



Nutrition counselling as an integral part of the treatment strategy among cancer patients with gastric tumor resection

Investigation of the status quo

Carina Eckhardt, Tina Richter, Volker Heinemann, Nicole Erickson

Abstract

Background: Malnutrition is widespread among patients with gastric cancer undergoing surgery. Experts recommend addressing nutritional needs of cancer patients pre- and postoperative.

Methods: A structured questionnaire was sent to stomach cancer support groups across Germany. It contained questions regarding the utilization and perception of nutrition counselling as well as the Patient-Generated Subjective Global Assessment (PG-SGA).

Results: 39 respondents (81%) received nutrition counselling at any point after diagnosis, in particular during the rehabilitation phase. More than half of the patients who received counselling (56%) were not fully able to implement the dietary advice provided. According to the PG-SGA, 24 out of 46 respondents (52%) required nutrition intervention, despite the fact that many received their surgery over a year ago.

Conclusion: The results of the survey indicate the need for a more patient-centered concept in which early and continuous nutrition care is delivered by qualified professionals and adjusted to the patient's individual needs.

Keywords: gastric cancer, gastric resection, malnutrition, nutrition counselling, PG-SGA

Introduction and background

Prevalence of malnutrition in cancer patients is highest among patients diagnosed with gastric cancer [1–5]. According to a prevalence study with 1,677 patients, 48% of cancer patients with a tumor in the upper gastrointestinal tract were malnourished [1]. A recently published retrospective cohort study among 131 patients with advanced gastric cancer receiving first-line systemic chemotherapy confirms this estimation and showed that up to 53% experienced weight loss within the first 12 weeks but increased to 88% after 48 weeks [4]. While pre-operative conditioning programs have been established and well accepted among the surgical community, follow up care among cancer patients who underwent gastric resection is often overlooked. Guidelines strongly recommend both pre- and postoperative nutritional risk assessment and provision of nutrition care for patients at risk of malnutrition before and after an extensive surgery [6]. Furthermore, experts recommend that all cancer patients continue to receive nutrition counselling in order to improve or maintain the nutritional status throughout the continuum of care [7]. Thus, our survey aimed to investigate the status quo of the availability and perception of nutrition counselling and the need for nutrition intervention among patients who underwent gastric tumor resection and thereby gain insights that could potentially lead to future prospective intervention trials in this population.

Methods

This single point cohort study included stomach cancer patients at any time after gastric resection who were willing and able to participate in completing the questionnaire. All participants were formally asked for permission to use their anonymous questionnaire results

Citation

Eckhardt C, Richter T, Heinemann V, Erickson N: Nutrition counselling as an integral part of the treatment strategy among cancer patients with gastric tumor resection. *Ernahrungs Umschau* 2021; 68(11): 210–6.

This article is available online:

DOI: 10.4455/eu.2021.044

Peer reviewed

Manuscript (original) submitted: 10 December 2020

Revision accepted: 28 June 2021

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for research purposes. After obtaining informed consent, patients could choose to complete the structured questionnaires either by using the online survey tool “survey monkey” or on paper. In total, 11 stomach cancer support groups across Germany agreed to distribute the questionnaires to their members who underwent gastric surgery. The survey contained questions regarding current nutrition behavior, sources of nutritional information and ability to implement nutrition recommendations. In part, questions were adapted from those developed by Maschke et al. [8]. Additionally, the Patient-Generated Subjective Global Assessment Short Form (PG-SGA SF) was utilized to identify current and long-term need for nutrition interventions after gastric surgery. The short form can be quantified utilizing the numerical score ranges from 0–36. A score of 4–8 shows that an intervention by a dietitian is required and a score of ≥ 9 indicates a critical need for nutrition intervention. The PG-SGA is an internationally validated assessment tool designed to be completed by the patients themselves. It is widely used among cancer patients across the globe. IBM SPSS Statistics 26 performed statistical analysis. This study was approved by the Institutional Review Board of the Ludwig Maximilian University of Munich in Germany.

