

# Evidence Brief: Haematology

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Produced by the Knowledge Management team Evidence Briefs offer an overview of the published reports, research, and evidence on a workforce-related topic.

**Date of publication:** Month and year

Please acknowledge this work in any resulting paper or presentation as:  
Evidence Brief: Haematology. Katie Nicholas and Katy Greenfield. (September 2023). UK: Workforce, Training and Education Knowledge Management Team

There may have been an update to this Evidence Brief - to check you are reading the most current version please see the links below:

- [Complete Evidence Brief list – link for Workforce, Training and Education staff](#)
- [Complete Evidence Brief list – link for External staff](#)

### Key publications – the big picture

#### [NHS Long Term Workforce Plan](#)

Source: NHS

Date of publication: June 2023

This plan sets out strategic direction for the NHS workforce, with three clear priority areas; train, retain and reform. The mental health workforce is identified throughout the plan.

#### [Expert Panel: evaluation of Government's commitments in the area of the health and social care workforce in England](#)

Source: UK Parliament

Publication date: June 2022

See evidence submitted by the British Society of Haematology ([EPW0045](#)).

Since the Government made no commitments on the workforce in relation to haematology specifically, our comments are intended to inform the Panel of our perspective on the workforce issues as we see them, informed in particular by our latest haematology workforce report, published in 2020. Divided in to three sections: Planning for the workforce, building a skilled workforce and wellbeing at work.

#### [The role of the haematology/ transfusion consultant scientist in the delivery of clinical and laboratory haematology services: an education and training solution and a workforce solution](#)

Source: NHS National School of Healthcare Science

Publication date: September 2020

Haematology is a diverse and complex clinical and laboratory specialism comprising a wide range of multi-professional roles and expertise. The report aims to identify 'service gaps' that medically qualified consultant haematologists have been unable to fulfil because of recruitment issues, gaps in specialist expertise issues or workload pressures. The report has been researched and written by a 'task and finish group' of

scientifically and medically qualified haematologists (a sub-group of the Haematology Workforce Working Group of the National School for Healthcare Science (NSHCS) in Health Education England (HEE)). It forms part of a larger report to be presented to the joint NHSEI and HEE's Pathology subgroup which is part of the larger diagnostic group in HEE/NHSEandI.

#### [The haematology laboratory workforce: challenges and solutions](#)

Source: The Royal College of Pathologists

Publication date: 2020

As part of the Royal College of Pathologists' Meeting Pathology Demand series, we carried out a survey of the haematology laboratory workforce, to help determine whether there is the right number of staff with the right skills in the right places to ensure safe and effective high-quality patient care and support. Like many pathologists, haematologists have a role in the direct management and treatment of patients as well as undertaking diagnostic work in the laboratory. This briefing contains the findings of our survey, which was sent to clinical directors and heads of haematology departments across the UK between December 2018 and September 2019. In particular, it focuses on the laboratory, rather than clinical, commitment of haematologists. The British Society of Haematology carried out its own review of the UK haematology clinical workforce over a similar period and we welcome the results of that report.

#### [Workforce Report 2019](#)

Source: British Society for Haematology

Publication date: March 2020

The [British Society for Haematology's review of the UK haematology clinical workforce undertaken in 2019](#) is the most comprehensive since the 2008 report by RCPATH.

Our findings show that clinical haematologists, nurses, laboratory scientists, pharmacists and specialist managers are under increasing pressure to deliver for patients in the NHS as the

burden of doing more with less staff impacts the rates of work-related stress, sickness and absence.

Review the [key points](#) to understand in more detail the needs and challenges faced by today's multidisciplinary haematology professionals.

[Science in healthcare: delivering the NHS Long Term Plan – The Chief Scientific Officer's Strategy](#)

Source: NHS England

Publication date: March 2020

Healthcare is entering the era of personalised medicine and prevention. Patient care is improving through maximising use of new technology and digital innovations, provision of diagnostics, and treatment closer to the patient. Digital advances, medical technology and diagnostic innovations will continue to change pathways and improve outcomes, with the potential to completely transform how we deliver care. Innovation in diagnostics and scientific services has revolutionised care over the years, from the first vaccine, to in-vitro fertilisation, to the advanced imaging that underpins many of today's clinical services. NHS scientific services are at the heart of this innovation; services that deliver changes to help patients and keep the NHS at the forefront of health innovation. Our ambition is to use the latest digital and technological innovations to embed new ways of delivering scientific services to improve patient care; delivered by a digitally enabled and intelligence-led healthcare science profession driving change.

e.g. [The Five Year Forward View for Mental Health](#) February 2016, NHS (Include link as whole article title and access details if needed e.g. *Abstract only\* or Athens log in required\**)

This independent report from the Mental Health Taskforce sets out the start of a ten-year journey for transformation, commissioned by Simon Stevens on behalf of the NHS. Chapter 4 addresses the Mental Health Workforce and looks at the picture at the time and the future workforce.

## The Star for workforce redesign

More resources and tools are available in the [the Star](#)

## Statistics

You can find relevant statistics on the [Health and Care Statistics Landscape](#) under “**Health and Care**”

## National Data Programme

Workforce, Training and Education staff can look at the [National Data Warehouse \(NDL\)](#) SharePoint site to find out more about datasets and Tableau products.

## Published Peer Reviewed Research

### Supply

[Interventions to Improve Advanced Practitioner Work-Related Quality of Life and Patient Satisfaction](#)

Item Type: Journal Article

Authors: Jackson, Heather;West, Olivia;Austin, Annie and Peal, Karline

Publication Date: Jan ,2023

Journal: Journal of the Advanced Practitioner in Oncology 14(1), pp. 49-53

Abstract: Background: Across the United States, an incremental need for cancer care continues to emerge. Specialty nurse practitioners and physician assistant teams have helped in

meeting this demand. However, there is a need for evidence-based recommendations to inform appropriate provider-patient staffing ratios that encompass complex cancer treatments and ensure optimal care. Methods: A literature review identified a gap in existing research with regard to recommended inpatient provider-patient ratios for hematology and oncology services. The conceptual framework of ICU nursing workload was utilized to ensure a comprehensive understanding of an inpatient specialty cancer provider's duties. Results: Within the unit, job, patient, and situation workload levels, there were multiple interventions implemented to streamline systems and improve workplace conditions for providers, as measured by the work-related quality of life (WRQoL) scale. Patient satisfaction scores improved an average of 4% across multiple criteria and exceeded benchmark rankings by 10.7% surrounding communication with nurses and physicians (a 6.3% increase). Discharge efficiency improved, with 6.1% more discharges occurring by 11:00 am, and length of stay was noted to be 8.8 days fewer than teaching services treating the same cancer diagnosis. Finally, additional shift pay was greatly reduced and turnover decreased by 17%. Conclusion: Application of the conceptual framework of ICU nursing workload provided a scientific assessment of specialty inpatient cancer services within one institution. Interventions resulted in improved working conditions, patient satisfaction, discharge efficiency, and reduced turnover, ultimately ensuring the provision of high-quality cancer care.

### [Perceptions of the stressful job search for pediatric hematology/oncology fellows](#) Abstract only\*

Item Type: Journal Article

Authors: Nishitani, Miki; Moerdler, Scott and Kesselheim, Jennifer

Publication Date: 2023

Journal: Pediatric Blood & Cancer 70(4), pp. e30226

Abstract: The pediatric hematology and oncology (PHO)

workforce landscape has been evolving over the past decades, with concern for waning interest in the subspecialty. We aimed to evaluate the impact of the initial PHO job search on fellow stress and anxiety, in addition to perceptions of the job search experience and potential areas of improvement. An anonymous survey consisting of demographics, emotional health impacts such as stress and anxiety, and job search experiences was developed and distributed to program leadership at all 74 PHO fellowship programs. At least one representative from 49 (66%) programs responded. Faculty were less likely than fellows to perceive that fellows are struggling to find jobs ( $p = .0198$ ). However, faculty were more likely than fellows to perceive that fellows are either "extremely stressed" or "stressed" due to job search ( $p = .0003$ ). By June 2021, 30 of 44 (68%) candidates had been offered a position, and 80% of those had accepted. There were no significant associations between fellow stress level and job offering, proximity to their ideal goals, or change in career type. Common barriers to the job search included geographic constraints and partner employment. Respondents identified centralized job listings, formal training on career development strategies, introduction to various career paths, and more transparency about the search as needed interventions. The perception of difficulty and stress regarding the job search is endorsed by most, identifying a need for more interventions to improve the experience. These data also highlight unmet mentorship and educational needs among PHO fellows in preparing for the job search.

### [Planning for the future workforce in haematology research](#)

Author(s): Hoots et al.

Source: Blood 125(18) pp. 2745-2752

Publication date: April 2015

The medical research and training enterprise in the United States is complex in both its scope and implementation.

Accordingly, adaptations to the associated workforce needs

present particular challenges. This is particularly true for maintaining or expanding national needs for physician-scientists where training resource requirements and competitive transitional milestones are substantial. For the individual, these phenomena can produce financial burden, prolong the career trajectory, and significantly influence career pathways. Hence, when national data suggest that future medical research needs in a scientific area may be met in a less than optimal manner, strategies to expand research and training capacity must follow. This article defines such an exigency for research and training in nonneoplastic hematology and presents potential strategies for addressing these critical workforce needs. The considerations presented herein reflect a summary of the discussions presented at 2 workshops cosponsored by the National Heart, Lung, and Blood Institute and the American Society of Hematology.

[The supply of hematology/oncology specialists.](#) Abstract only\*

Item Type: Journal Article

Authors: Maronge, Genevieve F.; Ramnaryan, Paragi Gururaja and Rigby, Perry G.

Publication Date: 2014

Journal: Journal of the Louisiana State Medical Society 166(1), pp. 10-14

Abstract: National hematology and oncology organizations and experts in the field, predict a shortage of hematology/oncology specialists in the United States. Four types of hematology/oncology graduate medical education programs picked to represent direct patient care specialists are presented as physician supply in quantitative data proportional to the averages of the United States in this paper. The hematology/oncology physician production in Louisiana is similar to the average of all programs in the United States. The complexities of having several hematology/oncology graduate medical education programs, along with other specialists, make physician supply more difficult to predict. The patient care

demand will rise gradually as the population increases and aging of the population ensues. Technology proliferates, and reform adds patient numbers. As the US shortage of hematology/oncology specialists occurs, the state of Louisiana is tracking the United States in supply and will show the shortage in the same way, same timing, and for the same reasons.

### Retention

[Impact of the Practice Environment on Oncology and Hematology Nurses: A Scoping Review](#) Abstract only\*

Item Type: Journal Article

Authors: O'Dea, Amy; Caulfield, Rebecca and Roche, Michael

Publication Date: 2023

Journal: Cancer Nursing

Abstract: BACKGROUND: Practice environments have a significant impact on nurses' practice and their retention within the oncology and hematology specialty. Understanding how specific elements of the practice environment impact nurse outcomes is important for creating supportive and safe practice environments. OBJECTIVE: To evaluate the impact of the practice environment on oncology and hematology nurses. METHODS: A scoping review was conducted according to the PRISMA-ScR Statement Guidelines. Electronic databases (MEDLINE, CINAHL, PsychINFO, Google Scholar, and Scopus) were searched using key terms. Articles were assessed according to the eligibility criteria. Data extraction was conducted with results explained through descriptive analysis. RESULTS: One thousand seventy-eight publications were screened with 32 publications meeting the inclusion criteria. The 6 elements of the practice environment (workload, leadership, collegial relations, participation, foundations, and resources) were found to significantly impact nurses' job satisfaction, psychological well-being, levels of burnout, and intention to leave. Negative practice environment elements were linked to increased levels of job

dissatisfaction, higher levels of burnout, greater prevalence of psychological distress, and greater intention to leave both oncology and hematology nursing and the nursing profession. **CONCLUSIONS:** The practice environment has a significant impact on nurses, their job satisfaction, well-being, and intention to stay. This review will inform future research and forthcoming practice change to provide oncology and hematology nurses with practice environments that are safe and lead to positive nurse outcomes. **IMPLICATIONS FOR PRACTICE:** This review provides a foundation upon which to develop and implement tailored interventions that best support oncology and hematology nurses to remain in practice and provide high-quality care.

### [Factors influencing pediatric hematology/ oncology nurse retention: a scoping review](#) Abstract only\*

Source: Journal of Pediatric/ Oncology Nursing

Publication date: July 2022

**Background:** Nursing staff retention is an ongoing concern within pediatric hematology/oncology settings globally. Work-related stressors cause emotional burden, psychological distress, and burnout to which nurses respond by leaving their workplace. Consequently, workplace culture and functionality are negatively impacted, quality of care reduces, and potential harm to patients increases. This paper aims to identify the “most” influencing factors for intention to leave among pediatric hematology/oncology nurses. **Methods:** A systematic search was undertaken on 29 July 2021 across five electronic databases, Cumulative Index to Nursing and Allied Health Literature, Joanna Briggs Institute, MEDLINE, PubMed, and Web of Science, using MeSH and keywords related to pediatric hematology/oncology nurse retention. **Results:** The initial search yielded 283 articles. Following abstract and full-text review, nine articles met inclusion criteria. Across all studies, strong links between health service organizational factors (e.g., unit acuity and time constraints), clinician demographics (e.g., age, education, experience, and

coping mechanisms), and nursing retention within pediatric hematology/oncology settings were observed. Direct patient care and long-term relationships with pediatric hematology/oncology patients were identified as the most frequent and intense stressors, while also presenting the most rewarding aspect of the nurse's work. **Discussion:** Clinician burnout and retention were found to be complex and multifaceted organizational and individual issues, which most importantly evolved from accumulative exposure to specialty-specific stressors. Interventions to prevent clinician burnout and improve staff retention, therefore, need to comprise individual and organizational level strategies specific to the healthcare context.

### [Assessment of attrition and retention factors in the oncology pharmacy workforce: Results of the oncology pharmacy workforce survey](#) Abstract only\*

Item Type: Journal Article

Authors: Rao, K. V.; Gulbis, A. M. and Mahmoudjafari, Z.

Publication Date: 2022

Journal: JACCP Journal of the American College of Clinical Pharmacy (pagination), pp. no pagination

**Abstract:** Introduction: Hospital departments of pharmacy are experiencing significant challenges in the recruitment and retention of trained hematology-oncology pharmacists. The reasons for these challenges are varied, but one consistent challenge is the growing attrition of clinically-trained pharmacists from the patient care environment. **Method(s):** An electronic 21-item survey was distributed to oncology pharmacists across the United States. The survey assessed work environment, board certification, clinical commitment, and other factors. How those factors might be associated with reported job satisfaction and risk for attrition was examined. **Result(s):** A total of 607 individuals responded to at least one of the survey questions, with the majority representing those actively in clinical practice. The results demonstrate that the oncology pharmacy workforce

is a highly trained and capable one, with a high level of satisfaction with their work. That said, over 60% of those who responded indicated that they were either actively seeking or open to alternate employment outside of the patient care environment. The largest contributing factors to attrition risk include untenable work burdens, burnout, lack of work-life integration, and ineffective leadership, while commitments to clinical work were associated with improved job satisfaction and decreased attrition risk. Conclusion(s): These results bring to light the current state of satisfaction and attrition risk for the oncology pharmacy workforce nationwide. A significant opportunity exists to improve the experience of these pharmacists, particularly in the patient care environment. Based on these findings, departmental, organizational, and national leadership must pursue more tenable work burdens, better value and recognition measures, and more accurate and meaningful metrics for clinical pharmacists in order to retain this important workforce. Copyright © 2022 Pharmacotherapy Publications, Inc.

