consultant case)	Not reported explicitly; implied need for evaluation data, infrastructure, service development
Bovero 2018	Advanced nurse practitioners in childhood leukaemia. Switzerland	Primary research: Peer-reviewed journal article	Hospital (paediatric): Paediatric Oncology and Haematology Unit	22 of 27 nursing staff (focus groups)	New therapies: mechanisms, side effects, immunotherapies, monoclonal antibodies, combinations	ANP support: institutional backing, legal recognition, collaboration, advocacy for role leadership

Study author	Study (aim/ population, Country)	Type of population	Workplace setting	CNS sample size	CNS training needs	CNS support needs
Carvalho 2022	Advanced nursing practice scopes in cancer care. United Kingdom	Secondary research: Review article	Hospital (oncology): Secondary/tertiary specialist oncology centre	Not specified (overview; mentions Haem-ANPs, team of 8)	WGS: skin punch biopsy technique training	ANP identity: role clarity, research engagement, leadership, professional development
Cheung 2025 a Cheung 2025 b	CNS role in myeloproliferative neoplasm care I. Cheung (2025) a Canada II. Cheung (2025) b Canada	Primary research: Peer-reviewed journal article	Cancer centre: Princess Margaret Cancer Centre, Toronto; MDT with shared-care partners	1 CNS role (MPN program, Part 1)	CNS roles: implied needs in advanced knowledge, triage, teaching, coordination, supportive care	Team-based care: collaboration, role clarity, system support for data collection
Dolling 2025	Haematology CNSs and person-centred care. United Kingdom	Primary research: Qualitative research article	Cancer centre: Haematology CNS team, tertiary centre	8 haematology CNSs	MPN role: requires advanced assessment, triage, disease-specific expertise	PCC: protected time, space, additional roles (e.g., support workers)
Foubert 2005	Haematology nurses' knowledge of toxicities. Europe (22 countries)	Primary research: Peer-reviewed journal article	Hospital (inpatient/ outpatient): Mainly inpatient (63.1%), outpatient (40.9%); also nursing schools, home care, hospices, admin	455 nurses (Europe); 16.3% CNSs (74)	Haematology toxicities: neutropenia, anaemia, risk assessment, patient education (few had recent formal training)	Continuing education: accredited CPE, preference for face-to-face, country/ knowledge-level tailored
Heveran 2020	Nursing support for haematology cancer survivors. United Kingdom	Secondary research: Systematic literature review	Survivorship care: Specialist nursing in haematology/ oncology services	Not reported	NP palliative care: general recommendation for further research (no CNS specifics)	Survivorship: role clarity, resources, pathway integration (aligned with NCSI plan)

Study author	Study (aim/ population, Country)	Type of population	Workplace setting	CNS sample size	CNS training needs	CNS support needs
Kekäle 2016	Patient education and CML treatment adherence. Finland	Primary research: Peer-reviewed journal article	Hospital (Finland): Secondary/tertiary haematology units	8 nurses (trained in adherence support, not CNS-specific)	Adherence training: 1-hour session plus rehearsals to standardise delivery	Patient education: resources, involvement in planning adherence support, updated materials
Kelly 2011	Nurse-led bone marrow examination evaluation	Primary research: Peer-reviewed journal article	Hospital (specialist): Regional haematology centre	1 ANP (performed 156 BM exams; 30 audited)	Biopsy training: ≥20 observed procedures, anatomy, anaesthesia, technique, complications	Consultant supervision; ongoing review; histology staff input in guidelines
Kenyon 2024	Training needs for advanced cell therapies. International (24 countries)	Primary research: Peer-reviewed journal article	Cancer centre: Academic centres (87%), JACIE (72%); BMT in-patient (83%), outpatient (53%), day hospital (26%)	109 respondents from 86 centres (Specialist Nurses n=59; 54%)	PCC: recommendation to train wider teams to enhance culture	ATMPs: collaboration, shared experiences, ongoing education, resources for delivery/follow-up
Kok 2019	Home chemotherapy for children with cancer. Netherlands	Primary research: Pilot study (peer-reviewed journal article)	Community/ paediatric: Homecare (KinderThuisZorg) with Emma Children's Hospital/UMC Amsterdam	11 children treated by NPs; CNS not specified	Not reported	Paediatric care: collaboration with oncologists, verification protocols, equipment, support, insurance backing
Lewis 2020	Nurse practitioner role in transplant palliative care.) Canada / North America	Secondary research: Literature review	Not reported	Not reported	Post-basic specialist education: need across Europe; urgent in Estonia; access facilitates role expansion	Palliative care: no detailed CNS-specific support; call for further NP research

