



UNIVERSITY OF LEEDS

This is a repository copy of *Blood transfusion practice in the UK and Ireland: a survey of palliative care physicians*.

White Rose Research Online URL for this paper:  
<http://eprints.whiterose.ac.uk/130794/>

Version: Accepted Version

---

**Article:**

Neoh, K, Stanworth, S and Bennett, MI [orcid.org/0000-0002-8369-8349](https://orcid.org/0000-0002-8369-8349) (2019) Blood transfusion practice in the UK and Ireland: a survey of palliative care physicians. *BMJ supportive & palliative care*, 9 (4). pp. 474-477. ISSN 2045-435X

<https://doi.org/10.1136/bmjspcare-2018-001494>

---

© 2018 Article author(s) (or their employer(s)). This article has been published in *BMJ Supportive and Palliative Care* following peer review, and the Version of Record can be accessed online at <https://doi.org/10.1136/bmjspcare-2018-001494>. Reuse of this manuscript version is permitted strictly pursuant to the terms of the CC-BY-NC-ND 4.0 license: <http://creativecommons.org/licenses/by-nc-nd/4.0/>

**Reuse**

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

**Takedown**

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.



[eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk)  
<https://eprints.whiterose.ac.uk/>

**Blood transfusion practice in the UK and Ireland; a survey of palliative care physicians**

**Karen Neoh**

Corresponding author

[karen.neoh@doctors.org.uk](mailto:karen.neoh@doctors.org.uk)

NIHR Academic Clinical Fellow

Academic Unit of Palliative Care, Leeds Institute of Health Sciences, University of Leeds, LS2 9JT, UK

**Simon Stanworth**

Consultant Haematologist

NHS Blood and Transplant, John Radcliffe Hospital, Headley Way, Oxford

**Michael I Bennett**

St Gemma's Professor of Palliative Medicine

Academic Unit of Palliative Care, Leeds Institute of Health Sciences, University of Leeds

Word count: 1551

## **ABSTRACT**

**Objectives:** Red cell (blood) transfusions are used in palliative care to manage symptomatic anaemic patients or when patients have lost blood. We aimed to understand current blood transfusion practice among palliative medicine doctors and compare this with NICE guidance. NICE guidance advocates more restrictive transfusion practice but is based on clinical trials in non-palliative care contexts; the extent to which these findings should be applied to palliative care remains unclear.

**Methods:** Four clinical vignettes of common clinical palliative care scenarios were developed. Members of the Association for Palliative Medicine were invited to complete the survey. Results were compared to acceptable responses based on current NICE recommendations and analysed to determine the influence of respondents' gender, experience or work setting.

**Results:** 27% of 1070 members responded. Overall, ideal or acceptable responses were selected by less than half of doctors to all four vignettes. Doctors were more liberal in prescribing blood transfusions than NICE guidance would advocate. Senior doctors were less likely to choose an acceptable response than junior colleagues.

**Conclusion:** Palliative care practice is varied and not consistent with a restrictive blood transfusion policy. More recently trained doctors follow less liberal practices than senior colleagues. More direct evidence of benefits and harms of blood transfusion is needed in palliative care to inform practice.

## **Background**

Anaemia is a common complication of cancer and is more common in advanced disease. In a cohort of 1797 patients with advanced cancer referred to palliative care services, we found that 38% had moderate to severe anaemia and that functional iron deficiency was present in 39-43%.[1] Anaemia can cause symptoms including fatigue and breathlessness, with fatigue being the most frequently reported symptom in cancer.[2]

Red cell transfusions are commonly considered as a treatment for anaemia in palliative care regardless of cause. Around 6-13% of patients admitted to palliative care units are transfused [3, 4] and the majority of patients received a single transfusion (71%), of 2 or 3 units of blood (76%), as an inpatient (83%). A Cochrane review of observational studies suggested that benefits were experienced by less than half of patients and that any benefit had largely disappeared 10-14 days post-transfusion. Between 25-35% of patients had died within 14 days of transfusion.[4]

Restrictive policies toward red cell transfusion have been advocated recently, defined as haemoglobin transfusion thresholds of 70g/l (80g/dl in acute coronary syndrome) and with only one unit transfused.[5, 6] These reflect evidence syntheses including a Cochrane review of 31 trials involving 12,587 participants.[7] This review found that restrictive transfusion strategies reduced the risk of receiving a blood transfusion by 43% with no impact on clinical outcomes, 30-day mortality or adverse events. Importantly, the authors felt there were insufficient data to draw firm conclusions about the safety of transfusion policies in certain subgroups including acute coronary syndrome, bone marrow failure and blood cancers.