### [The Social Determinants of Nursing Retention in a Pediatric Hematology/Oncology Unit.](#) Abstract only\*

Item Type: Journal Article

Authors: Mahon, P. R.

Publication Date: 2018

Journal: Journal of Pediatric Oncology Nursing : Official Journal of the Association of Pediatric Oncology Nurses 35(6), pp. 417-427

Abstract: Pediatric hematology/oncology units (PHOUs) are highly paced, stressful environments and can be difficult areas to work. Thus, these units can present issues when it comes to both recruiting and retaining health care professionals (HCPs). There is scant research addressing how the environment of a PHOU contribute to a HCP's desire to stay or leave this environment. To conduct this project, a critical ethnographic approach was used. The researcher conducted semistructured

interviews ( n = 29), which included nurses ( n = 21), physicians ( n = 4), and allied health care staff ( n = 4). This sample represented approximately one third of staff in each category. Participants identified that their ability to develop long-term relationships with children and families as a significant source of satisfaction. Belonging to the oncology team was seen as extraordinarily important to all the participants. The majority of the participants also felt that working in this ever-evolving dynamic medical field afforded them with ongoing learning opportunities. The main frustration described by participants pertained to administrative involvement in the everyday workings of the PHOU, potentially leading to attrition. It is important to note that there was also diversity among and between the categories of HCPs when describing the work environment and the issues that most influence them. While similarities among participants were found between satisfaction and dissatisfaction, significant differences between them led us to believe it would be unreasonable to attempt to compare the three groups here. Thus, in this article the author focused primarily on nursing while noting related observations from physicians and allied health professions.

## Burnout and Resiliency

### [Burnout in the haematological workforce](#)

Source: The Lancet Haematology

Publication date: July 2023

Burnout has been defined as a syndrome of emotional exhaustion, depersonalisation, and a sense of low personal accomplishment, leading to decreased effectiveness at work. It is an issue which is affecting health-care systems around the world. Burnout in physicians, which had already been on the rise before COVID-19, has been exacerbated by the pandemic and shows little sign of easing. A recent study, presented by Fumiko Chino at the 2023 American Society of Clinical Oncology annual

meeting, showed that 22% of academic oncologists surveyed reported feelings of burnout, with the highest rates among lesbian, gay, or bisexual faculty (OR 3.56; 95% CI 1.55–8.18) and female faculty (OR 2.32; 95% CI 1.51–3.56). The study included 724 academic oncologists and used data from the Association of American Medical Colleges StandPoint Faculty Engagement Survey between 2017 and 2020. The importance of addressing burnout and physician wellbeing in the oncology community was also highlighted by Vice Admiral Vivek H Murthy, the American Surgeon General, during the opening ceremony of the conference. These concerns and findings are echoed around the world: burnout is a global health care problem.

[Prevalence and factors associated with compassion fatigue, compassion satisfaction, burnout in health professionals](#) Abstract only\*

Item Type: Journal Article

Authors: Kartsonaki, Maria George; Georgopoulos, Dimitris; Kondili, Eumorfia; Nieri, Alexandra Stavroula; Alevizaki, Afroditi; Nyktari, Vasileia and Papaioannou, Alexandra

Publication Date: 2023

Journal: Nursing in Critical Care 28(2), pp. 225-235

Abstract: BACKGROUND: Constant exposure of health professionals to the pain and suffering of patients can adversely affect their emotional wellbeing. AIM: The study aimed to investigate the prevalence and the factors affecting the levels of secondary traumatic stress/compassion fatigue (STS/CF), burnout (BO) and compassion satisfaction (CS) of health professionals working in adult and paediatric Intensive Care Units (ICU) as well as in departments treating patients with serious illness in five hospitals in Crete. STUDY DESIGN: A descriptive cross-sectional survey with the use of the Professional Quality of Life Scale (ProQOL-CSF-R-IV) questionnaire. METHODS: We enrolled medical, nursing and support staff working in the adult and paediatric ICU, emergency,

oncology, haematology and neurosurgical departments, haemodialysis unit and operating theatre. RESULTS: 598 health professionals completed the questionnaire (response rate 73.2%). Significantly increased levels of STS/CF were observed in non - ICU as compared to ICU staff ( $p = .009$ ) females compared to males.

[Burnout in US hematologists and oncologists: impact of compensation models and advanced practice provider support](#)

Item Type: Journal Article

Authors: Lee, Alfred Ian; Masselink, Leah E.; De Castro, Laura M.; Marshall, Ariela L.; Connell, Nathan T.; Dent, Georgette A.; Fritz, Josel; Homer, Morgan; Lucas, Tiffany L.; Naik, Rakhi P.; Nelson, Marquita; O'Connell, Casey L.; Rajasekhar, Anita; Reynolds, Robby J.; Sharma, Deva; Smith, Melody; Weeks, Lachelle D. and Erikson, Clese E.

Publication Date: Jul 11, 2023

Journal: Blood Advances 7(13), pp. 3058-3068

Abstract: Burnout is prevalent throughout medicine. Few large-scale studies have examined the impact of physician compensation or clinical support staff on burnout among hematologists and oncologists. In 2019, the American Society of Hematology conducted a practice survey of hematologists and oncologists in the AMA (American Medical Association) Masterfile; burnout was measured using a validated, single-item burnout instrument from the Physician Work-Life Study, while satisfaction was assessed in several domains using a 5-point Likert scale. The overall survey response rate was 25.2% ( $n = 631$ ). Of 411 respondents with complete responses in the final analysis, 36.7% ( $n = 151$ ) were from academic practices and 63.3% ( $n = 260$ ) from community practices; 29.0% ( $n = 119$ ) were female. Over one-third (36.5%;  $n = 150$ ) reported burnout, while 12.0% ( $n = 50$ ) had a high level of burnout. In weighted multivariate logistic regression models incorporating numerous variables, compensation plans based entirely on relative value

unit (RVU) generation were significantly associated with high burnout among academic and community physicians, while the combination of RVU + salary compensation showed no significant association. Female gender was associated with high burnout among academic physicians. High advanced practice provider utilization was inversely associated with high burnout among community physicians. Distinct patterns of career dissatisfaction were observed between academic and community physicians. We propose that the implementation of compensation models not based entirely on clinical productivity increased support for women in academic medicine, and expansion of advanced practice provider support in community practices may address burnout among hematologists and oncologists.

### [Prevalence and predictions of burnout and work-life balance within the haematology cancer nursing workforce](#) Abstract only\*

Author(s): Gribben and Semple

Source: European Journal of Oncology Nursing 52

Publication date: June 2021

Purpose; The effects of burnout can have serious consequence for individual nurse's, patients and healthcare organisations. The aim of this study was to assess prevalence and predictors of burnout and work-life balance amongst haemato-oncology nurses. Methods: This study employed a cross-sectional survey design. Haematology cancer nurses attending a 2-day conference in Ireland, during Oct 2019 were recruited.

Anonymised data were collected on: 1) socio-demographics and occupational variables, 2) burnout using Maslach Burnout Inventory and 3) satisfaction with work-life balance. Results: There was an 80.4% survey completion rate (n = 78 of 97). One-third of haemato-oncology nurses reported high levels of emotional exhaustion, with an additional 46% experiencing moderate levels. Despite this, 64% of nurses highlighted a moderate or high level of personal accomplishment.

Demographics such as <40yrs old, unmarried, working ≥25hrs per week and having 6–10 years' experience in haemato-oncology, all showed trends towards increased burnout, although none reached statistical significance. Over half (58%) surveyed were dissatisfied with their work-life balance. Nurses with dependent children had statistically significant poorer work-life balance scores. In addition, one-third reported they did not receive adequate support or reasonable adjustments from their organisation, with inpatient nurses finding this particularly challenging. Relevance to clinical practice: Taking into consideration the high levels of burnout, healthcare organisations should have a responsibility to teach approaches of stress management, self-care and foster resilience within their workforce. Oncology nurses with dependent children, working in in-patient settings, have identified a need for greater flexibility with working conditions, to improve work-life balance.

### [Creating the Hematology/Oncology/Stem Cell Transplant Advancing Resiliency Team: A Nurse-Led Support Program for Hematology/Oncology/Stem Cell Transplant Staff](#). Abstract only\*

Item Type: Journal Article

Authors: Schuster, M. A.

Publication Date: 2021

Journal: Journal of Pediatric Oncology Nursing : Official Journal of the Association of Pediatric Oncology Nurses 38(5), pp. 331-341

Abstract: Background: Burnout, moral distress, compassion fatigue, and posttraumatic stress disorder are concerns for health-care staff. Due to the high mental, physical, and emotional demands of the pediatric hematology/oncology profession, workplace supports should be in place to address the needs of the staff. A nurse-led support program is one strategy to enhance staff well-being. Method(s): The Hematology/Oncology/Stem Cell Transplant Advancing Resiliency Team (HART) is a nurse-led peer-to-peer on-site

support program for multidisciplinary staff caring for hematology/oncology patients. HART coaches, working 8-hour shifts, covering both day and night shift hours, are present 3 days a week on the unit. HART offers a confidential space for one on one or group interactions, educational sessions, assistance with work related, patient-care based, or personal concerns, and various forms of integrative therapies. Result(s): There have been over 1,100 coach consults and 98 HART shifts worked. The most commonly reported changes since HART began include staff feeling more supported by leadership and staff making time for breaks during the work shift. A 25.6% increase in staff reporting to be extremely satisfied with unit support was found. Discussion(s): Cultivating a culture of staff support is important. Due to COVID-19, physical HART coach presence was put on hold for 4 weeks and virtual interventions were trialed. Since its return, coach consult numbers have been steadily rising. Having a support program led by coaches with direct experience understanding the emotional toll of caring for the pediatric hematology/oncology patient population was found to be well utilized, feasible through donor funding, and measurable via staff report.

### [Factors associated with burnout among hematology & oncology physicians](#)

Item Type: Conference Proceeding

Authors: Masselink, L.E., Lee, A.I. and Erikson, C.E.

Publication Date: 2020

Publication Details: Blood. Conference: 62nd American Society of Hematology Annual Meeting and Exposition, ASH 2020. San Diego, CA United States. 136(SUPPL 1) (pp 41-42); American Society of Hematology, pp. 41

Abstract: Background The American Society of Hematology and researchers at the Fitzhugh Mullan Institute for Health Workforce Equity at the George Washington University are conducting a 3-year study of the hematology workforce to understand factors

that influence the supply of hematology services in the U.S. The Survey of Practicing Hematologists and Oncologists focuses on practicing hematology/oncology physicians' practice activities and experiences, compensation, job satisfaction and burnout. While the prevalence and predictors of burnout in the oncology workforce have been studied in detail previously, less is known about factors associated with burnout in the hematology or combined hematology/oncology workforce-or whether these differ across academic and community practice settings. This study seeks to examine factors associated with severe burnout for hematology/oncology physicians in academic and community practice settings using data from a large-scale, comprehensive survey of hematology/oncology physicians. Methods We collected survey data via mail and online survey (using Qualtrics, an online survey tool) in April through June 2019. The survey included questions about hematology/oncology physicians' work hours, practice activities, compensation, job satisfaction and burnout. This analysis uses data from a single validated question examining respondents' level of burnout: "Overall, based on your definition of burnout, how would you rate your level of burnout?" The question asks respondents to rank their burnout on a 5-point Likert scale. We collapsed responses into a dichotomous variable indicating severe burnout (=4 or 5 on the Likert scale). We used two weighted multiple logistic regression models to examine associations between severe burnout and work hours, practice characteristics and activities, and type of compensation for respondents in academic and community practice in Stata 15, controlling for demographics and type of practice ( $p < 0.05$ =statistically significant). Results A total of 675 hematologists/oncologists completed the survey (27% response rate). Of these, 427 respondents reported working in academic or community practice and had complete data to be included in the analysis: 162 (38%) in academic practice settings and 265 (62%) in community practice settings. Respondents in academic practice settings were slightly less likely to report experiencing

severe burnout than those in community practice settings (9% [15/162] vs. 12% [34/265],  $p=0.26$ ). In the logistic regression models, we found statistically significant and positive association between severe burnout and Relative Value Unit or RVU-based compensation (vs. salaried or other compensation models) for both academic ( $OR=18.42$ ,  $p<0.01$ ) and community practice respondents ( $OR=3.05$ ,  $p<0.01$ ). We also found a significant and positive association between severe burnout and being female for respondents in academic practice only ( $OR=6.07$ ,  $p<0.01$ ). We found a significant and negative association between severe burnout and often working with advanced practice providers (nurse practitioners and/or physician assistants) for respondents in community practice only ( $OR=0.32$ ,  $p<0.01$ ). Conclusions Study findings suggest that severe burnout rates are similar for hematology/oncology physicians in academic and community practice settings. Severe burnout appears to be related to use of RVU-based compensation systems in both academic and community practices, suggesting that these models may require major revision to reduce burnout and support the health and longevity in practice of hematology/oncology physicians. Improving access to advanced practice providers may mitigate severe burnout, especially in community practice settings. Higher levels of burnout among women in academic hematology/oncology practices suggest an area for further research into possible explanations and solutions. These findings merit further exploration, particularly given the increased pressures on physicians in the era of COVID-19.

### [Mental and physical well-being in oncology-hematology-unit personnel.](#) Abstract only\*

Item Type: Journal Article

Authors: Magnavita, Nicola;Sestili, Cristina;Mannocci, Alice;Ercoli, Elisa;Boccia, Antonia;Bonaga, Gloria;Sica, Simona;Maurici, Massimo;Alvaro, Rosaria;Sili, Alessandro;Cartoni, Claudio and La Torre, Giuseppe

Publication Date: 2018

Journal: Archives of Environmental & Occupational Health 73(6), pp. 375-380

Abstract: Health care workers (HCWs) in university hematology units (UHUs) face high job demand that can have adverse health effects. This cross-sectional study investigated the relationship between some job stressors and health-related quality of life among HCWs of 3 UHUs in Rome. Work-related stress was measured with the Demand-Control Questionnaire; health-related functioning with the mental component score (MCS) and physical component score (PCS) of the Short Form 12 Survey; positivity with the Positivity Scale. Data of 201 respondents were analyzed. Job demand was inversely associated with MCS ( $p = .05$ ) and PCS ( $p = .049$ ); job control was directly associated with PCS ( $p < .001$ ) and MCS ( $p = .024$ ). A high positivity scale score and high decision latitude score predicted high MCS and PCS. High job demand score predicted low MCS and PCS scores. Reduced job stressors and enhanced positive attitudes can improve HCWs' health-related quality of life.