Study author	Study (aim/ population, Country)	Type of population	Workplace setting	CNS sample size	CNS training needs	CNS support needs
Liptrott 2019	Haematology nurses' educational priorities. Western Europe	Primary research: Peer-reviewed journal article	Hospital (specialist): Malignant haematology and SCT units	265 nurses (incl. CNSs/educators; breakdown not given)	Survivorship: late effects, communication, survivorship planning	Barriers: lack of courses, time, funding, managerial/ medical support; facilitators: conferences, protected time
Liptrott 2023	Evolving role of haematology nursing practice. Europe (19 countries)	Primary research: Peer-reviewed journal article	Hospital (survey): Predominantly inpatient (86.3%), outpatient (37.8%); ANPs across both (45.7%)	233 respondents; 81 (34.8%) in advanced practice roles (CNS/ APNs)	CNS support: tailored information, signposting to charities, peer support (implied)	Barriers/facilitators: time, funding, opportunities, support from managers/medical staff
Lobban 2013	Specialist nurse role in myeloma care. United Kingdom	Secondary research: Narrative review with expert commentary	Hospital/community: Secondary and primary care interface, MDTs, specialist haematology	Not specified (Myeloma UK patient survey, not CNS-specific)	Disease-specific education resources; difficulty accessing external training	Support for emotional demands; access to networks; protected learning time
Martina, 2016	Workshop for malignant haematology nurse education. Canada	Primary research: Peer-reviewed journal article	Cancer centre: Princess Margaret Cancer Centre (Toronto)	3 APNs delivered; 28 nurses attended (not CNS-specific)	Malignant haematology: need for basic early-career training (existing courses too advanced)	Novice staff: not CNS-specific; focus on education delivery
McNamara 2011	Structured training in bone marrow biopsy.) United Kingdom	Primary research: Conference abstract	Hospital (NHS): UK haematology and stem cell transplant services	6 delegates (nurses; CNS not specified)	Bone marrow biopsy: legal/professional knowledge, anatomy, sedation, complications, documentation	Simulation-based training, mentoring, observation days, tailored workbook

Study author	Study (aim/ population, Country)	Type of population	Workplace setting	CNS sample size	CNS training needs	CNS support needs
Montague-Hellen 2024	CNS support for chronic cancer self-management.) United Kingdom	Primary research: Peer-reviewed journal article	Hospital (NHS): UK settings; CNS redeployment during COVID-19	Not CNS-specific (patient interviews only)	Advanced training: bone marrow biopsy, chemotherapy, structured CNS programmes (e.g., 3-year EPHONS)	CNS holistic care: tailored information, psychosocial support, patient signposting, peer networks
Morley 2023	Regional biopsy training for WGS services United Kingdom	Primary research: Conference abstract	Hospital (NHS): 11 hospitals, NEY GLH region	34 nurses trained (out of 136 staff)	Complex therapies: chemotherapy, monoclonals, CAR-T; need documented training and competencies	Structured support: face-to-face teaching, SOPs, succession planning
Murray 2018	Educational needs in multiple myeloma care. Europe (8 countries)	Primary research: Peer-reviewed journal article	Hospital/cancer centre: Mainly academic hospitals and cancer centres	83 nurses (11 interviews, 72 survey)	Paediatric NP: physical exam, chemo administration, contraindication assessment at home	Myeloma care: more specialist nurses, better day-care resourcing, tailored CPE
Polomeni 2017	Coordinator nurses' views on donor care. France	Primary research: Peer-reviewed journal article	Hospital (France): Adult HSCT units/ haematology centres	22 HSCT coordinating nurses (HSCT-CNs)	Donor care: need for psychological evaluation training and information provision	Donor care: psychological support (donors and nurses), financial/ social assistance, structured follow-up
Toh 2012	Nursing shortage, job satisfaction and burnout. (North America, Canada, Europe)	Secondary research: Systematic review	Hospital (oncology): Inpatient, outpatient, haematology, BMT units	Review of 7 studies; variable sample sizes	Burnout/stress: training in emotional coping; further research needed on CNS training requirements	Emotional support: coping skill training, supportive environments to address stress/ burnout
Wallace 2015	Survivorship care in haematological malignancy Australia	Primary research: Peer-reviewed journal article	Hospital (survey): Inpatient (54.7%), outpatient and other settings	119 nurses (113 completed)	Survivorship care: fertility, psychosocial, financial/ employment issues; need for educational resources	Survivorship: standardised care plans, institutional support, role clarity in MDTs