There is a lack of direct evidence and hence specific guidance for the use of red cell transfusions in advanced cancer and palliative care. Observational studies suggest that benefits may be limited and harms may be significant. We aimed to understand current practice of red cell transfusion by palliative medicine doctors and compare this with National Institute for Health and Care Excellence (NICE) guidance on best practice.

## **Methods**

### Sample

In July 2016 we invited all members of the Association for Palliative Medicine (APM) of Britain and Ireland to complete an online survey. An explanatory email with a link embedded to the online survey was sent out with a reminder two weeks later.[8] The survey consisted of questions about the respondent (gender, grade or job title, work setting, and year of graduation) and four clinical vignettes.

### Methodology and Development of Vignettes

#### Methodology

The questionnaire was developed in a systematic manner: The literature (including guidelines and available surveys) was reviewed and experts of various disciplines including palliative care and haematology were consulted throughout the development process.

Concordance rates were estimated by calculating the percentage of overlap between duplicate questions (for open questions 10% was considered concordant).

The final four clinical vignettes represented cases in which a red cell transfusion may be considered in palliative care practice (figure 1). Each vignette included the patient's history, key symptoms and signs, haemodynamic condition and recent haemoglobin result. It was made clear that any option chosen would be in keeping with the patients' wishes as this forms a large part of decision making in palliative medicine. All cases had the same five response options. The survey was piloted among ten local doctors to check clarity of questions and following minor amendments four doctors piloted the online survey to check usability.

### Ethics

Approval was given by the University Of Leeds School Of Medicine Research Ethics Committee (project number SoMREC15-09).

### Analyses

We developed and agreed a NICE guideline concordant response to each vignette. We then compared survey responses with our research team responses. This was analysed as a dichotomous response (did the doctor select a concordant or discordant response). Pearson's chi squared ( $\chi^2$ ) tests were performed to identify significant differences between proportion of concordant responses depending on gender, place of work and seniority of doctor.

### **Results**

293 of 1070 doctors responded; response rate 27%. Most doctors graduated in 2000-2009 and so had a minimum of 7 years clinical experience.

#### *Figure 1: Vignettes and results*

### Responses to individual vignettes

Overall, concordant responses were selected by less than half of doctors to all four vignettes. Case 1 had the greatest proportion of doctors who selected a concordant response (47.6%) of active monitoring. In Case 2, only 17.3% of doctors selected a concordant response as 39.3% opted for arranging a transfusion of two or more units. This is not in keeping with NICE guidance as the patient is stable with a haemoglobin above 70g/l and no signs of major haemorrhage. Doctors felt the patient in Case 3 warranted further investigations or possible transfusion (38.3% doctors) which is concordant given the likely iatrogenic cause to blood loss. In Case 4, most doctors considered transfusing 2 or more units (44.8%), which is not in line with NICE guidance as the patient is stable with a haemoglobin above 70g/l and no sign of major haemorrhage. Therefore monitoring alone would be advocated (15.9% doctors). If transfusion were indicated then giving one unit and assessing is most appropriate (22.8% doctors).

### Influence of respondent characteristics

We found no association between gender and responses and no important differences in responses based on place of work. However, doctors in training programmes were significantly more likely to select concordant responses than their senior peers in three of four vignettes; Case 1: 56.3% vs 38.9% ( $p = 0.017$ ), Case 3: 62.5% vs 42.5% ( $p = 0.007$ ), Case 4: 51.6% vs 34.1% ( $p = 0.015$ ). In two vignettes, other doctors working in the specialty were also significantly more likely to select concordant responses than certified palliative medicine specialists: Case 1: 63.6% vs 38.9% ( $p = 0.001$ ), Case 2: 25.5% vs 13.2% ( $p = 0.032$ ). There were no observed differences in responses to other vignettes between all three groups of doctors.

## Discussion

More than half of palliative medicine doctors selected non concordant responses to all four clinical vignettes based on NICE guidance relating to red cell transfusion. In general, doctors followed a more liberal policy toward red cell transfusion than is recommended.

Seniority of doctor was the most influential factor on responses; training grade doctors were most likely to select concordant responses and certified specialists were most liberal in their approach. Training grade doctors usually have the least years of practice in medicine in all of the three groups but may be more likely to be exposed to recent evidence such as NICE guidance as well as to restrictive transfusion practice in acute sector medicine.

These findings support the need for primary research alongside education for palliative medicine doctors as has been recognised and evaluated in other settings. A hospital tested the effect of a behavioural strategy on practice.[9] A multidisciplinary team reviewed all blood transfusion requests. If transfusion was deemed inappropriate individualised advice was given and where appropriate haematinic supplementation offered as an alternative. There was a significant reduction in the number of red cell units transfused and haematinic testing increased by 16.6%. The intervention was cost effective and saved money.