### [A Self-Care Retreat for Pediatric Hematology Oncology Nurses.](#)

Abstract only\*

Item Type: Journal Article

Authors: Altounji, D.;Morgan, H.;Grover, M.;Daldumyan, S. and Secola, R.

Publication Date: 2013

Journal: Journal of Pediatric Oncology Nursing 30(1), pp. 18-23

Abstract: Pediatric hematology oncology nurses face a variety of stressors while working in this specialty field. Through hematology oncology staff group discussions, nurses identified a myriad physical and emotional stressors they experienced, and expressed concern regarding possible burnout. They described facing stressors related to experiencing loss, grief, moral and ethical dilemmas, and administering complex treatment regimens. To address these concerns, a hematology oncology

nursing supportive care committee envisioned and implemented 3 off-site self-care retreats. The committee's primary purpose was to create a therapeutic and supportive environment for all participants, while allowing time for relaxation, reflection, and serenity. The primary goals for the retreats were to heal nurses from their reported past trauma and stress and to provide them effective coping strategies for the ongoing stressors they will inevitably face. In a collaborative effort, the committee members developed an agenda including presentations, group discussions, and relaxation activities. Written evaluations were completed by each participant to assess the benefit of the retreat. Overall feedback was extremely positive, with the majority of the participants finding great value in this experience. © 2012 by Association of Pediatric Hematology/Oncology Nurses.

### Advanced Practice

#### [The Evolving Role of Haematology Nursing Practice: A Cross-Sectional Survey](#)

Item Type: Journal Article

Authors: Liptrott, Sarah; NiChonghaile, Mairead; O'Connell, Liz and Aerts, Erik

Publication Date: 2023

Journal: Mediterranean Journal of Hematology & Infectious Diseases 15(1), pp. e2023033

Abstract: Background And Objectives: The scope of haematology nursing practice is dynamic and must respond to advances in treatment, patients' needs and service requirements. Little is known, however, about the different roles of haematology nurses across the European setting. The purpose of this study was to identify the professional practices of haematology nurses. Method: A cross-sectional online survey design was used to investigate practice elements undertaken by

haematology nurses. Frequencies and descriptive statistics were calculated for demographic variables and chi-square tests to examine relationships between practice elements, nursing role and country. Results: Data is reported from 233 nurses across 19 countries, working as Staff Nurses (52.4%), senior nurses (12.9%) and Advanced Practice Nurses (APNs) (34.8%). Most frequently reported activities included medication administration - oral/ intravenous (90.0%), monoclonal antibodies (83.8%), chemotherapy (80.6%), and blood components (81.4%). APNs were more commonly involved in nurse-led clinics and prescribing activities ( $p < .001$ ,  $p = .001$ , respectively); however, other nursing groups also reported performing extended practice activities. Patient and carer education was a significant part of all nurses' roles; however, senior nurses and APNs were more often involved with the multidisciplinary team ( $p < .001$ ) and managerial responsibilities ( $p < .001$ ). Nurses' involvement in research was limited (36.3%) and frequently reported as an out-of-work hours activity. Conclusions: This study describes haematology nursing care activities performed in various contexts and within different nursing roles. It provides further evidence of nursing activity and may contribute to a core skills framework for haematology nurses.

#### [Advanced clinical practice in paediatric haematology and oncology: developing a capability document](#) Abstract only\*

Author(s): Woodman and Spencer

Source: Nursing Children and Young People

Publication date: July 2022

Specialist roles have been developed to provide holistic care to children and young people with cancer, one of which is the advanced clinical practitioner (ACP) in paediatric oncology and haematology. A survey showed that paediatric oncology and haematology ACPs in the UK work in a wide variety of roles and that their numbers vary greatly between treatment centres. The survey also confirmed the need for a national standardised

framework delineating the knowledge, skills and expertise required of ACPs working in paediatric oncology and haematology. This article describes the development of a capability document to support and standardise advanced practice in paediatric oncology and haematology. The document reflects the advanced level of critical thinking, autonomy and decision-making required of ACPs and has been endorsed by the Children's Cancer and Leukaemia Group and by the Royal College of Nursing. It is hoped that it will support ACPs to consistently deliver high-quality, safe care for the benefit of children and young people with cancer and their families.

[The emerging advanced nurse practitioner role in haematology- does it cause confusion or provide support to the traditional clinical nurse specialist role?](#) Scroll down to BSH22-EP74

Item Type: Conference Proceeding

Authors: Spencer, R., Jackson, R. and Keegan, D.

Publication Date: 2022

Publication Details: British Journal of Haematology. Conference: 62nd Annual Scientific Meeting of the British Society for Haematology. Virtual. 197(SUPPL 1) (pp 219-220); Blackwell Publishing Ltd, pp. 219

Abstract: The emerging advanced nurse practitioner role in haematology- does it cause confusion or provide support to the traditional clinical nurse specialist role? Advanced nurse practitioners (ANPs) are experienced healthcare professionals often considered to be 'the link' between medicine and nursing. The position carries a high degree of autonomy and complex decision-making, supported by a master's degree. ANPs are integral members of the multi-professional team with a significant contribution to the patient journey. The role is becoming more valued within the haemato-oncology setting, supporting patients throughout their disease pathway. The ANP role is hindered by role clarity and scope of practice issues when compared with the traditional 'clinical nurse specialist' (CNS) role. This can cause

anxiety, insecurity and role dissatisfaction for the ANP consequently leading to suboptimal performance. The lack of precedent for the new ANP role by CNS colleagues can lead to criticism further increasing stress levels, resulting in a hostile work-environment and feelings of professional isolation. A lack of support and leadership in their new role can also add to this feeling of professional isolation. In addition, a lack of role regulation in the United Kingdom has resulted in misconception about the role and this therefore impacts on how the role is viewed in professional clinical practice. Following completion of advanced practice training and sharing experiences of other trainee ANPs within haematology. The author found that creating a visual poster presenting a comparative 'day in the life' of both the ANP and CNS could help clarify some of the key differences between the two roles. The poster found that despite some blurring between the roles, further clarity about each of their responsibilities and scope of practice consequently helped future ANPs to shape their role and how the two interlink and work together. The poster explores how the ANP role bridges the gap between nursing and medicine creating a more holistic approach to patient assessment and their journey and how it is integrated within the haematology team, working together with experienced CNS to improve patient outcomes, reduce waiting times for medical input and overall creates a formidable nursing workforce to support our cancer patients..

[Exploring practice site contributions and professionalization impact of engaging student pharmacists on hematology-oncology advanced pharmacy practice experience rotations.](#)

Item Type: Journal Article

Authors: Yacobucci, Matthew J.; Lombardi, Christina L. and Briceland, Laurie L.

Publication Date: Jan ,2022

Journal: Journal of Oncology Pharmacy Practice 28(1), pp. 109-118

**Abstract:** **INTRODUCTION:** Student pharmacists contribute meaningfully to patient care during Advanced Practice Pharmacy Experiences (APPEs) in varied settings. We aimed to characterize and evaluate the impact of student participation in hematology-oncology (hem-onc) APPEs on the practice site, and on student professionalization. **METHODS:** For students completing hem-onc APPEs during 2016-2019, rotation activities and post-APPE self-reflections describing meaningful impact were reviewed; activities were categorized into direct and indirect patient care, and up to three reflection themes of professionalization impact were extracted from each self-reflection. Hem-onc preceptor cohort was surveyed to assess impact of student contributions on the practice site. **RESULTS:** 171 students completed hem-onc APPEs in ambulatory care (133) and/or inpatient (38) settings. Of 932 student-reported activities, the most common were: evaluating patient pharmacotherapy (209), providing education to medical staff (132), patient counseling [non-chemotherapy (99); chemotherapy (82)], and providing drug information (96); 89% involved direct patient care/education. Survey results from 16 of 33 preceptors identified the most impactful student activities as evaluating pharmacotherapy, medication education/adherence resources, and in-service presentations. Of 392 student self-reflections, themes of impact focused on professionalization/self-awareness (39.3%), counseling/communication skills (27.8%), practice skills development (20.4%) and collaborative teamwork (12.5%). **CONCLUSION:** Pharmacy students make significant direct patient care contributions to hem-onc practice settings by evaluating pharmacotherapy and providing education to patients and healthcare personnel. Participation in hem-onc APPEs is highly influential to the professionalization of students, particularly in developing skills in oncology practice, patient interactions/communications, and developing self-awareness.

[Comment: Advanced clinical practitioners in haematology and oncology](#)

Author(s): Matthew Fowler

Source: British Journal of Nursing 30(17)

Publication date: September 2021

Within my scope of professional practice as a nurse consultant with over 20 years' clinical experience within haematology and oncology, I initiated an innovative workforce planning opportunity setting up a dedicated advanced clinical practice service within a secondary NHS service. The first advanced clinical practitioner (ACP) commenced in post in 2015, and we currently have a team consisting of a nurse consultant working as the lead ACP, one ACP for haematology and two ACPs for oncology.

[Do advanced clinical practitioners have the theoretical knowledge to authorise blood components for transfusion? A cross sectional survey Study.](#) Abstract only\*

Item Type: Journal Article

Authors: Harvey, M. and Leary, A.

Publication Date: 2021

Journal: Journal of Clinical Nursing 30(19-20), pp. 2968-2977

**Abstract:** **Aim:** The aim of this study is to investigate whether non-medical authorisers of blood component transfusion, in a single centre working at an advanced level, have the theoretical knowledge to potentially undertake this task safely.

**Background(s):** Authorisation of blood components for transfusion has predominantly been a medical role in the United Kingdom. Advanced Clinical Practitioners (ACP) are increasingly undertaking this role in order to maintain timely transfusion care.

**Design(s):** A cross sectional study design was utilised for this study which was conducted between 05th March 2018 and the 4th of April 2018.

**Method(s):** A total of 81 participants (49 medical authorisers and 32 Advanced Clinical Practitioners of which 21 were nurses and 11 were Allied Healthcare Professionals) working in a single centre completed the BEST-

TEST, a previously validated knowledge assessment tool (Transfusion, 54, 2014, 1225). This study's methods were compliant with the STROBE Checklist. Result(s): The overall mean was 8.74 out of a possible 20 questions. Doctors scored higher within the basic science domain compared to Advanced Clinical Practitioners ( $p = .01$ ). This study found the method of training received by its participants was statistically significant with those receiving formal training scoring more than those who had received on the job training from their colleagues ( $p = .02$ ). When all specialities were compared for differences with the mean correct scores a statistically significant difference was found ( $p = .01$ ). Conclusion(s): This study demonstrates there is no statistically significant difference in transfusion medicine knowledge between professional subgroups working in a single centre. Furthermore, there is deficits in the knowledge of all subgroups. Relevance to clinical practice: With advanced practice roles expanding, it is essential that we realise their full potential. There is no current research examining knowledge of ACPs, who could potentially authorise blood components for transfusion, but there are some clear benefits for clinical practice such as providing safe, timely and patient centred care.

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[The haematology advanced nurse practitioner: 'A multifaceted role in stem cell transplantation'](#) Scroll down to NP021

Item Type: Conference Proceeding

Authors: Waller, M.

Publication Date: 2019

Publication Details: Bone Marrow Transplantation. Conference: 45th Annual Meeting of the European Society for Blood and Marrow Transplantation. Frankfurt Germany. 54 (pp 647-648); Nature Publishing Group, pp. 647

Abstract: Background: The stem cell transplant unit is busy and challenging with complex patients who have multiple nursing and medical needs. Historically the roles of nurses and doctors has

been well defined. While nurses deliver direct patient care including administration of medications, chemotherapy and blood products the medical team undertake clinical assessment, examination and formulate a medical plan. Roles such as clinical nurse specialist and transplant nurse coordinator are embedded within the transplant team. These roles often include skills such as non medical prescribing, bone marrow biopsies and placement of PICC lines. The role of haematology advanced nurse practitioner (ANP) is relatively new within this setting. Within the United Kingdom (UK) the ANP role evolved due to reduction in junior doctors working hours, roles were initially in primary and urgent care. In recent years the role has become established in other clinical areas giving senior nurses an opportunity to further develop their clinical skills, attributes and careers. Method(s): After undertaking the MSc in Advanced clinical practice and non medical prescribing course the author became a qualified ANP working on the stem cell transplant unit. The ANP works within the medical team and manages a case load of patients; both chemotherapy and stem cell transplant. The role includes clinical examination, assessment and management of side effects following treatment, formulating a medical plan, non medical prescribing and ordering and prescribing of blood products. The ANP coordinates the junior medical team, facilitates timely patient discharge, ensures smooth running of the transplant unit and provides leadership to nursing and medical colleagues. The ANP is involved in education and leading change of practice (i.e, developing guidelines) both locally and nationally. Result(s): The ANP has become an integral role to ensure the smooth running of the transplant unit. The literature describes the ANP as a linchpin-bridging the gap between the medical and nursing team. This includes communication within the MDT, a point of contact for patients and relatives, educator and role model for nurses and leadership for junior team members. Within the UK there are four main elements that underpin the ANP role: Advanced clinical

practice, Research, Education, and Leadership. The ANP can manage their own clinical workload and undertake thorough holistic assessments using advanced communication and clinical skills. As the ANP is permanent this can improve continuity of care for patients unlike rotational training or middle grade doctors. The ANP has become a point of contact for the extended members of the multidisciplinary team such as microbiology, palliative care and pharmacy. Conclusion(s): The role of the haematology advanced nurse practitioner has become embedded and integral within the stem cell transplant unit. The multifaceted role incorporates the four elements of advance practice whilst ensuring safe, effective and quality care is delivered to patients on the transplant unit. The ANP can bridge the gap between the medical and nursing team offering support, education and leadership to both. Furthermore the ANP can use advanced clinical skills to holistically assess and manage the complex needs of transplant patients.

### [Role of advanced nurse practitioners in the care pathway for children diagnosed with leukemia.](#) Abstract only\*

Item Type: Journal Article

Authors: Bovero, M.;Giacomo, C.;Ansari, M. and Roulin, M. J.

Publication Date: 2018

Journal: European Journal of Oncology Nursing : The Official Journal of European Oncology Nursing Society 36, pp. 68-74

Abstract: PURPOSE: The development of advanced nursing practices (ANP) can meet challenges presented by evolving needs of health care. We aimed at describing the approach taken to implement ANP in a pediatric oncology-hematology unit. METHOD(S): The Participatory, Evidence-informed, Patient-centered Process for Advanced practice was considered as a conceptual framework for the development, implementation and evaluation of the nursing role. Successive steps were taken for identifying patients and family needs, defining the health care priorities, and establishing a new health care model.