Appendix 4: CNS participant sample characteristics

Study ID	Nursing title used	CNS Specialism	CNS age	CNS gender	CNS Career stage	Years since qualifying as a CNS	Years working as a CNS in blood cancer
Aerts 2010	Clinical Nurse Specialist (CNS)	Haematology: Nursing incl. BMT	Age breakdown shows majority between 31-50 years (combined 75%), but no exact mean or SD provided.	Majority female (87%) overall; no breakdown specifically for CNS given.	Mixed: 56% >10 years in haematology nursing; CNSs more experienced	Not reported	Not reported
Amicucci 2024	Mixed: CNS, Nurse Practitioner, Advanced Practice Nurse, Paediatric Oncology Nurse Specialist	Paediatric: Haematology-oncology	Not reported.	Not reported.	Framework spans novice to expert (no numbers)	Not reported.	Not reported.
Blewitt 2010	Nurse Consultant (progressing to Nurse Practitioner candidate)	Haemato-oncology: Skin lymphoma, haematology-oncology, supportive care	Not reported	Female	Advanced/leadership role; transitioning to NP	Not reported	N/A
Bovero 2018	Advanced Nurse Practitioner (ANP)	Paediatric: Oncology/ haematology	Not reported	Not reported	Newly developed role, early stage of implementation	Not reported	Not reported
Carvalho 2022	Advanced Nurse Practitioner (ANP)	Mixed cancer nursing: Haematology, breast, colorectal, acute oncology, vascular access, gynae, head & neck, urology	Not reported	Not reported	Not reported (ANPs described as lead/ senior roles)	Not reported	Not reported

Appendix 4: CNS participant sample characteristics

Study ID	Nursing title used	CNS Specialism	CNS age	CNS gender	CNS Career stage	Years since qualifying as a CNS	Years working as a CNS in blood cancer
Cheung 2025 a&b	Clinical Nurse Specialist (CNS)	Haemato-oncology: Myeloproliferative neoplasms (MPNs)	Not reported	Not reported	Advanced practice: Master's-prepared, haematology/ oncology expert. Senior: advanced practice, 40+ years' experience (RCN Fellow)	Not reported	The CNS role in the MPN program was implemented late 2016; period of experience stated indirectly (5+ years by publication). From 2016 (implementation) to 2025 (publication) = 9 years experience in this specific CNS blood cancer role.
Dolling 2025	Clinical Nurse Specialist (CNS)	Haemato-oncology: Lymphoma, leukaemia, myeloma	Not reported	Not reported	Not specified; CNS role established in 2016	Not reported	Minimum 12 months (all participants)
Foubert 2005	Oncology nurse (42.9%), Clinical Nurse Specialist (16.3%), others including lecturers/clinical teachers (e.g., Germany 75%)	General CNS: CNS roles (16.3%); blood cancer not specified	Majority aged 30-50 years (77.4%); some countries (UK, Italy) had higher percentage under 30 (26.1%, 17.6% respectively). Mean years in nursing: 18.2 years; in oncology nursing: 11.1 years.	Not reported	Experienced: mean 18.2 years nursing; 11.1 years oncology	Mean 18.2 years nursing, 11.1 years oncology nursing	Not reported