We acknowledge several limitations; we cannot be sure that these answers accurately represent what doctors do. Research has shown that vignettes are a valid tool for measuring the quality of clinical practice,[10] but decisions around blood transfusions may be a team decision. An alternative approach is direct observation of doctors' practice however this can also lead to changes in behaviour and is more labour intensive. Our response rate was 27%, this is double the average healthcare response rate to an online survey with no incentive attached.[11] Our sample may not be representative of all palliative medicine doctors and our interpretation of the NICE guidance may not be universally agreed.

NICE guidance was not developed using studies in palliative care as no clinical trials exist in this context. However, the guidance was based on a diverse range of acutely unwell medical and surgical patients and so is likely to be applicable to palliative care patients. Palliative care patients may be at a higher risk of transfusion complications such as transfusion associated circulatory overload due to risk factors including low body weight, so a more restrictive approach and the need to monitor patients after each unit is paramount. Other clinical considerations may influence decisions; given the pressure and demand on specialist palliative medicine services, doctors may opt to transfuse more than one unit before

assessing for response to try and reduce total treatment time. However this may lead to unnecessary transfusions and also longer inpatient stays for patients.

Despite limitations, our study shows that there is a need to raise awareness in palliative medicine doctors (particularly senior doctors) of red cell transfusion guidance and the change to a more restrictive approach. This study was based in the UK and Ireland but addresses a treatment that is given globally. It is important that doctors consider the harms and costs associated with transfusions and also evaluate the benefit their patients may or may not get from the intervention. In addition, a central tenet of patient blood management is support and appropriate use of alternatives to transfusion, such as iron, but this area has been poorly studied in palliative care.

## **Declarations**

## **Acknowledgements**

- Karen Neoh – concept, design of survey, distribution, analysis/ interpretation of data and write up of paper.
- Mike Bennett – concept, design of survey, analysis/ interpretation of data and write up of paper.
- Simon Stanworth – design of survey, revision of paper.

All authors approve the final version.

## **Funding**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

## **Conflicts of interest**

The Authors declare that there is no conflict of interest.

## **Research ethics**

Approval was given by the University of Leeds School of Medicine Research Ethics Committee (project number SoMREC15-09)

The Corresponding Author has the right to grant on behalf of all authors and does grant on behalf of all authors, an exclusive licence (or non-exclusive for government employees) on a worldwide basis to the BMJ Publishing Group Ltd and its Licensees to permit this article (if accepted) to be published in BMJ Supportive & Palliative Care editions and any other BMJ PGL products to exploit all subsidiary rights, as set out in our licence.

## References

1. Neoh K, Stanworth S, Pasricha SR et al. Estimating prevalence of functional iron deficiency anaemia in advanced cancer. *Support Care Cancer* 2017;25(4):1209-1214
2. Magnusson K, Möller A, Ekman T et al. A qualitative study to explore the experience of fatigue in cancer patients. *Eur J Cancer Care* 1999;8(4):224-232
3. Brown E, Bennett M. Survey of blood transfusion practice for palliative care patients in Yorkshire: implications for clinical care. *J Palliat Med* 2007;10(4):919-22
4. Preston NJ, Hurlow A, Brine J et al. Blood transfusions for anaemia in patients with advanced cancer. *Cochrane Database Syst Rev* 2012;15(2)
5. NICE guidelines [NG24] Blood transfusion. [www.nice.org.uk/guidance/ng24/chapter/Recommendations#red-blood-cells-2](http://www.nice.org.uk/guidance/ng24/chapter/Recommendations#red-blood-cells-2) (2015, accessed 6th of January 2015)
6. Carson JL, Guyatt G, Heddle NM et al. Clinical practice guidelines from the AABB: red blood cell transfusion thresholds and storage. *JAMA* 2016;316(19):2025-2035
7. Carson JL, Stanworth SJ, Roubinian N et al. Is it safe to use lower blood counts as a trigger for blood transfusion in order to give fewer blood transfusions? *Cochrane Database Syst Rev* 2016
8. Dillman D. *Mail and telephone surveys: the total design method*. Toronto: John Wiley and Sons 1978
9. Warburton KG, Chituku M, Ballard K et al. Challenging blood transfusion practice: effect of targeted behavioural intervention on red cell transfusion in a district general hospital. *Future Hosp J* 2016;3(3):169–73
10. Peabody JW, Luck J, Glassman P et al. Measuring the quality of physician practice by using clinical vignettes: a prospective validation study. *Ann Intern Med* 2004;141(10):771-80
11. Cho YI, Johnson TP, Vangeest JB. Enhancing surveys of health care professionals: a meta-analysis of techniques to improve response. *Eval Health Prof* 2013;36(3):382-407