



Global haematology

From residency training to professional life: which competencies and skills are most valued by haematologists in Brazil?

Since the end of the last century, outcomes of medical education have been systematised in conceptual frameworks describing the most important competencies for physicians. These frameworks were constructed considering the evolving picture of health-care provision, which shifted to a patient-centred perspective and faces emerging challenges such as the pace of scientific innovation, heterogenous access to health care, and expectations for more effective and humane care. Although using different languages and schemes, these frameworks share the common premise that medical knowledge and skills that used to be intuitively associated with medical care are not sufficient to deliver these goals to society, and thus need to be complemented by non-clinical competencies, such as being capable of critical and continuous learning, effective communication with patients, ethical and humane practice, and understanding and using health-care systems to improve care and advocate for patients.

Although these concepts and competencies have been extensively discussed by the community of medical educators, the perception of their importance by trainees and physicians not formally exposed to them cannot be taken for granted, particularly in Brazil, where regulation of residency programmes is mainly focused on content-related competencies. The importance of mastering these non-content related competencies cannot be overstated, as haematologists deal with the increase of content knowledge, growing complexity of health-care systems, and higher expectations for empathy and patient participation in clinical care. Accordingly, assessing the perception of haematologists about the relative importance of these competencies in their current practice could generate valuable information for curricular improvements.

We did a cross-sectional survey of a 35-year consecutive cohort of alumni from a haematology residency programme from an academic medical centre (University of Campinas, Campinas, Brazil). Admission to a haematology residency programme in Brazil currently requires 2 years of residency in internal medicine, and encompasses clinical haematology (malignant and non-malignant), transfusion medicine, and a strong focus on pathology training, with a syllabus that holds structural similarities with the haematology training curriculum from the UK. Of note, even though Brazil has its own framework for competence-based medical education, formal assessments in haematology are not based on these frameworks, so the vast majority of trainees and physicians from this field have not been formally exposed to these

concepts. The survey was done using a Research Electronic Data Capture platform and was offered to 98 (96%) of 102 alumni that completed their training from 1985 to 2020. The survey was available from Aug 19 to Dec 31, 2020. In addition to demographic and socioeconomic status information, the survey included a section on participants' perceptions about the importance of specific competencies and skills for their current medical practice, as well as questions on strategies used for continuous learning.

86 (88%) of the 98 alumni consented and participated. Median age at residency completion was 28 years (IQR 27–30) and 52 were women and 34 were men. Most respondents (77 [90%]) still practiced as haematologists, after a median follow-up of 11 years (IQR 4–18) since residency completion. The most common area of practice was malignant haematology, followed by transfusion medicine. A list of competencies and skills formulated by authors to encompass all Accreditation Council for Graduate Medical Education (ACGME) competencies and most American Society of Hematology (ASH) Hematology Curricular Milestones was presented to participants, who were asked to rate their importance in clinical practice using a 5-point Likert scale, ranging from unimportant to essential, and including a neutral option. Skills associated with the ability to continue education after residency, communication skills, and ethics and professionalism were classified as very important or essential by more than 90% of respondents, followed by medical (content) knowledge (figure). By contrast, interpretation of bone marrow biopsies, and practical skills to perform invasive procedures in critically ill patients were more frequently classified as unimportant or of little importance. Skills and competencies associated with systems-based care and laboratory haematology were ranked intermediately (figure).

We also explored tools used by participants for continuing education. In Brazil, there is no mandatory continuing education system, so after finishing residency, the decision to engage in these activities is individual. Published research papers and in-person meetings were ranked first in importance, while textbooks and stand-alone educational events offered by the pharmaceutical industry were ranked as having lower importance (appendix). Of note, none of these tools is considered suitable to address competencies ranked as most important by participants.

Almost half a century ago (1977), when the current pace of medical science advancement could not be anticipated, the guidelines for haematology training

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For more on **medical education in haematology** see *Br J Haematol* 2017; **177**: 838–45

For more on **communication training for haematologists** see *Br J Haematol* 2017; **78**: 11–19

For more on the **UK haematology curriculum** see https://www.gmc-uk.org/-/media/documents/haematology-2021-curriculum-final_pdf-86495892.pdf

For more on **awareness of core competencies** see *GMS J Med Educ* 2018; **35**: Doc16 and *Perm J* 2016; **20**: 16–67