Study ID	Nursing title used	CNS Specialism	CNS age	CNS gender	CNS Career stage	Years since qualifying as a CNS	Years working as a CNS in blood cancer
Heveran 2020	Specialist Nurse (CNS role implied in survivorship)	Haemato-oncology: Survivorship in haematology cancer	Not reported	Not reported	Not reported	Not reported	Not reported
Kekäle 2016	Haematology/ adherence nurses (title not explicitly CNS)	Haematology: CML, adherence support	Not reported	Not reported	Not reported	Not reported	Not reported
Kelly 2011	Advanced Nurse Practitioner (ANP)	Haematology: Advanced haematology nursing practice	Not reported	Not reported	Experienced: ANPs ≥5 years specialist practice + Master's (Ireland NCNM)	Not reported	Not reported
Kenyon 2024	Specialist Nurse (54%), Registered Nurse (24%), others (Research Nurse, Ward Manager, Quality Manager)	Haematology: HSCT and advanced cell therapies (ATMPs)	Not reported	Not reported	Experienced: all ≥12 months in role	[No CNS-specific duration detailed]	Years experience in hematology/ BMT: 0-2 years (3.7%), 2-5 years (6.4%), 5-10 years (22%), 10-15 years (24%), >15 years (44%) [No CNS-specific duration detailed]
Kok 2019	Nurse Practitioner (paediatric oncology home care)	Paediatric: Oncology	Not reported	Not reported	Specialised/well-trained; years not specified	Not reported	Not reported

Study ID	Nursing title used	CNS Specialism	CNS age	CNS gender	CNS Career stage	Years since qualifying as a CNS	Years working as a CNS in blood cancer
Lewis 2020	Not reported	Not reported: Specialism not stated	Not reported	Not reported	Not reported	Not reported	Not reported
Liptrott 2019	Mixed: CNS, Nurse Educator, ANP, Staff Nurse	Haemato-oncology: Malignant haematology, SCT, paediatric/AYA care	Not reported	Not reported	Differentiated: ≤5 years vs. >5 years in haematology nursing	Not reported	Not reported
Liptrott 2023	Mixed: CNS, ANP.	Haematology: Malignant/ non-malignant conditions, coagulation, haemo-globinopathies, SCT	Data not reported in detail for CNS subgroup; overall majority aged 41-50 years (31.3%)	Majority of survey respondents were female (85.0%) ; CNS gender breakdown not separately reported	Majority >5 years haematology nursing (76%); 59.3% APNs >15 years	Not reported	Not reported
Lobban 2013	Myeloma Specialist Nurse / Clinical Nurse Specialist	Haemato-oncology: Myeloma	Not reported	Not reported	Implied advanced/ experienced practitioners	Not reported	Not reported
Martina 2016	Advanced Practice Nurse Educator (not labelled CNS)	Haemato-oncology: Myeloma, leukaemia, lymphoma	Not reported	Not reported	Advanced/educator role (mid-to-late career)	Not reported	Not reported

Study ID	Nursing title used	CNS Specialism	CNS age	CNS gender	CNS Career stage	Years since qualifying as a CNS	Years working as a CNS in blood cancer
McNamara 2011	Nurse / Nurse Practitioner	Haematology: Bone marrow biopsy, HSCT care	Not reported	Not reported	Likely experienced staff (assistant -> independent practitioner)	Not reported	Not reported
Montague-Hellen 2024	Clinical Nurse Specialist (CNS)	Haemato-oncology: Chronic lymphocytic leukaemia	Not reported	Not reported	Not reported	Not reported	Not reported
Morley 2023	Nurses (CNS implied but not explicitly stated)	Haemato-oncology: Haematology/hae-mato-oncology	Not reported	Not reported	Not reported	Not reported	Not reported
Murray 2018	Haematology Nurse (specialised in multiple myeloma)	Haemato-oncology: Multiple myeloma	Not reported	Not reported	Experienced: ≥5 years practice required	Minimum 5 years (inclusion criterion)	Not reported