RESULT(S): The seven steps of the PEPPA framework were carried out over a year and contributed to the identification of the tasks and the role of the advanced nurse practitioner in the patient care pathway. The implementation of ANP was gradually achieved with the development of new evidenced-based health care procedures. The subsequent approval of a contract specification for advanced nurse practitioners facilitated the onset of a specific consultation, which facilitated a holistic approach. CONCLUSION(S): The impact of the implementation can be appreciated at different levels: i) the patient and his or her family, with improvement of communication and continuity of care; ii) the interdisciplinary team, with development of a dynamic and greater motivation of the health care providers; and iii) the profession, with a greater recognition of the competencies and conceptualization of the new role. An assessment of the process, the structure and the results should be carried out to validate the role of the advanced nurse practitioner throughout the long journey of a child with leukemia. Copyright © 2018 Elsevier Ltd. All rights reserved.

### [Ambulatory care for haematology and oncology patients.](#)

Abstract only\*

Item Type: Journal Article

Authors: Ingram, Bethan

Publication Date: Feb 23 2017

Journal: British Journal of Nursing 26(4), pp. S12-S14

Abstract: Bethan Ingram, Advanced Nurse Practitioner, Teenage Cancer Trust Unit, University Hospital of Wales, Cardiff, discusses alternatives to inpatient-focused services.

### [Patients' satisfaction with a hematology advanced nurse practitioner in Ireland.](#) Abstract only\*

Item Type: Journal Article

Authors: Kelly, M. B.;Dowling, M.;Burke, E. and Meskell, P.

Publication Date: 2013

Journal: Journal for Nurse Practitioners 9(7), pp. 466-469

There is great variety in the descriptions of advanced practice nursing (APN) roles internationally. However, this variety hinders advanced practice role development. <sup>1</sup> In Ireland, where advanced practice roles have developed much later than in the United States, the delay has resulted in a transparent regulatory process with a clear clinical pathway for advanced nurse and midwife practitioners. The first Irish advanced nurse practitioner (ANP) was in emergency nursing in 2002; a variety of other ANP roles now exist, including oncology, diabetes, and primary care. However, there are currently only 3 ANPs in hematology in Ireland.

### [What do patients think of an advanced nurse practitioner \(ANP\) in haematology? Patient satisfaction with a new nursing role](#)

Abstract only

Item Type: Conference Proceeding

Authors: Kelly, M., Dowling, M., Msekell, P. and Burke, E.

Publication Date: 2012

Publication Details: Bone Marrow Transplantation. Conference: 38th Annual Meeting of the European Group for Blood and Marrow Transplantation, EBMT 2012. Geneva Switzerland.

Conference Publication: (var.pagings). 47(SUPPL. 1) (pp S498); Nature Publishing Group,

Abstract: Introduction: This study evaluated haematology patients' satisfaction with their review undertaken by the ANP in haematology. The study also evaluated patients' satisfaction with bone marrow (BM) examinations performed by the ANP. The study team included the ANP in haematology and three nurse lecturers based at an Irish university. Patient satisfaction is a significant factor in contribution to the patient's well being. Evaluating patient satisfaction is therefore central to evaluating health care service provision. In Ireland, the evaluation of the ANP role is in its infancy. There is some evidence of this new

role's positive impact in surveys undertaken by a number of ANPs in recent years. However, this is the first known study with Irish haematology patients. Methodology: The study questionnaire was developed from an adaptation of two pre-existing published questionnaires developed in the US. The questions asked focused on patient care, patients' views on the ANP's knowledge of their diagnosis, the ANP's courtesy and respect, and satisfaction with how bone marrow examination was performed. Following ethical approval, a database of all eligible patients was compiled. This included all patients reviewed by the ANP between June 2010 and 2011, and all patients who had a BM examination performed by the ANP during this time. 405 patients and 111 bone marrows were completed by the ANP during the study timeframe. Based on calculations derived from the raosoft sample size calculator, a sample size of 200 reviews and 87 bone marrows was required. Patients were randomly selected (every second patient) from the ANP patient database using the medical record no (MRN). 300 patients received a letter inviting them to complete the questionnaire and return their completed questionnaire to one of nurse lecturers on the study team. Findings/Conclusion: A total of 147 questionnaires were returned. The data is currently being analysed using SPSS, and descriptive statistically results on the returned questionnaires will be presented. Patients' qualitative responses to the open question on the questionnaire will also be presented.

### [Evaluation of bone marrow examinations performed by an advanced nurse practitioner: An extended role within a haematology service.](#) Abstract only\*

Item Type: Journal Article

Authors: Kelly, M.;Crotty, G.;Perera, K. and Dowling, M.

Publication Date: 2011

Journal: European Journal of Oncology Nursing 15(4), pp. 335-338

Abstract: Purpose: Traditionally, medical personnel have

undertaken bone marrow (BM) examination. However, specially trained nurses in advanced practice roles are increasingly undertaking this role. This paper presents the findings from an audit of BM examinations undertaken by an advanced nurse practitioner (ANP) at a regional haematology specialist centre. Method(s): The audit evaluated the quality of BM examinations performed by the ANP over the past two years (September 2007-September 2009). Over the two year period, 324 BM examinations were performed at the centre of which 156 (48.1%) were performed by the ANP. A random sample of 30 BM examinations undertaken by the ANP were analysed by the consultant haematologist. Result(s): All 30 BM examinations undertaken by the ANP were sufficient for diagnosis. Conclusion(s): The ANP is capable and competent to obtain BM samples which are of a sufficient quality to permit diagnosis. © 2010 Elsevier Ltd.

### New roles

[Pharmacist and physicians associate led Myeloproliferative neoplasm clinics](#) Scroll down to BSH22-PO120

Item Type: Conference Proceeding

Authors: Wood, K., Bamber, C. and Francis, S.

Publication Date: 2022

Publication Details: British Journal of Haematology. Conference: 62nd Annual Scientific Meeting of the British Society for Haematology. Virtual. 197(SUPPL 1) (pp 160-161); Blackwell Publishing Ltd, pp. 160

Abstract: The myeloproliferative neoplasm (MPN) clinics have traditionally been delivered by medical staff and haematology specialist nurses. However, there have been increased pressures experienced by the medical workforce with 8% locums at the haematology consultant level nationally, increased number of retirements and increased numbers of less than full-time consultants. There have also been improvements in treatment

for chronic myeloid leukaemia (CML) and Myeloproliferative neoplasms (MPN). This has led to a large unsustainable number of patients in the MPN medical clinics. To help resolve this issue, Sheffield Teaching Hospital NHS trust have invested in pharmacists and Physicians associates to run CML and MPN clinics independently. Pharmacists have been utilised to run the CML clinics since 2020. Pharmacists oversee the monitoring of BCR::ABL1 monitoring, Tyrosine kinase inhibitor prescribing and consenting for initiation of Treatment free remission (TFR) in CML. They review patients who have achieved a Major molecular response (MMR) or are in a TFR. The pharmacists have developed standard operating procedures for CML clinics and attend the haematology MDT. The physician associates (PA) have run the MPN clinic since 2019. PA have developed SOPs incorporating the MPN 10 score and arranged venesections independently for PRV and liaise with medical staff for MPN related prescriptions. At present, there are 82 patients with CML under regular follow-up. Forty-six (56%) are reviewed in the pharmacist-led clinic. The pharmacy team has also initiated 11 patients for TFR, with only 1 patient losing Major molecular response (MMR). There has been an improvement with respect to patient adherence with medication, monitoring of drug-drug interactions, appropriate initiation of statin in high QRISK three patients and compliance with BCSH CML guidelines. There are 176 patients in the Sheffield MPN clinics, with 63 (35%) reviewed in the PA-led clinic and 46 (26%) patients reviewed in the nurse-led clinic. The PAs have 100% compliance with MPN 10 score evaluations. The Sheffield MPN and CML service have used a sustainable long-term model of utilising the skills of pharmacists and PAs to deliver clinics safely and efficiently. They adhere to BCSH guidelines and follow SOPs. Greater than 50% of patients are now reviewed by non-medical staff in the MPN and CML clinic. This has resulted in improved patient feedback and allows care to be delivered in a clinical governance-approved framework..

### [The changing role of the specialist haemophilia nurse](#)

Source: Nursing Times

Publication date: 9<sup>th</sup> August 2021

Haemophilia nurses coordinate and provide comprehensive care. As models of haemophilia care and management evolve, their role is changing to include more psychosocial care.

### [Development of the consultant clinical scientist role in the UK - Haematology and transfusion medicine](#) Scroll down to P-154

Item Type: Conference Proceeding

Authors: Allard, S. and Ferry, B.

Publication Date: 2021

Publication Details: Vox Sanguinis. Conference: 31st Regional ISBT Congress, ISBT In Focus. Virtual. 116(SUPPL 1) (pp 104-105); Blackwell Publishing Ltd, pp. 104

Abstract: Background: The Higher Specialist Scientific Training (HSST) program in the UK prepares healthcare scientists for the challenging role of Consultant Clinical Scientist within the National Health Service (NHS). Aim(s): This 5-year work based program, underpinned by a part time doctorate, is managed and delivered by the National School of Healthcare Science (NSHCS) and funded by Health Education England (HEE).

Method(s): The HSST training programs for pathology specialities and life sciences are implemented in conjunction with the Royal College of Pathologists with many available curricula including Haematology and Transfusion Science. Other allied curricula include clinical immunology, histocompatibility & immunogenetics, microbiology and virology together with an innovative new course in bio-informatics These programs entail a blend of training for essential skills required in senior scientific roles within the NHS either in hospitals or blood services, including leadership, innovation, research and higher specialist scientific and clinical knowledge. Trainees are required to gain Fellowship of the Royal college of Pathologists through specialist

FRCPath examinations. The funded academic element entails a Professional Doctorate (DClinSci) and a Postgraduate Diploma (PgDIP) in Leadership and Management. In addition, trainees benefit from a 5-year training budget to support costs of attending conferences, professional examinations and research costs. Result(s): There are 58 candidates enrolled on the Scientist Training Programme (STP) for Haematology and Transfusion Science that provides eligibility for entry to HSST training either for the Haematology or for Transfusion Science program. This number will hopefully increase further with release of an updated STP curriculum in 2022. The entry criteria have also been widened to increase eligibility for biomedical scientists to also apply for these HSST training posts. There are currently 11 trainees on the HSST Haematology program and a further 11 on the Transfusion Science program with training for many of the latter strongly supported by the UK Blood Services. The majority of HSST trainees are in service candidates with key NHS service delivery roles in their departments either within hospitals or the UK Blood services complementing the aims of the program with practical experience and opportunities to implement skills learnt whilst on the course. Summary/Conclusions: The trainees on the initial HSST cohorts are now beginning to complete the program and move into Consultant Scientist roles taking on significant clinical and scientific responsibilities with scope for easing the burden in areas where significant workforce gaps have been previously identified. During the COVID19 pandemic, HSST trainees have taken on further roles and responsibilities highlighting their adaptability and resilience which reflects the quality of their training and experience. HSSTs in key pathology specialties are bringing high-level scientific expertise, research skills and leadership training relevant to the practice of Haematology and Transfusion Medicine with benefit to patients across the whole of the NHS. The relatively low number of posts at present suggest this is a highly under-recognised and under-utilised resource with potential for a blended medical and

scientific consultant workforce as providing a flexible solution to staffing and recruitment issues.

[Physician associate \(PA\) led myeloproliferative neoplasm \(MPN\) telephone clinics: Is this the way forward to a revolutionised service?](#) Scroll down to BSH2020-PO-063

Item Type: Conference Proceeding

Authors: Khalifa, M., Bamber, C. and Francis, S.

Publication Date: 2020

Publication Details: British Journal of Haematology. Conference: 60th Annual Scientific Meeting of the British Society for Haematology. Birmingham United Kingdom. 189(Supplement 1) (pp 84); Blackwell Publishing Ltd, pp. 84

Abstract: Myeloproliferative Neoplasms (MPN) are chronic haematological disorders affecting 3890 people per year. The 5-year survival rate is 93.5%, illustrating a high number burden of patients for long term follow up in the outpatient clinic. This provides the challenge of maintaining the quality and sustainability of an ever growing service. The majority of chronic MPN are stable patients with straightforward assessment and management. In early 2012 meetings were initiated and funded by Shire Pharmaceuticals with NHS Commissioners and Haematology Nurse Specialists to develop a tool-kit that will aid the development of MPN Nurse-Led Clinics. This was then adopted by some Haematology departments across the country to reduce the number of stable MPN patients filling the clinics. Telephone clinics emerged as a new way of managing chronic conditions both in primary and secondary care. On the other hand, there is growing interest in physician associates (PAs), what they do, and how they fit with the established roles and systems. At Sheffield Teaching Hospitals we identified the following problems in our MPN service: \* Very large patient numbers and overbooked clinics \* Longer waiting times to see new patients \* Doctors and nurses staffing issues \* Patient dissatisfaction and complaints due to long waiting times \* Delays

in outpatient pharmacy due to the high number of prescriptions \* Crowded waiting rooms and difficult parking Questions raised? \* Do all patients need to be seen face to face? \* Do we have patients who are appropriate for telephone clinics? \* Who is the appropriate healthcare professional to do the clinic? \* Can the patients have their blood tests prior to appointments? \* Can patients pick their prescription on a separate visit? The idea then came to set up a telephone clinic led by our PA to overcome some of the issues highlighted. Criteria for patients selected for the telephone clinic: \* Diagnosis of Essential thrombocythaemia or Polycythaemia Rubra vera who are on hydroxycarbamide or venesections, stable on three monthly follow up. \* Patients with low MPN 10 scores A service evaluation questionnaire was given to 49 patients fitting the criteria above. Results include -81.6% of patients agreed to go on to telephone clinic -16% of patients were unhappy to be switched to telephone clinics due to reasons such as: "too many visits", short term memory loss, language barrier, not always at home -92% of patients had their blood tests done at the hospital with an average waiting time for blood tests of 17 min (range of 5-45 min) -36 % of patients rated the service as good (mainly due to lengthy waiting times) Telephone clinics have been running since November 2019. Patients have their blood tests done at their preferred location either hospital or GP 1 week prior to the appointment and pick up the medications post appointment. Feedback on the telephone clinic experience so far: -100% happy with PA review and got enough time over the telephone -100% confident in the quality of care provided by the PA -100% feel this is an improvement to the service This illustrates a transferrable model of excellent quality, efficiency and cost effective care for patients with a chronic stable condition, led by a physician associate. It also demonstrated the change in MPN management over time and perhaps sheds the light into using MPN10 scores to select the appropriateness of patients being selected for telephone clinic follow up.

[Evaluation of the introduction of physician associates in the haematology department at Guy's and St. Thomas' hospitals](#)

[foundation NHS trust](#) Scroll down to BSH19-PO-027

Item Type: Conference Proceeding

Authors: Sealy, D., Saunders, J., Jannah, O., Streetly, M., Harrison, C., Wrench, D., KesseAdu, R. and Radia, D.