For more on **skills for practice** see *Br J Haematol* 2017; **178**: 501–07

For more on **communication** see *J Surg Educ* 2021; **78**: 440–49

See Online for appendix

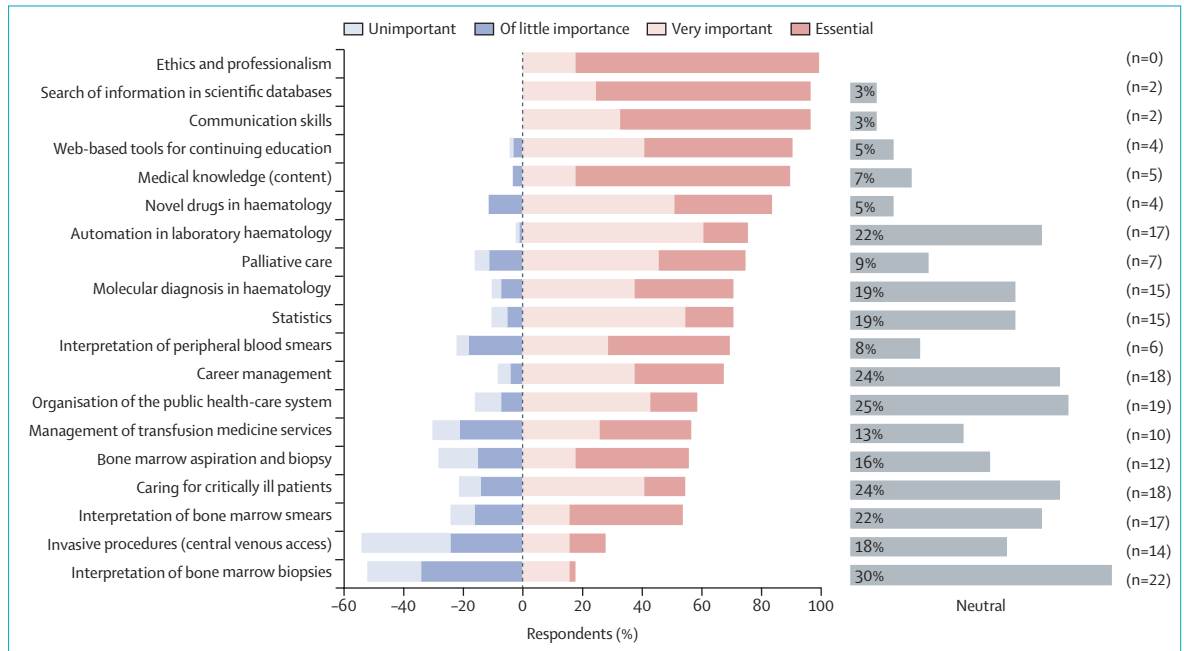


Figure: Importance of competencies and skills for haematology practice according to former haematology residents in Brazil

from the American Board of Internal Medicine stated that “teaching and learning should continue throughout the careers of subspecialists”. Accordingly, when outcomes of medical education were organised in conceptual frameworks by the ACGME in 1999, the ability to participate in continuous learning or practice-based improvement was listed as a high-order competence by ACGME, along with professionalism, which encompasses ethics and humanism, as well as communication skills. However, more than two decades later, awareness outside communities of medical educators was still limited. In this context, the demonstration that continuous learning, professionalism, and communication are considered the most important competencies for practice by a cohort of practicing haematologists in Brazil, where these concepts are not mandatory requirements of haematology residency programmes, reinforce the relevance of these competencies to haematology practice, and the importance of their incorporation into training programmes.

Another finding of our study was that competencies related to pathology interpretation skills, which have been considered as one of the most relevant single skills for practice, were valued as of intermediate importance for haematology. Centralisation of diagnostic reporting in malignant haematology coupled with improved turn-around time of non-microscopy diagnostic methods has been speculated to be associated with reduced pathology training opportunities, which could also explain the relatively low value attributed to these skills. These are worrying results, not only because Brazil is a country

where local laboratories remain central for haematological diagnoses in several regions, but also due to the importance of pathology interpretation for haematology practice. We also observed that despite the increasing volume of stand-alone educational events (eg, dinners and breakfasts) offered by the pharmaceutical industry, the formal scientific literature, attendance at meetings such as the annual meeting of our national haematology association (ABHH), and online educational activities remain the main resources for continuous education.

As evidenced by anecdotal reports, learning and assessment activities that specifically address communication and professionalism are not normally part of haematology residency programmes. However, evidence suggests that an important cause of clinical errors and lapses in professionalism can be inadequate communication, and that specific training can improve these skills. Regarding continuous learning, participation in research activities, journal clubs, and attendance at scientific meetings should be viewed as essential activities for mastering the clinical and scientific competencies.

In conclusion, our results confirm the importance of non-content related competencies in real-world practice, and suggest that efforts should be made to systematically address these topics during haematology training, particularly in countries where residency programmes are focused mainly on content-related competencies, such as Brazil.

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