Study ID	Nursing title used	CNS Specialism	CNS age	CNS gender	CNS Career stage	Years since qualifying as a CNS	Years working as a CNS in blood cancer
Polomeni 2017	Haematopoietic Stem Cell Transplantation Coordinating Nurse (HSCT-CN)	Haematology: HSCT coordination	Not explicitly reported as mean or SD; distribution provided: <30 years, 31-40 years, 41-50 years, >50 years (Table 1 summary available but exact numbers not detailed in text).	Female 100%	Mixed: <2 to >10 years; many >10 years in haematology	Nursing experience: <2 yrs (4.5%), 2–5 yrs (13.6%), 6–10 yrs (22.5%), >10 yrs (59%).	Haematology experience: <2 yrs (18%), 2–5 yrs (22.5%), 6–10 yrs (36.3%), >10 yrs (22.5%). HSCT CNS roles: <2 yrs (22.5%), 2–5 yrs (54.5%), 6–10 yrs (22.5%).
Toh 2012	Mixed: Registered Nurses, Oncology Nurses, Advanced Practice Nurses (APNs), Cancer Nurse Specialists	Not reported: Specialism not stated	Not reported	Not reported	Not reported	Not reported	Not reported
Wallace 2015	Nurses caring for haematology patients (CNSs implied, not explicitly reported)	Haemato-oncology: Haematological cancer nursing (CNS not separated)	Mean age 36.09 years (SD not explicitly given)	Majority female (88.9%, n=104)	Mixed: majority >6 years oncology experience	Not reported	Not reported

Appendix 4

Free text comments in response to 'As a blood cancer CNS, what training and support would be most helpful to you from a charity?'

Extra support to link in with other haematology nurses. Study days to remain updated that are funded. Mentorship to support the needs and demands of a CNS.

Structured, accredited online course to support learners from early-career practitioners through to senior specialist level

"Back to basics" specifically aimed at new CNSs (or refreshers for experienced CNS). How to approach service development, looking at barriers and how to overcome, and presenting abstracts, etc.

- Ability to share knowledge, access to peer review.
- Access to a web base of other Nurse specialists and the sharing of good practice.
- Access to conferences, support funding for courses, career progression advice.
- Access to information days on updates in treatments/ access to leadership courses.
- Accredited courses on blood cancer, different conditions, treatment pathways, support available.
- Advanced cancer care.
- An overall accredited course for Blood Cancer CNS'or a Passport similar to the UKONS chemotherapy passport.
- Any.
- As above.
- As above webinars or specialist days , possible mentor ship scheme.
- Autologous & Allogeneic Stem Cell Transplant Education.
- Being able to access study days and online learning. Podcasts are really helpful in the current environment eg. UCLH podcasts BOLUS Education. They are an amazing resource for those interested in Haematology Nursing.
- Being able to attend conferences, allowing the most up to date research.
- Blood specific training.
- Clinical education, more in depth of ways to manage/ support patients through their journey.
- Communication skills, how to support patient and loved ones through cancer diagnosis, how to manage late effects and support patients through this. How to deal with complaints. Conferences to enable collaboration and support of CNS's across the UK.
- Communication skills, understanding patient experience / their QOL Funding for conferences and study days.
- Conferences.
- Conferences/webinars, educational grants.
- Cpd.
- CPD for revalidation, supporting job matching and career progression, late effects, understanding how the CNS role differs in different hospitals - how can we all provide a similar service?
- Current management of all aspects of haematological malignancy.
- Disease specific
- Disease specific and its management.
- Disease specific training possible case studies.
- Disease specific training, alliances being streamlined in CNS roles and responsibilities.
- E-learning.
- E-learning/ videos to watch.
- E-learning and webinars.
- E-learning courses about haematology diseases.
- E-learning would be helpful made with help of healthcare professionals working in the area.
- E-learnings would really be helpful.
- Easy access to updates and changes in practice - newsletters, podcasts etc.
- Education, updates on trials.
- Enhancing my skills and knowledge to support my patients.
- External learning training opportunities such as courses funded for and provided.