Publication Date: 2019

Publication Details: British Journal of Haematology. Conference: 59th Annual Scientific Meeting of the British Society for Hematology. Glasgow United Kingdom. 185(Supplement 1) (pp 50); Blackwell Publishing Ltd, pp. 50

Abstract: Physician Associates (PAs) are a new, exciting member of the workforce introduced to the NHS in 2007, currently working in a variety of primary and secondary care settings. PAs undergo a 2-year postgraduate intensive generalist medical training to assess, examine and diagnose patients. PAs do not have prescribing rights and are unable to order investigations that cause ionising radiation. In November 2017 the haematology department at Guys and St. Thomas' Hospitals NHS Foundation Trust invested to enhance their workforce and 3 PAs over the year. The PAs are placed within the haematology ward team sickle cell team and haematology day unit. The aim of this survey was to evaluate the impact of their introduction over a 12-month period. An online Survey Monkey questionnaire was distributed to all clinical staff groups within the haematology department in August-September 2018, to assess staff experiences of working with PAs and future potential roles (Table 1: questions asked). This was a small survey with 24 participants; Nurses, Clinical Nurse Specialists, Doctors and Consultants. All participants reported having experience of working with a PA within the department. 87.5% of participants reported having none or very minimal prior knowledge of PAs before their introduction reported a positive experience. Comments included were that PAs were found to be an extremely valuable part of the team, they are a hardworking

group and have a good knowledge base, it has far exceeded my expectations, and PAs are a safe and reliable team member. 1 participant had negative and positive experiences but did not comment further; 1 participant did not have any prior expectations but had a positive experience and 1 participant could not comment as they had only had one interaction with a PA in the department. The main limitation was an inability to prescribe noted by 37.5% participants. Several benefits were identified i.e. a consistent presence enabling continuity in the department/teams. It was highlighted that PAs can conduct ward rounds in the absence of senior cover and support doctors in the diagnosis and management of patients. When asked about what a PA role is within the department, the majority were able to identify a number of competencies: review and examine patients, perform and participate in ward rounds, see patients in outpatient clinics, taking histories, examine patients and develop a management plan, request and interpret blood results, performing procedures such as bone marrows and liaise with the medical team. These comments confirm the benefits of PA roles in a variety of settings such as the haematology day unit, inpatient wards and outpatient clinics. PAs can be embedded in haematology sub-speciality teams e.g. thrombosis; sickle cell and malignant as well as performing procedures e.g. bone marrows, PICC lines. This survey confirms the introduction of PAs in our haematology department has been a significant enhancement of our workforce. PAs support nursing/junior/senior doctors to improve and provide continuity of patient care. This study demonstrates that PAs can make a great impact in a short time within a haematology setting. With current NHS pressures on medical staffing and increase in service PAs are an invaluable addition to the workforce. (Table Presented) .

### New ways of working

#### [Development and implementation of "handshake rounds": An antibiotic stewardship intervention for hospitalized adult patients with hematologic malignancies](#)

Item Type: Journal Article

Authors: Gorsline, Chelsea A.; Miller, Ryan M.; Bobbitt, Laura J.; Satyanarayana, Gowri; Baljevic, Muhamed and Staub, Milner B. O.

Publication Date: 2023

Journal: Antimicrobial Stewardship & Healthcare Epidemiology : ASHE 3(1), pp. e76

Abstract: Objective: To design and implement "handshake rounds" as an antibiotic stewardship intervention to reduce inpatient intravenous (IV) antibiotic use in patients with hematologic malignancies. Design: Quasi-experimental analysis of antibiotic use (AU) and secondary outcomes before and after handshake rounds were implemented. Setting: Quaternary-care, academic medical center. Patients: Hospitalized adults with hematologic malignancies receiving IV antibiotics. Methods: We performed a retrospective review of a preintervention cohort prior to the intervention. A multidisciplinary team developed criteria for de-escalation of antibiotics, logistics of handshake rounds, and outcome metrics. Eligible patients were discussed during scheduled handshake rounds between a hematology-oncology pharmacist and transplant-infectious diseases (TID) physician. Prospective data were collected over 30 days in the postintervention cohort. Due to small sample size, 2:1 matching was used to compare pre- to and postintervention AU. Total AU in days of therapy per 1,000 patient days (DOT/1,000 PD) was reported. Mean AU per patient was analyzed using Wilcoxon rank-sum test. A descriptive analysis of secondary outcomes of pre- and postintervention cohorts was performed. Results: Total AU was substantially lower after the intervention, with 517 DOT/1,000 PD compared to 865 DOT/1,000 PD before the

intervention. There was no statistically significant difference in the mean AU per patient between the 2 cohorts. There was a lower rate of 30-day mortality in the postintervention cohort and rates of ICU admissions were similar. Conclusions: Conducting handshake rounds is a safe and effective way to implement an antibiotic stewardship intervention among high-risk patient population such as those with hematologic malignancies.

#### [Analyzing the impact of systems-based hematologist in the healthcare system at an academic medical center.](#) Abstract only\*

Item Type: Journal Article

Authors: Lim, Ming Y. and Greenberg, Charles S.

Publication Date: Jan ,2019

Journal: Journal of Thrombosis & Thrombolysis 47(1), pp. 109-112

Abstract: Over the next decade, there is a predicted shortage of nonmalignant hematologist to maintain the workforce in the United States. To address this, the American Society of Hematology described the creation of the healthcare systems-based hematologist (SBH). The role of SBH has the potential to provide high-value, cost-conscious care to the healthcare system. In 2011, an Anticoagulation and Bleeding Management Medical Directorship position for a SBH was created at our healthcare system. We described our 6-year experience as SBH at a 750-bed tertiary academic medical center to improve clinical outcomes while reducing costs. Via four different initiatives, we were able to provide high-value, cost-conscious care as SBH by reducing cost of heparin-induced thrombocytopenia management, optimizing blood product utilization using goal-directed algorithms, reducing inappropriate thrombophilia testing and improving inferior vena cava filter retrieval rates. To ensure continuing success as a SBH, business plans need to include education, enforcement, monitoring, feedback, validation of safety and outcomes and a shared vision among leadership.

### [Evaluating a pharmacist prescriber role in haematology and oncology clinics.](#) Scroll down

Author(s): Duncan N

Type: Conference Proceeding

Source: Journal of Oncology Pharmacy Practice 23(8-suppl)25

Publication date: 2017

In June 2016, as part of a 12-month pilot of a consultant pharmacist post, the post-holder started working in four different outpatient clinics in haematology and oncology at University Hospitals Birmingham NHS Foundation Trust, reviewing patients (who would previously have been seen by a doctor) and prescribing relevant medication, including chemotherapy.

The aim of this piece of work was to evaluate the impact of this service development, focusing on activity data and levels of satisfaction with the service amongst patients and colleagues.

Methods: A Microsoft Excel® spreadsheet was used to record all clinic consultations with the pharmacist. A 10 item questionnaire was designed, in collaboration with the Trust's patient experience department, and sent to 151 consecutive patients who had been seen in clinic by the pharmacist from 1 November 2016 onwards. A second questionnaire was designed and distributed to staff working alongside the pharmacist in the four outpatient clinics.

Results: After 12 months, 1014 clinic consultations with the pharmacist had taken place (mean of 23 consultations per week after adjusting for annual leave). The breakdown per clinic was as follows: lymphoma clinic 225 (22%), CML/MDS clinic 254 (25%), post-transplant clinic 337 (33%), prostate cancer clinic 198 (20%). 56% of consultations involved prescribing a systemic anticancer therapy, broken down into the following categories: parenteral chemotherapy – 245 prescriptions, oral tyrosine kinase inhibitors – 213 prescriptions, hormonal therapies – 109 prescriptions.

A total of 76 completed patient questionnaires were received (50% response rate). Key findings are summarised below:

- 59% of respondents felt that waiting times in clinic were shorter when they saw the pharmacist (this figure was 81% for the CML/MDS clinic)
  - 100% of respondents stated that the pharmacist spent adequate time with them
  - 100% of respondents stated that they had confidence and trust in the pharmacist
  - When asked to evaluate the consultation with the pharmacist, 65% of respondents rated it as “excellent”, 28% as “very good” and 5% as “good”.
  - 86% of respondents stated that they would definitely be happy to see the pharmacist when they came to clinic again. Only one respondent stated that they would not want to see the pharmacist on future visits.
- Fifteen colleagues responded to the staff survey (eight doctors, seven nurses/HCAs) – a 62% response rate. Ninety-three per cent of respondents felt that the presence of the pharmacist reduced clinic waiting times. One hundred per cent of respondents stated that they had complete confidence in having the pharmacist seeing patients in clinic. All respondents rated the clinic service provided by the pharmacist as either excellent (67%) or very good (33%). Conclusions: The presence of a consultant pharmacist in four different outpatient clinics has reduced clinician workload, been extremely well received by patients and colleagues and has been perceived to have a positive impact on clinic waiting times.

### [The role of hematologists in a changing United States health care system](#)

Author(s): Wallace et al.

Source: Blood 125(16) pp. 2467-2470

Publication date: 2015

Major and ongoing changes in health care financing and delivery in the United States have altered opportunities and incentives for new physicians to specialize in nonmalignant hematology. At the

same time, effective clinical tools and strategies continue to rapidly emerge. Consequently, there is an imperative to foster workforce innovation to ensure sustainable professional roles for hematologists, reliable patient access to optimal hematology expertise, and optimal patient outcomes. The American Society of Hematology is building a collection of case studies to guide the creation of institutionally supported systems-based clinical hematologist positions that predominantly focus on nonmalignant hematology. These roles offer a mix of guidance regarding patient management and the appropriate use and stewardship of clinical resources, as well as development of new testing procedures and protocols.

### Workforce

#### [Professional Challenges for United States Hematology/Oncology Trainees during COVID-19](#)

Abstract only\*

Item Type: Journal Article

Authors: Banerjee, Rahul;Kareff, Samuel A.;Leyfman, Yan;Dhawan, Natasha;Hammons, Lindsay R.;Desai, Aakash;Tsang, Mazie;Velazquez, Ana I. and Nizam, Amanda  
Publication Date: Jul 2023

Journal: Cancer Investigation 41(6), pp. 539-547

Abstract: COVID-19 has been devastating for patients with cancer. In this commentary, we chronicle the pandemic's downstream impacts on United States hematology/oncology trainees in terms of professional development and career advancement. These include loss of access to clinical electives and protocol workshops, delays in research approval and execution, mentor shortages due to academic burnout, and obstacles with career transitions (most notably the post-fellowship job search). While certain silver linings from the pandemic have undoubtedly emerged, continued progress against COVID-19 will be essential to fully overcome the

professional challenges it has created for the future hematology/oncology workforce.

#### [The American Society of Pediatric Hematology Oncology workforce, productivity, and fellowship assessment: Current state of the workforce](#)

Item Type: Journal Article

Authors: Hastings, Caroline;Borinstein, Scott C.;Bergsagel, D. John;Hagstrom, J. Nathan;Hooker, Ryan;Nugent, Diane J. and Hudspeth, Michelle

Publication Date: 2023

Journal: Pediatric Blood & Cancer 70(5), pp. e30221

Abstract: The American Society of Pediatric Hematology Oncology conducted follow-up workforce surveys in 2017 and 2021 as well as a Pediatric Hematology Oncology Fellowship Program Directors Survey in 2020 to provide an updated review of the current workforce. We provide a comprehensive review and analysis of these results with the goal to provide better understanding of the current landscape in pediatric hematology oncology.

#### [Trends and factors affecting the US adult hematology workforce: A mixed methods study.](#)

Item Type: Journal Article

Authors: Sharma, D.;Wallace, N.;Levinsohn, E. A.;Marshall, A. L.;Kayoumi, K.;Madero, J.;Homer, M.;Reynolds, R.;Hafler, J.;Podoltsev, N. A. and Lee, A. I.

Publication Date: 2019

Journal: Blood Advances 3(22), pp. 3550-3561

Abstract: The current demand for adult hematologists in the United States is projected to exceed the existing supply. However, no national study has systematically evaluated factors affecting the adult hematology workforce. In collaboration with the American Society of Hematology (ASH), we performed a mixed methods study consisting of surveys from the annual ASH

In-Service Exam for adult hematology/oncology fellows from 2010 to 2016 (8789 participants); interviews with graduating or recently graduated adult hematology/oncology fellows in a single training program (8 participants); and 3 separate focus groups for hematology/ oncology fellowship program directors (12 participants), fellows (12 participants), and clinicians (10 participants) at the 2016 ASH annual meeting. In surveys, the majority of fellows favored careers combining hematology and oncology, with more fellows identifying oncology, rather than hematology, as their primary focus. In interviews with advanced-year fellows, mentorship emerged as the single most important career determinant, with mentorship opportunities arising serendipitously, and oncology faculty perceived as having greater availability for mentorship than hematology faculty. In focus group discussions, hematology, particularly benign hematology, was viewed as having poorer income potential, research funding, job availability, and job security than oncology. Focus group participants invariably agreed that the demand for clinical care in hematology, particularly benign hematology, exceeded the current workforce supply. Single-subspecialty fellowship training in hematology and the creation of new clinical care models were offered as potential solutions to these workforce problems. As a next step, ASH is conducting a national, longitudinal study of the adult hematology workforce to improve recruitment and retention in the field. Copyright © 2019 by The American Society of Hematology.

[The American Society of Pediatric Hematology/Oncology workforce assessment: Part 1-Current state of the workforce.](#)

Abstract only\*

Item Type: Journal Article

Authors: Hord, Jeffrey;Shah, Mona;Badawy, Sherif M.;Matthews, Dana;Hilden, Joanne;Wayne, Alan S.;Salsberg, Edward;Leavey, Patrick S. and American Society of Pediatric Hematology/Oncology Workforce Advisory Taskforce

Publication Date: Feb ,2018

Journal: Pediatric Blood & Cancer 65(2)

Abstract: The American Society of Pediatric Hematology/Oncology (ASPHO) recognized recent changes in medical practice and the potential impact on pediatric hematology-oncology (PHO) workforce. ASPHO surveyed society members and PHO Division Directors between 2010 and 2016 and studied PHO workforce data collected by the American Board of Pediatrics and the American Medical Association to characterize the current state of the PHO workforce. The analysis of this information has led to a comprehensive description of PHO physicians, professional activities, and workplace. It is important to continue to collect data to identify changes in composition and needs of the PHO workforce. Copyright © 2017 Wiley Periodicals, Inc.

[The American Society of Pediatric Hematology/Oncology workforce assessment: Part 2-Implications for fellowship training.](#)

Abstract only\*

Item Type: Journal Article

Authors: Leavey, P. J.;Hilden, J. M.;Matthews, D.;Dandoy, C.;Badawy, S. M.;Shah, M.;Wayne, A. S.;Hord, J. and American Society of Pediatric Hematology/Oncology Workforce Advisory Taskforce

Publication Date: Feb ,2018

Journal: Pediatric Blood & Cancer 65(2)

Abstract: The American Society of Pediatric Hematology/Oncology (ASPHO) solicited information from division directors and fellowship training program directors to capture pediatric hematology/oncology (PHO) specific workforce data of 6 years (2010-2015), in response to an increase in graduating fellows during that time. Observations included a stable number of physicians and advanced practice providers (APPs) in clinical PHO, an increased proportion of APPs hired compared to physicians, and an increase in training-level first

career positions. Rapid changes in the models of PHO care have significant implications to current and future trainees and require continued analysis to understand the evolving discipline of PHO. Copyright © 2017 Wiley Periodicals, Inc.