- Financial support to attend conferences to meet other Peers and update knowledge and skills.
- Forum for peer support.
- Funding.
- Funding and webinars.
- Funding for a Haematology module and nurse prescriber. These can be offered online with some practical days at a Uni.
- Funding for Conferences and external learning opportunities.
- Funding for conferences and external learning opportunities as these are being pulled from NHS trust due to budget constraints.
- Funding for conferences and university courses.
- Funding for conferences or other courses.
- Funding for PhD.
- Funding for study days.
- Funding for university courses, conferences.
- Funding opportunities, national policy to enforce training requirements for the role, and empower blood CNSs. Podcasts with guest speakers would be interesting.
- Funding to access (or provision of) specialist blood cancer courses.
- Funding to attend conferences.
- Funding to attend courses you want to.
- Funding to attend learning opportunities.
- Funding to attend study days about blood cancer.
- Funding to enable us to attend appropriate remote study days.
- Funding to participate to conferences, on line training.
- Further academic qualifications specific to haematology and leadership.
- Further disease specific education.
- General blood cancer training, tailored to CNSs.
- Grants to attend conferences, community of practice groups for leadership/quality improvements.
- Help to complete my masters. I am struggling to complete this as I am not on an ANP pathway but it is a part of my key role to complete.
- Help with service improvement. A network to share policies and protocols with other CNS's from other health boards - sharing best practice.
- High quality educational resources (up to date) - can be remote.
- How to set up a local support group Information on the new treatments for clinical staff.
- I would like to complete my MSc cancer care but funding and agreed leave can be difficult.
- Ideas for service development in the context of the nationwide financial climate. Support with service and professional development of Haematology CNSs in the context of the nationwide financial climate.
- Improving experience of diagnosis and treatment ie prehab, rehab, side effect management, recovery, long term effects.
- Increased funding for learning opportunities and increased funding for further CNS roles within the NHS.
- Insight from other CNSs about their service improvements, More CNS-tailored education (based more around what patients want to know and how to communicate this to them) Communication skills and psychology.
- Keeping up to date with the latest developments and treatments.
- Knowing I can signpost a patient and they are receiving the best evidenced based and holistic care. Help to do collaborative nursing research amongst your known pool of Haem CNSs.
- Knowledge/information on best practice of care, updates, networking opportunities sharing practice and support.
- Leadership modules.
- Leading on some nurse lead research funding for conferences and education.

- Learning more about paediatrics. Opportunity to network with other CNS in similar roles.
- MSc.
- MSc support.
- Networking with others. Funding for relevant courses/ education. Awareness of what is on offer, it's hard to know where to look and find information if you don't have the networking.
- New treatments blood prescribing courses.
- Over view of all blood cancers, process that to lead to diagnosis, all support out there to offer the patients.
- Peer support.
- Plenty of resources for patients available, continuation of representation at conferences and study days.
- Practical skills, how to manage patient expectations, dealing with the emotional toil on patient/ family and staff.
- Professional webinars.
- Professional webinars & networking.
- Regular relevant updates to role.
- Remote training regarding leadership.
- Sending CNS nurses to a course that will help build up confidence and the to understand the role of a blood cancer CNS.
- Service redesign.
- Services that are provided my charities.
- Short online courses Access to funding.
- Specialist CNS study days - focused on this workforce for learning and networking.
- Online courses.
- Study days.
- Support for educations conferences, course, travel, accommodation.
- Support with education costs.
- Survivorship Lymphoma specific modules.
- Teaching sessions on different areas to do with blood cancer e.g. different disorders, cancers, treatments, everything!
- Telephone triage skills, Psychological skills training. These are normally oversubscribed and/or very difficult to access due to cost & number of people wishing to attend.
- To help to keep clinically up to date with treatment changes and research.
- To understand what charities can help my patients best and where/how to refer them.
- Training to support clinical knowledge in haematology. With the uncertainty of funding for CNS roles at the moment university accredited courses are favourable as transferrable to other CNS roles.
- Transplant in ambulatory setting, delivering treatments in ambulatory setting.
- Updates of latest developments by diagnosis.
- Up to knowledge on treatments . Motivation support to help fine tune skills already acquired. Group sharing of ideas.
- Webinars.
- What do patients want from our service.
- What the charity can offer my patients and professionals.