### [Planning for the future workforce in hematology research.](#)

Item Type: Journal Article

Authors: Hoots, W. K.;Abkowitz, J. L.;Coller, B. S. and DiMichele, D. M.

Publication Date: 2015

Journal: Blood 125(18), pp. 2745-2752

Abstract: The medical research and training enterprise in the United States is complex in both its scope and implementation. Accordingly, adaptations to the associated workforce needs present particular challenges. This is particularly true for maintaining or expanding national needs for physician-scientists where training resource requirements and competitive transitional milestones are substantial. For the individual, these phenomena can produce financial burden, prolong the career trajectory, and significantly influence career pathways. Hence, when national data suggest that future medical research needs in a scientific area may be met in a less than optimal manner, strategies to expand research and training capacity must follow. This article defines such an exigency for research and training in nonneoplastic hematology and presents potential strategies for addressing these critical workforce needs. The considerations presented herein reflect a summary of the discussions presented at 2 workshops cosponsored by the National Heart, Lung, and Blood Institute and the American Society of Hematology. Copyright © 2015, American Society of Hematology. All rights reserved.

## Multidisciplinary teams

### [Patient satisfaction with quality of care from a new multidisciplinary thrombosis service](#)

Item Type: Conference Proceeding

Authors: Young, S., Bonsu, K.O., Lee, T., Nguyen, H.V. and Chitsike, R.

Publication Date: 2021

Publication Details: Research and Practice in Thrombosis and Haemostasis. Conference: 2021 Congress of the International Society of Thrombosis and Haemostasis, ISTH 2021. Virtual. 5(SUPPL 2) (no pagination); Wiley-Blackwell Publishing Ltd, Abstract: Background : We opened a multidisciplinary Adult Outpatient Thrombosis Service (TS) in 2017 in a Canadian health region. The TS is a comprehensive thrombosis and anticoagulation management program with unique, interrelated clinics. The TS is staffed by Pharmacists, a Thrombosis Physician/Hematologist, and Clerical staff. Aims : This study assessed patient satisfaction with the TS. Methods : We conducted a cross-sectional mailed survey of eligible patients ( n = 1058) attending the TS between 2017 and 2019. Patient satisfaction was measured using the validated, seven-item Short Assessment of Patient Satisfaction (SAPS). The SAPS assesses core satisfaction domains of treatment satisfaction, explanation of treatment results, clinician care, participation in decision-making, respect by the clinician, time with the clinician, and satisfaction with clinic care, and utilizes 5-point responses (0-4), with the range from 0 (extremely dissatisfied) to 28 (extremely satisfied). Results : Of the 563 surveys returned, nine were excluded for missing SAPS items. Most respondents (87%) were 50 or more years, with 51% male. Two-thirds (67%) had post-secondary education. About half (54%) were taking a direct oral anticoagulant, 19% taking warfarin, and 19% no anticoagulant. Almost half (47%) had taken the anticoagulant for one to five years, 28% less than one year, and 25% greater than five years.

The mean SAPS score was 22.1 (SD 4.1, range 8 to 28). Multivariate analysis showed patients with post-secondary education were more satisfied with the TS (beta = 16.153, P = 0.024), and patients taking warfarin were less satisfied (beta = -15.832, P = 0.039). The SAPS tool demonstrated high internal consistency (Composite reliability tests 0.86). Of the 40% that provided written responses to one open-ended question, most described positive experiences and perceptions of the TS. Content analysis revealed four major themes: service organization and coordination of care, patient-provider relationship, pharmacist-led medication therapy management, and patient-centered delivery and communication of health information. Conclusions : The majority of respondents were satisfied with the multidisciplinary TS.

### [The role of the pharmacist in a multidisciplinary long-term follow-up clinic for survivors of allogeneic hematopoietic cell transplant](#)

Abstract only

Item Type: Conference Proceeding

Authors: Blosser, N., Jupp, J., Hynes, K., De Leon, L. and Leyshon, C.

Publication Date: 2020

Publication Details: Journal of Oncology Pharmacy Practice.

Conference: Canadian Association of Pharmacy in Oncology Conference, CAPhO 2020. Toronto, ON Canada. 26(4 SUPPL)

(pp 12); SAGE Publications Ltd, pp. 12

Abstract: Objective/Purpose: The risks of late morbidity and mortality after allogeneic hematopoietic cell transplant (allo-HCT) are extensive but may be modifiable with comprehensive survivorship care. A multidisciplinary survivorship clinic for allo-HCT recipients was established at our institution in October 2018. Clinic staff consisted of a hematologist/ nurse practitioner, nurse, and pharmacist. At patient's initial visit, pharmacists were responsible for completing medication reconciliation, Framingham risk score assessment, review of vaccination

history, fracture risk assessments, and identifying cumulative anthracycline doses. Study Design/Methods: Data was prospectively collected from 15 October 2018 to 7 October 2019. Patient characteristics and pharmacist interventions were quantified and described. Results/Key Findings: Over the data collection period, 150 patients were seen for an initial visit. Sixty-nine patients were intermediate to high risk for a cardiovascular event by Framingham with only 29 (42%) on statin therapy. A total of 36 and 48 interventions were made for bone health and vaccinations requirements, respectively. Twenty-six patients received cumulative anthracycline doses equivalent to  $\geq 300\text{mg/m}^2$  of doxorubicin, prompting additional review of cardiac history and risk factors. Conclusion/Recommendations: Clinical pharmacists at a survivorship clinic provided assessment and screening for post-allo-HCT patients and had a role in providing recommendations for primary and secondary prevention strategies.

### [Effectiveness of the multidisciplinary team model in treating lymphoma](#) Abstract only\*

Item Type: Conference Proceeding

Authors: Wu, P.H., Chang, S.C., Huang, W.T. and Tsao, C.J.

Publication Date: 2017

Publication Details: Cancer Nursing. Conference: International Conference on Cancer Nursing, ICCN 2017. Anaheim, CA United States. 40(6 Supplement 1) (pp E61); Lippincott Williams and Wilkins,

Abstract: Purpose: The aim of this study was to investigate the role of weekly lymphoma MDT in patient management and treatment modifications. Background & Significance: The multidisciplinary team (MDT) model involves multiple medical professionals to provide integrated medical care. Lymphoma is the cancer with the highest prevalence in Taiwan. Conceptual or Clinical Model/Philosophic or Theoretic Framework: The Multidisciplinary Team Model Methods & Analysis: From January

2010 to December 2015, 220 patients (Stage 1 to Stage 4 lymphoma) were prospectively presented before a MDT. Presentation included clinical data, imaging and pathological review followed by prospective treatment plan formulated by the physician group. If postoperative presentation, final histopathology of the tumor and adjuvant treatment relevant to each patient was discussed. MDT was performed via teleconference, including video projection of pathology slides and images. Feed-back evaluations were completed and returned to the tumor registry for consistent weekly improvement of lymphoma. Findings & Implications: 56 patients (25.5%) had modified management after being presented at lymphoma, 60.7% (n = 34) chemotherapy, 16.1% (n = 9) radiation, 7.1% (n = 4) both chemotherapy and radiation treatment and 16.1% (n = 9) imaging changes. Majority of changes were made to patients with Stage II (55.6%) followed by Stage IV (44.4%) lymphoma. Discussion(s): MDT presents a significant impact on patient management and serves as a model for best practice in cancer care. The results of this study may be valuable for medical institutions promoting the MDT model in lymphoma care, for improving cancer patient care. Consultative discussion of each case permits every team member to be acutely aware of the patient's condition, contribute to treatment plan and permit a harmonious and cooperative team approach while assuring best treatment for the patient.

### Healthcare scientists

[Education and training of healthcare scientists in haematology - Fit for the future?](#) Scroll down to BSH2020-PO-028

Item Type: Conference Proceeding

Authors: O'Connor, S.

Publication Date: 2020

Publication Details: British Journal of Haematology. Conference: 60th Annual Scientific Meeting of the British Society for

Haematology. Birmingham United Kingdom. 189(Supplement 1) (pp 63-64); Blackwell Publishing Ltd, pp. 63

Abstract: Over the last 60 years Haematology & Transfusion Science laboratories have undergone major changes. However, the current service is a mishmash of poorly connected specialist and general laboratories. The historical evolution of the NHS laboratory service has resulted in a lack of concordance in training and career progression for Healthcare Scientists (HCS) nationally within Haematology & Transfusion Science. This results in the loss of HCS from the workforce and stagnation and under use of HCS with potential to become specialists of the future. HCS includes Biomedical Scientists (BMS) and Clinical Scientists (CS). Haematology & Transfusion Science historically employs BMS with CS confined to specialised laboratories. This matters as there is an established route to Consultant CS but scientific career progression as a BMS is difficult with able BMS often 'lost' to senior laboratory management roles. I hoped the 2010 education and training strategy for HCS, 'Modernising Scientific Careers' (MSC) would remove these artificial barriers by introducing a national curriculum and harmonising career pathways. However, the Scientist Training Programme (STP) (National School of Healthcare Science (NSHCS)), a highly competitive post-graduate programme that attracts the brightest remains under-utilised in Haematology. There are perceptions that there is no role for CS in general haematology and confusion about how to use these knowledgeable CS. At a time when there is a workforce shortfall of medical Haematology & Transfusion Consultants there should be an expansion of CS undergoing Higher Specialist Training (HSST) with clear recognition of their role in the profession. HSST is a doctorate level programme and is jointly managed by the NSHCS and the Royal College of Pathologists (RCPATH). HCS training is delivered by a 'confusion' of routes. BMS training (Institute of Biomedical Science (IBMS)) has basic (BSc) and advanced level (MSc) training with assessment based on a portfolio of evidence

and viva which is subjective. CS training (NSHCS) is MSc level, and is similar to advanced BMS training. CS follow a national curriculum and have an objective structured final assessment (OSFA). An apprenticeship route is under development that leads to HCPC registration as a CS - assessment methods are uncertain. HCS wishing to progress to Consultant grade must be CS. These highly trained BMS must undertake 'Equivalence' to the national CS STP under the remit of the Academy of Healthcare Science (AHCS) or the IBMS who also offer an experiential route. This is a significant burden of work for the BMS who generally has to navigate the system alone with acceptance of equivalence status subjective. In conclusion, if we want a Haematology & Transfusion Science scientific workforce fit for the next 60 years we need to rethink our approach to the education and training of HCS. We cannot risk this valuable human resource because of artificial barriers and historical division. Education and training of HCS routes must be simplified. There should be agreed national curricula and objective assessment that all routes share. Existing professional bodies need to co-operate with joined up approaches to objective assessment and clear benchmarks for career progression. This will generate a larger pool of eligible staff for HSST which would ameliorate some of the medical workforce issues. The abstract contains the personal views of the author (SO'C).

### [Challenges facing the benign hematology physician-scientist workforce: identifying issues of recruitment and retention.](#)

Abstract only\*

Item Type: Journal Article

Authors: Soffer, E. and Hoots, W. K.

Publication Date: 2018

Journal: Blood Advances 2(3), pp. 308

Research conducted by investigators in the field of benign hematology has been and continues to be impactful, as basic

hematologic scientific discovery has been readily translated to health research. Physician-scientists are critical to the advancement of health sciences, but the size and demographic composition of the physician-scientist workforce are stagnant and at risk for decline. Attracting the next generation of physicians to careers in blood science is essential to the field's survival, but there are many barriers to successful recruitment and retention of trainees. A recently convened working group identified many key points for intervention, including early, meaningful exposure to blood sciences in medical school; developing partnerships with physicians and scientists trained in other fields; improving diversity; offering protected research time during residency; and enhancing the Loan Repayment Program. By addressing challenges facing hematology and evaluating program success, the Division of Blood Diseases and Resources of the National Institutes of Health, National Heart, Lung, and Blood Institute and the blood sciences community look forward to creating a model from which other rare subspecialties and the general clinical population can draw to address their workforce concerns.

## Diversity and Inclusion

### [Career paths and workforce diversity in hematology: A cross-sectional study of a 35-year alumni cohort from an academic residency program in Brazil](#)

Item Type: Journal Article

Authors: Barbosa, Ayla Cristina Nobrega;Duarte, Bruno Kosa Lino and De Paula, Erich Vinicius

Publication Date: Jul 2023

Journal: Hematology Transfusion & Cell Therapy 45(Suppl 2), pp. S76-S84

Abstract: INTRODUCTION: Although not mandatory, medical residency has become a sine qua non condition for practicing in most medical specialties in Brazil. Residency programs are

hosted mainly by university accredited academic centers and hospitals in the national public healthcare system, under guidance and accreditation by a national commission. Despite the importance of these programs for the development of the hematology workforce, few studies have addressed their characteristics and impact on society. **METHODS:** We performed a comprehensive cross-sectional survey of a 35-year alumni cohort from a hematology academic residency program in Brazil. **RESULTS:** In total, 86/98 (87.8%) responded to the survey. The mean age at residency completion was 28.5 years, 60.5% of the alumni were women and sixty-four (74.4%) self-declared their skin color as white. Higher rates of parental education attainment and low rates of trainee financial dependence were observed and these patterns were stable over time. While the proportion of trainees from other states increased steadily, the number of hematologists practicing in other states remained stable. Approximately half of the alumni worked both in the private and public sectors, mainly in malignant hematology and in outpatient clinics. Twenty-five percent of the alumni reported prior leadership and teaching positions, mainly as directors of transfusion services. **CONCLUSION:** Our results provide data that can be potentially useful for policymakers and curricular development in the planning of strategies concerning the future workforce of hematologists.

### [Trainee and workforce diversity in hematology and oncology: Ten years later what has changed?](#)

Item Type: Conference Proceeding

Authors: Velazquez Manana, A.I., Leibrandt, R. and Duma, N.  
Publication Date: 2020

Publication Details: Journal of Clinical Oncology. Conference: 2020 Annual Meeting of the American Society of Clinical Oncology, ASCO 2020. Chicago, IL United States. 38(15) (no pagination); American Society of Clinical Oncology,

**Abstract:** Background: The diversification of the healthcare workforce has been identified as a strategy to address health disparities and increase patient-physician trust. A prior review of diversity among oncology fellows up to 2010, showed an increase in female representation over 17 years, but no change in underrepresented minorities (URM). We aim to assess the changes in hematology and oncology (HO) fellowship diversity over the last decade and how this compares to our workforce. **Method(s):** Publicly available registries were used to assess differences among female and URM HO fellows, HO fellowship applicants, internal medicine (IM) academic faculty, IM residents, medical school graduates (MSG), and the US population in 2019. These were compared to the 2016 HO practicing physicians. Changes in URM and female HO fellow representation from 2009 to 2019 were assessed. Data was analyzed using binomial tests and simple linear regression models. **Result(s):** Female representation among HO fellows (43.8%) was increased when compared with HO practicing physicians (+11.8%, p Result(s): Female representation among HO fellows (43.8%) was increased when compared with HO practicing physicians (+11.8%, p Result(s): Female representation among HO fellows (43.8%) was increased when compared with HO practicing physicians (+11.8%, p Result(s): Female representation among HO fellows (43.8%) was increased when compared with HO practicing physicians (+11.8%, p Result(s): Female representation among HO fellows (43.8%) was increased when compared with HO practicing physicians (+11.8%, p Result(s): Female representation among HO fellows (43.8%) was increased when compared with HO practicing physicians (+11.8%, p Conclusion(s): The current state of diversity in HO workforce still requires attention. Despite ongoing efforts, females, AA, and Hispanics continue to be underrepresented. The decreasing trend in Hispanic representation and clear differences in diversity between HO fellowships and IM residencies calls for action among fellowship

programs and national societies to increase URM engagement and recruitment.

[Female Representation in the Academic Oncology Physician Workforce: Radiation Oncology Losing Ground to Hematology Oncology](#) Abstract only\*

Item Type: Journal Article

Authors: Ahmed, Awad A.;Hwang, Wei-Ting;Holliday, Emma B.;Chapman, Christina H.;Jagsi, Reshma;Thomas, Charles R. Jr and Deville, Curtiland Jr

Publication Date: 05 01 ,2017

Journal: International Journal of Radiation Oncology, Biology, Physics 98(1), pp. 31-33

Abstract: PURPOSE: Our purpose was to assess comparative female representation trends for trainees and full-time faculty in the academic radiation oncology and hematology oncology workforce of the United States over 3 decades. METHODS AND MATERIALS: Simple linear regression models with year as the independent variable were used to determine changes in female percentage representation per year and associated 95% confidence intervals for trainees and full-time faculty in each specialty. RESULTS: Peak representation was 48.4% (801/1654) in 2013 for hematology oncology trainees, 39.0% (585/1499) in 2014 for hematology oncology full-time faculty, 34.8% (202/581) in 2007 for radiation oncology trainees, and 27.7% (439/1584) in 2015 for radiation oncology full-time faculty. Representation significantly increased for trainees and full-time faculty in both specialties at approximately 1% per year for hematology oncology trainees and full-time faculty and 0.3% per year for radiation oncology trainees and full-time faculty. Compared with radiation oncology, the rates were 3.84 and 2.94 times greater for hematology oncology trainees and full-time faculty, respectively. CONCLUSION: Despite increased female trainee and full-time faculty representation over time in the academic oncology physician workforce, radiation oncology is

lagging behind hematology oncology, with trainees declining in recent years in radiation oncology; this suggests a de facto ceiling in female representation. Whether such issues as delayed or insufficient exposure, inadequate mentorship, or specialty competitiveness disparately affect female representation in radiation oncology compared to hematology oncology are underexplored and require continued investigation to ensure that the future oncologic physician workforce reflects the diversity of the population it serves. Copyright © 2017 Elsevier Inc. All rights reserved.

[Enhancing diversity in the hematology biomedical research workforce: A mentoring program to improve the odds of career success for early stage investigators.](#)

Item Type: Journal Article

Authors: Pace, B. S.;Makala, L. H.;Sarkar, R.;Liu, L.;Takezaki, M.;Mohandas, N.;Dixon, G.;Werner, E. M.;Jeffe, D. B.;Rice, T. K.;Maihle, N. J. and Gonzalez, J.

Publication Date: 2017

Journal: American Journal of Hematology 92(12), pp. 1275-1279

The necessity for greater racial and ethnic diversity in the US biomedical research workforce is evident, however many challenges must be overcome to achieve this formidable goal. Historically, underrepresented minority (URM) groups are the most rapidly growing segment of the US population and there is an urgent need to ensure that scientific talent among these groups is recognized, mentored and actively supported. For example, in 2010, Hispanics/Latinos, Blacks/African Americans, and American Indians/Alaskan Natives represented 29.8% of the US population, yet only 4.8% of National Institutes of Health (NIH) research project grants (RPG) were awarded to URM principal investigators.<sup>1</sup> A study by Ginther et al. revealed that PhD-trained African American applicants are 13.2% less likely than White applicants to be awarded RPG.<sup>2</sup> While the NIH is the largest research funding agency in the world, it has not achieved

proportional representation of URM investigators in the US biomedical research workforce. Likewise, the imperative to increase diversity is justified by inequities in access to health care and health outcomes.<sup>3</sup>

### Technology

[Applications of artificial intelligence in clinical management, research, and health administration: imaging perspectives with a focus on hemophilia](#) Abstract only\*

Item Type: Journal Article

Authors: Doria, Andrea S.

Publication Date: 2023

Journal: Expert Review of Hematology 16(6), pp. 391-405

Abstract: INTRODUCTION: Joints of persons with hemophilia are frequently affected by repetitive hemarthrosis. In this paper, concepts, perks, and quirks of the use of artificial intelligence (AI), machine learning (ML), and deep learning are reviewed within clinical and research contexts of hemophilia and other blood-induced disorders' patient care, targeted to the imaging diagnosis of hemophilic joints, under the perspective of different stakeholders (radiologists, hematologists, nurses, physiotherapists, technologists, researchers, managers, and patients/caregivers). AREAS COVERED: Rubrics that determine the suitability of the utilization of AI in blood-induced disorders' patient care, including diagnosis and follow-up of patients are discussed, focusing on features in which AI can replace or augment the role of radiology in the clinical management and in research of patients. Insights on features in the design and conduct of AI projects in which the human intervention remains critical are provided. EXPERT OPINION: The author discusses research concepts in radiogenomics, and challenges for the utilization of AI in different healthcare fields such as patient safety, data sharing and privacy regulations, workforce education and future jobs' shortage. Finally, the author proposes

alternatives and potential solutions to mitigate challenges in successfully deploying ML algorithms into clinical practice.

[Culture intelligent workflow, structure, and steps](#)

Item Type: Journal Article

Authors: Henry, James Andrew

Publication Date: 2023

Journal: Frontiers in Artificial Intelligence 6, pp. 985469

Abstract: Introduction: Technologies abstract intelligence and provide predictor and precision insight in workflows that manage disorders, similar to cardiology and hematological disease.

Positive perceptions of Artificial Intelligence (AI) that support Machine Learning (ML) and Deep Learning (DL) manage transformations with a safe system that improves wellbeing. In sections, workflow introduces an eXamination (X = AI) as an end-to-end structure to culture workstreams in a step-by-step design to manage populace health in a governed system.

Method: To better healthcare outcomes, communities and personnel benefit from an explanation and an interpretive that elucidates workflow for citizens or practitioners to comprehend personalized platforms. Therefore, the author undertook structure and practice reviews and appraised perspectives that impact the management of AI in public health and medicine.

Results: Figures for the management of AI workflow illustrate and inform on the model, structure, culture, assurance, process steps, values, and governance required for abstract insights in public health and medicine. The papers' end-to-end structure with explanans in a work culture interprets the step-by-step designs that manage the success of AI. Personalized care graphics offer an explanandum in the management of biological analytic value. Discussion: Healthcare leadership collaboratives plan population health with an upstream, workplace and workstream format. Secure workflow and safety wellbeing system requirements prove that genomics and AI improve medicine. Therefore, the paper discusses group understanding

of current practice, ethics, policy, and legality. Conclusion: "Culture, intelligent workflow, structure, and steps" improve wellbeing with personalized care and align a percept for national opportunities, regional control, and local needs. Personalized practice cultures support analytic systems to describe, predict, precision, and prescript medicine in population health management eXaminations.

### [Hematology and Machine Learning](#) Abstract only\*

Item Type: Journal Article

Authors: Obstfeld, Amrom E.

Publication Date: 2023

Journal: The Journal of Applied Laboratory Medicine 8(1), pp. 129-144

Abstract: BACKGROUND: Substantial improvements in computational power and machine learning (ML) algorithm development have vastly increased the limits of what autonomous machines are capable of. Since its beginnings in the 19th century, laboratory hematology has absorbed waves of progress yielding improvements in both of accuracy and efficiency. The next wave of change in laboratory hematology will be the result of the ML revolution that has already touched many corners of healthcare and society at large. CONTENT: This review will describe the manifestations of ML and artificial intelligence (AI) already utilized in the clinical hematology laboratory. This will be followed by a topical summary of the innovative and investigational applications of this technology in each of the major subdomains within laboratory hematology. SUMMARY: Application of this technology to laboratory hematology will increase standardization and efficiency by reducing laboratory staff involvement in automatable activities. This will unleash time and resources for focus on more meaningful activities such as the complexities of patient care, research and development, and process improvement.

### [Pediatric Hematology and Oncology Center Integrated by Telemedicine: Experience, Challenges and First Results of a Cross Border Network](#)

Item Type: Journal Article

Authors: Troschke, Tabea;Wieczorek, Aleksandra;Kulinski, Konrad;Ociepa, Tomasz;Zielezinska, Karolina;Lode, Holger N. and Urasinski, Tomasz

Publication Date: May 15 2023

Journal: Healthcare 11(10)

Abstract: This article reports on the development, implementation and management of a German-Polish telemedicine network in the field of pediatric oncology and hematology in the Euroregion Pomerania. The achievements and challenges of joint medical case reviews involving patients and their care givers, as well as cross-border education activities for physicians, students and nursing staff, are presented. In addition to a progress report, the results of an evaluation of the participants and teachers, likewise the measurement of knowledge growth, are given.

### [Impact of a pharmacist-led telehealth oral chemotherapy clinic.](#)

Abstract only\*

Item Type: Journal Article

Authors: Mathur, A. D.;Maiers, T. A. and Andrick, B. J.

Publication Date: 2022

Journal: American Journal of Health-System Pharmacy 79(11), pp. 896-903

Abstract: Purpose: Oral oncolytics come with significant concerns of noncompliance due to complex regimens, adverse effects, and high overall costs. The Geisinger Oral Chemotherapy Clinic is a fully telephone-based medication therapy disease management (MTDM) program designed to integrate pharmacists as advanced practitioners in hematology/oncology clinics for comanagement of oral chemotherapy. Summary: To date, Geisinger has 11 oncology

clinics and 3 full-time pharmacists designated to the management of oral chemotherapy. Pharmacists receive referrals for comanagement of patients starting oral oncolytics. Under a collaborative practice agreement, they can order laboratory tests as well as supportive care medications and refills. Pharmacists review planned therapies, perform medication reconciliations, and provide medication counseling. Once treatment has been initiated, pharmacists contact patients for laboratory and toxicity assessments. The clinic incorporates the use of customized smart data elements within the electronic medical record to collect data regarding pharmacist interventions and time allocations in the clinic. As of March 31, 2021, the clinic was actively following approximately 1,100 patients, resulting in an average of 80 to 90 encounters per day for new referrals, chemotherapy education, and laboratory and toxicity assessments. Approximately 2,113 patients were followed from December 1, 2019, to March 31, 2021, with 46,929 interventions documented. Conclusion(s): By obtaining provider buy-in for pharmacy services, acquiring enough personnel resources to meet the needs of the growing patient population and respective therapies, and proper utilization of technology, the program has thrived, allowing for increased provider and patient satisfaction. Future goals include expanding collection of pharmacist intervention metrics and analysis of patient perceptions of services provided by the clinic. Copyright © 2022 American Society of Health-System Pharmacists 2022. All rights reserved.

### [Feasibility of Wearable-Based Remote Monitoring in Patients During Intensive Treatment for Aggressive Hematologic Malignancies.](#)

Item Type: Journal Article

Authors: Jacobsen, Malte;Rottmann, Pauline;Dembek, Till A.;Gerke, Anna L.;Gholamipoor, Rahil;Blum, Christopher;Hartmann, Niels-Ulrik;Verket, Marlo;Kaivers, Jennifer;Jager, Paul;Baermann, Ben-Niklas;Heinemann,

Lutz;Marx, Nikolaus;Muller-Wieland, Dirk;Kollmann, Markus;Seyfarth, Melchior and Kobbe, Guido

Publication Date: 2022

Journal: JCO Clinical Cancer Informatics 6, pp. e2100126

Abstract: PURPOSE: Intensive treatment protocols for aggressive hematologic malignancies harbor a high risk of serious clinical complications, such as infections. Current techniques of monitoring vital signs to detect such complications are cumbersome and often fail to diagnose them early. Continuous monitoring of vital signs and physical activity by means of an upper arm medical wearable allowing 24/7 streaming of such parameters may be a promising alternative. METHODS: This single-arm, single-center observational trial evaluated symptom-related patient-reported outcomes and feasibility of a wearable-based remote patient monitoring. All wearable data were reviewed retrospectively and were not available to the patient or clinical staff. A total of 79 patients (54 inpatients and 25 outpatients) participated and received standard-of-care treatment for a hematologic malignancy. In addition, the wearable was continuously worn and self-managed by the patient to record multiple parameters such as heart rate, oxygen saturation, and physical activity. RESULTS: Fifty-one patients (94.4%) in the inpatient cohort and 16 (64.0%) in the outpatient cohort reported gastrointestinal symptoms (diarrhea, nausea, and emesis), pain, dyspnea, or shivering in at least one visit. With the wearable, vital signs and physical activity were recorded for a total of 1,304.8 days. Recordings accounted for 78.0% (63.0-88.5; median [interquartile range]) of the potential recording time for the inpatient cohort and 84.6% (76.3-90.2) for the outpatient cohort. Adherence to the wearable was comparable in both cohorts, but decreased moderately over time during the trial. CONCLUSION: A high adherence to the wearable was observed in patients on intensive treatment protocols for a hematologic malignancy who experience high symptom burden. Remote patient monitoring of vital signs and

physical activity was demonstrated to be feasible and of primarily sufficient quality.

### [Impact of hematology electronic consultations on utilisation of referrals and patient outcomes in an Integrated Health Care](#)

[System](#) Abstract only\*

Author(s): Dosani et al.

Source: JCO Oncology Practice 18(4)

Publication date: 2022

**INTRODUCTION:** Electronic consultations (e-consults) may be a valuable tool in the current era of increased demand for hematologists. Despite the increasing use of e-consults in hematology, their optimal utilization and impact on patient outcomes and workload are largely unknown. **METHODS:** In this retrospective cohort study, we studied the hematology consult experience at Veterans Affairs Connecticut from 2006 to 2018. We included 7,664 hematology consults (3,240 e-consults and 4,424 face-to-face [FTF] consults) requested by 1,089 unique clinicians. **RESULTS:** We found that e-consults were rapidly adopted and used equally among physicians of different degrees of experience. The number of FTF consults did not decrease after the introduction of e-consult services. E-consults were preferentially used for milder laboratory abnormalities that had been less likely to result in a consult before their availability. Referring clinicians used e-consults preferentially for periprocedural management, anemia, leukopenia, and anticoagulation questions. Eighty-three percent of e-consults were resolved without needing an FTF visit in the year after the consult. Consults for pancytopenia, gammopathy, leukocytosis, and for patients with known malignancy were less likely to be resolved by e-consult. Among patients who were diagnosed with a new hematologic malignancy after their consult, having an e-consult before an FTF visit did not adversely affect survival. **CONCLUSION:** In summary, e-consults safely expanded delivery of hematology services in our health care system but

increased total consult volume. We report novel data on what types of consults may be best suited to the electronic modality, the impact of e-consults on workload, and their optimal use and implementation.

### [Point-of-Care Haematology Analyser Quality Assurance Programme: a rural nursing perspective.](#)

Item Type: Journal Article

Authors: Beazley, Catherine;Blattner, Katharina and Herd, Geoffrey

Publication Date: 2021

Journal: Journal of Primary Health Care 13(1), pp. 84-90

**Abstract:** BACKGROUND AND CONTEXT Rural health services without an onsite laboratory lack timely access to haematology results. Set in New Zealand's far north, this paper provides a rural nursing perspective on how a health service remote from a laboratory introduced a haematology analyser suitable for point-of-care use and established the associated quality assurance programme. **ASSESSMENT OF PROBLEM** Five broad areas were identified that could impact on successful implementation of the haematology analyser: quality control, staff training, physical resources, costs, and human resource requirements. **RESULTS** Quality control testing, staff training and operating the haematology analyser was more time intensive than anticipated. Finding adequate physical space for placement and operation of the analyser was challenging and costs per patient tests were higher than predicted due to low volumes of testing. **STRATEGIES FOR IMPROVEMENT** Through a collaborative team approach, a modified quality assurance programme was agreed on with the supplier and regional point-of-care testing coordinator, resulting in a reduced cost per test. The supplier provided dedicated hours of staff training. Allocated time was assigned to run point-of-care testing quality assurance. **LESSONS** Having access to laboratory tests can reduce inequalities for rural patients, but natural enthusiasm to introduce

new point-of-care technologies and devices needs to be tempered by a thorough consideration of the realities on the ground. Quality assurance programmes need to fit the locality while being overseen and supported by laboratory staff knowledgeable in point-of-care testing requirements. Associated costs need to be sustainable in both human and physical resources.

### [A Novel Approach to Hematology Testing at the Point of Care.](#)

Item Type: Journal Article

Authors: Bransky, Avishay;Larsson, Anders;Aardal, Elisabeth;Ben-Yosef, Yaara and Christenson, Robert H.

Publication Date: 03 01 ,2021

Journal: The Journal of Applied Laboratory Medicine 6(2), pp. 532-542

Abstract: BACKGROUND: The need for rapid point-of-care (POC) diagnostics is now becoming more evident due to the increasing need for timely results and improvement in healthcare service. With the recent COVID-19 pandemic outbreak, POC has become critical in managing the spread of disease. Applicable diagnostics should be readily deployable, easy to use, portable, and accurate so that they fit mobile laboratories, pop-up treatment centers, field hospitals, secluded wards within hospitals, or remote regions, and can be operated by staff with minimal training. Complete blood count (CBC), however, has not been available at the POC in a simple-to-use device until recently. The HemoScreen, which was recently cleared by the FDA for POC use, is a miniature, easy-to-use instrument that uses disposable cartridges and may fill this gap. CONTENT: The HemoScreen's analysis method, in contrast to standard laboratory analyzers, is based on machine vision (image-based analysis) and artificial intelligence (AI). We discuss the different methods currently used and compare their results to the vision-based one. The HemoScreen is found to correlate well to laser and impedance-based methods while emphasis is given to mean

cell volume (MCV), mean cell hemoglobin (MCH), and platelets (PLT) that demonstrate better correlation when the vision-based method is compared to itself due to the essential differences between the underlying technologies. SUMMARY: The HemoScreen analyzer demonstrates lab equivalent performance, tested at different clinical settings and sample characteristics, and might outperform standard techniques in the presence of certain interferences. This new approach to hematology testing has great potential to improve quality of care in a variety of settings.

## Education and Training

### [Measuring the Impact of a Pharmacist-Driven Blood Factor Education Program: A Prospective, Single-Center Observational Study](#) Abstract only\*

Item Type: Journal Article

Authors: Arnall, Justin R.;Moore, Donald C.;Michael, Meghan;Wolcott, Michael and Cowgill, Nicole

Publication Date: Jun 2023

Journal: Hospital Pharmacy 58(3), pp. 282-288

Abstract: Introduction: Patients with bleeding disorders are best served by multidisciplinary teams. Pharmacists can play a critical role in the optimal management of patients with bleeding disorders through blood factor stewardship strategies and programs. An educational program was developed and implemented wherein a hematology pharmacist provided brief recorded lectures to an entire department of pharmacists in a multi-site health-system with the goal to improve the knowledge base and confidence among this population of general practitioners. Methods: The primary objective of this study was to evaluate the educational outcomes of a blood factor education program for pharmacists. The impact of the educational program was determined by measuring the difference in mean test scores

between the pre- and post-program surveys. Results: The final analysis included 214 participants. The primary endpoint of mean competency test score was significantly improved in the post-test compared to pre-test (78.33% vs 52.83%; P n = 212) of participants. Pharmacist confidence was significantly improved in all 20 domains of bleeding disorders and blood factor product verification and management. Conclusion: This program identified that most pharmacists in a large multi-site health-system were not familiar with bleeding disorders to a satisfactory degree, commonly because of the relative rare encounters with bleeding disorder-related orders, and that despite systems-based support there was an opportunity to improve practice through education. Such educational programming could be beneficial for the development of pharmacist-provided care and is a measure that could be implemented as part of blood factor stewardship initiatives.

### [Foundation Program in Oncology and Hematology for Newly Recruited Nurses](#) Abstract only\*

Item Type: Journal Article

Authors: Nolan, Amy;Impey, Sinead and Rankin, Kate

Publication Date: 2022

Journal: Clinical Journal of Oncology Nursing 26(5), pp. 565-568

Abstract: There is a constant need to educate and upskill nurses who are new to oncology settings. This article describes the outcomes of an education quality improvement (QI) project at an Organisation of European Cancer Institutes.

### [Curricular course for medical students at a hematology and oncology specialty practice, 2010-2022.](#)

Item Type: Journal Article

Authors: Weide, Rudolf;Thomalla, Jorg;van Roye, Christoph;Chakupurakal, Geothy;Heymanns, Jochen;Koppler, Hubert;Feiten, Stefan;Nickel, Jorg-Andre;Schmidberger, Heinz;Theobald, Matthias and Lutz, Christoph

Publication Date: 2022

Journal: GMS Journal for Medical Education 39(4), pp. o40

Abstract: Aim: For several years now, medical students have also been taught general practice at academic medical teaching practices. Specialty practices have not yet been included in the curricular education. Since 1998, we have conducted a block seminar in hematology twice per semester for eighth-semester medical students. This block seminar was offered from 1998-2001 to students at the Philipps University in Marburg and since 2001 to students at the Johannes Gutenberg University in Mainz. Since 2010 our block seminar has been part of the curriculum at the Johannes Gutenberg University. Method: Standardized course evaluation by students who had attended our block seminar between January 2010 and March 2022. Courses that were held virtually due to corona were not included in the analysis. The questionnaire used to evaluate courses in the medical degree program at the Johannes Gutenberg University served as the evaluation instrument. Results: Since 1998 more than 1,000 students have attended our seminar. The systematic evaluation of the course by 500 students who participated in the curricular, classroom-based seminar sessions since 2010 shows that the highest ratings possible are given for practical relevance, learning atmosphere, teaching and effectiveness. Conclusion: High quality in teaching curricular courses to medical students at a specialty practice is possible. Insights into the possibilities connected with working in the outpatient setting at a medical practice broadens students' experience. This teaching format facilitates external university instructors in terms of teaching and, at the same time, relieves the university in terms of staff and financial budget.

### [An interprofessionally developed geriatric oncology curriculum for hematology-oncology fellows.](#)

Item Type: Journal Article

Authors: Eid, A.;Hughes, C.;Karuturi, M.;Reyes, C.;Yorio, J. and

Holmes, H.

Publication Date: 2015

Journal: Journal of Geriatric Oncology 6(2), pp. 165-173

Abstract: Objective: Because the cancer population is aging, interprofessional education incorporating geriatric principles is essential to providing adequate training for oncology fellows. We report the targeted needs assessment, content, and evaluation tools for our geriatric oncology curriculum at MD Anderson Cancer Center. Method(s): A team comprising a geriatrician, a medical oncologist, an oncology PharmD, an oncology advanced nurse practitioner, and two oncology chief fellows developed the geriatric oncology curriculum. First, a general needs assessment was conducted by reviewing the literature and medical societies' publications and by consulting experts. A targeted needs assessment was then conducted by reviewing the fellows' evaluations of the geriatric oncology rotation and by interviewing fellows and recently graduated oncology faculty. Result(s): Geriatric assessment, pharmacology, and psychosocial knowledge skills were the three identified areas of educational need. Curriculum objectives and an evaluation checklist were developed to evaluate learners in the three identified areas. The checklist content was validated by consulting experts in the field. Online materials, including a curriculum, a geriatric pharmacology job aid, and pharmacology cases, were also developed and delivered as part of the curriculum. Conclusion(s): An interprofessional team approach was a successful method for identifying areas of learners' educational needs, which in turn helped us develop an integrated geriatric oncology curriculum. The curriculum is currently being piloted and evaluated.

### Career pathways

[Mentorship Experiences Are Not All the Same: A Survey Study of Oncology Trainees and Early-Career Faculty](#) Abstract only\*

Item Type: Journal Article

Authors: Idossa, Dame;Velazquez, Ana I.;Horiguchi, Miki;Alberth, Julia;Abuali, Inas;Smith-Graziani, Demetria;de Lima Lopes, Gilberto;Lubner, Sam and Florez, Narjust

Publication Date: May 16 2023

Journal: JCO Oncology Practice OP2200643

Abstract: PURPOSE: Physician workforce diversity can be a driver of institutional excellence, improving innovation and reducing health disparities. However, the current diversity of the hematology/oncology (HO) workforce does not reflect that of the US population. METHODS: We conducted a cross-sectional online survey of current trainees and faculty within 5 years of completing terminal training in oncology specialties. RESULTS: Of the 306 respondents, 64 (21%) were under-represented in medicine (URiM) and 161 (53%) identified as male. URiM participants were less likely to have a primary mentor (66%) than non-URiM participants (80%;  $P = .015$ ). Among those who had a primary mentor, URiMs met less frequently (once every 3-6 months or less) with their mentor (19% v 7% non-URiM;  $P = .003$ ). Furthermore, URiMs were more likely to report having mentors outside their own institution (47% v 40% non-URiM;  $P = .002$ ) and making compromises to gain access to mentorship (36% v 23% non-URiM;  $P = .035$ ) and awards (28% v 43% non-URiM;  $P = .019$ ). In multivariable models, URiM individuals were more likely to make compromises to gain access to mentors (odds ratio [OR], 1.96; 95% CI, 1.01 to 3.82) and this remained significant for females (OR, 2.17; 95% CI, 1.26 to 3.75). CONCLUSION: URiM individuals may be less likely to have effective mentorship and apply for awards and grant support. Understanding the challenges of URiM trainees can help shape training environments in academic medicine to ensure that they are grounded in diversity, inclusion, and retention.

### [Associations between hematology/ oncology fellows' training and mentorship experiences and hematology-only career plans](#)

Author(s): Masselink et al.

Source: Blood advances 3(21) pp. 3278-3286

Publication date: 2019

As the adult hematology and oncology fellowship training pathways have merged in the United States and concerns have arisen about the aging of practicing hematologists, the American Society of Hematology and hematology education leaders are looking to improve their understanding of the factors that contribute to fellows' plans to enter hematology-only careers. With the support of the American Society of Hematology, we collected and analyzed data from a survey of hematology/oncology fellows (n = 626) to examine the relationship between training and mentorship experiences and fellows' plans to enter hematology-only careers. Fellows who planned to enter hematology-only careers were significantly more likely to report having clinical training and mentorship experiences in hematology throughout their training relative to fellows with oncology-only or combined hematology/oncology career plans. After controlling for prior interest in hematology and demographic characteristics, exposure to hematology patients in medical school and fellowship, hematology research experiences, and hematology mentorship (research collaboration and career coaching) were positively and significantly associated with hematology-only career plans. These findings suggest that increasing opportunities for exposure to hematology patients, research opportunities and mentors throughout training could be helpful in building a strong pipeline of potential hematologists.

### [Effect of an inpatient hematology-oncology ward rotation on medical house staff interest in pursuing hematology-oncology as a career](#)

Item Type: Conference Proceeding

Authors: McFarland, D.C., Holland, J. and Holcombe, R.F.

Publication Date: 2015

Publication Details: Journal of Clinical Oncology. Conference: 2015 Annual Meeting of the American Society of Clinical Oncology, ASCO. Chicago, IL United States. Conference Publication: (var.pagings). 33(15 SUPPL. 1) (no pagination); American Society of Clinical Oncology, Abstract: Background: There is an oncologist workforce shortage. Medical sub-specialty training experiences influence residents' career choices. We hypothesized that an inpatient ward rotation may increase residents' interest in hematology-oncology. Resident distress, empathy, resilience, and patient death experiences were explored as reasons that would mitigate interest. Method(s): Agreement with "I am interested in pursuing a career/fellowship in hematology and oncology", was rated by residents before and after a hematology-oncology rotation where 0 = not true at all, 1 = rarely true, 2 = sometimes true, 3 = often true, 4 = true nearly all the time. Residents completed the Connors-Davidson Resilience Scale (CD-RISC), Impact of Events Scale-Revised (IES-R), and the Interpersonal Reactivity Index (IRI). Demographic information, number of dying patients, and derived meaning from working with dying patients were surveyed. Result(s): Fifty-six residents completed before and after rotation questionnaires (response rate 56%). The mean interest score was 1.43 initially and decreased to 1.24 after the rotation (p = 0.301). Female mean score was 1.13 initially and dropped to 0.81 after the rotation (p = 0.04). Male mean score was 1.71 initially and 1.81 after the rotation (p = 0.649). The attribution of 'meaning' had a protective effect on maintaining interest. Conclusion(s): The ward experience decreased residents' interest in hematology-oncology. Encouraging outpatient rotations and cultivating resilience, empathy, and the 'meaning' of death-laden experiences may increase resident interest in hematology-oncology. (Table presented) .

## Competency Frameworks

### [The Myeloma Nursing Competency Framework](#)

Source: Myeloma UK

Publication date: 2015

- Provide UK standards which outline the knowledge, skills and behaviours required by nurses involved in the treatment, management and care of myeloma patients.
- Improve the patient experience by maximising the therapeutic alliance between the patient, doctor and nurse.
- Reflect the increasing shift of treatment, management and care to community settings.

### [A competency framework for nurses: caring for patients living with and beyond cancer](#)

Source: Macmillan

Publication date: June 2014

The gruelling mental and physical legacy often remains many years after cancer treatment. Macmillan estimates that more than 500,000 people in the UK are currently facing poor health or disability as a result of their cancer treatment. It is essential that people living with and beyond cancer experience better and safer care.

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