Results

In total 48 respondents from 11 stomach cancer support groups took part of the survey. However, just 46 respondents answered the questions related to the PG-SGA, as participants or cancer support groups possibly overlooked this sheet. The average age of the respondents was 69 years and ranged from 20 to 89 years. 36 (75%) of the respondents had their stomach completely removed and 12 (25%) underwent a partial gastric removal. The majority of respondents ($n = 39$; 81%) had completed their therapy while 4 (8%) were currently under chemotherapy. The therapy status of the remaining respondents is unknown.

Need for nutrition intervention based on the PG-SGA short form ($n = 46$)

The survey reveals that more than half of the respondents ($n = 24$; 52%) required a nutrition intervention at the time of the survey, despite the fact that many respondents received surgery over a year ago (♦ Figure 1). Using the Patient-Generated Subjective Global Assessment (PG-SGA) 14 respondents (30%) scored 4–8 points and 10 participants (22%) scored 9 points or more. Based on the triage recommendations, these respondents required an intervention by a dietitian (score 4–8) or were even in critical need for improved symptom management and/or nutrition intervention options (score ≥ 9). The average PG-SGA score of the survey population was $5.13 (\pm 4.96)$. Respondents older than 70 years tend to have a higher mean score (6.00 ± 6.18) compared to respondents younger than 70 years (4.50 ± 3.85), although this difference was statistically not significant ($p = 0.515$).

Furthermore, 9 respondents (20%) reported to have lost more than 5% of their body weight during the last six months. Among them 5 respondents (56%) declared, that it decreased even more

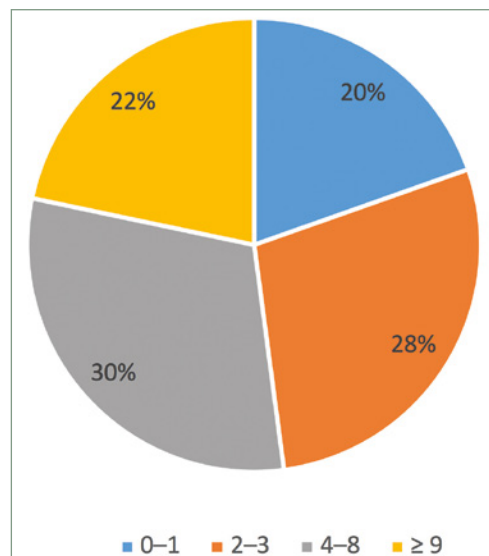


Fig. 1: Results of the Patient-Generated Subjective Global Assessment (PG-SGA)
 Score 0–1: no intervention required at this time
 Score 2–3: patient and family education by dietitian, nurse or other clinician (as indicated by symptom survey and lab values)
 Score 4–8: requires intervention by dietitian
 Score ≥ 9 : indicates a critical need for nutrient intervention options and/or improved symptom management

than 20%. More than half of the respondents ($n = 25$; 54%) mentioned nutrition related symptoms, which impaired their oral nutrition intake. The most common reported symptoms were fatigue ($n = 13$; 28%), pain in the gastrointestinal tract ($n = 12$; 26%), early satiety ($n = 9$; 20%), diarrhea ($n = 9$; 20%) and taste alterations ($n = 8$; 17%) (♦ Figure 2).

Utility and perception of nutrition counselling

Nutrition counselling was widely used among the survey population. 39 respondents (81%) received counselling at some stage of their disease, without significant difference between men and women ($p = 0.793$). Furthermore, among those who didn't receive any counselling and answered this particular question ($n = 8$), nearly all ($n = 7$, 88%) expressed that they would like to have access to nutrition counselling. Most of the respondents ($n = 24$, 62%) were counselled at a rehabilitation facility. Only 15 (38%) received care by a dietitian during their hospital stay. Moreover, 4 respondents (10%) sought and received nutrition counselling from a self-employed dieti-

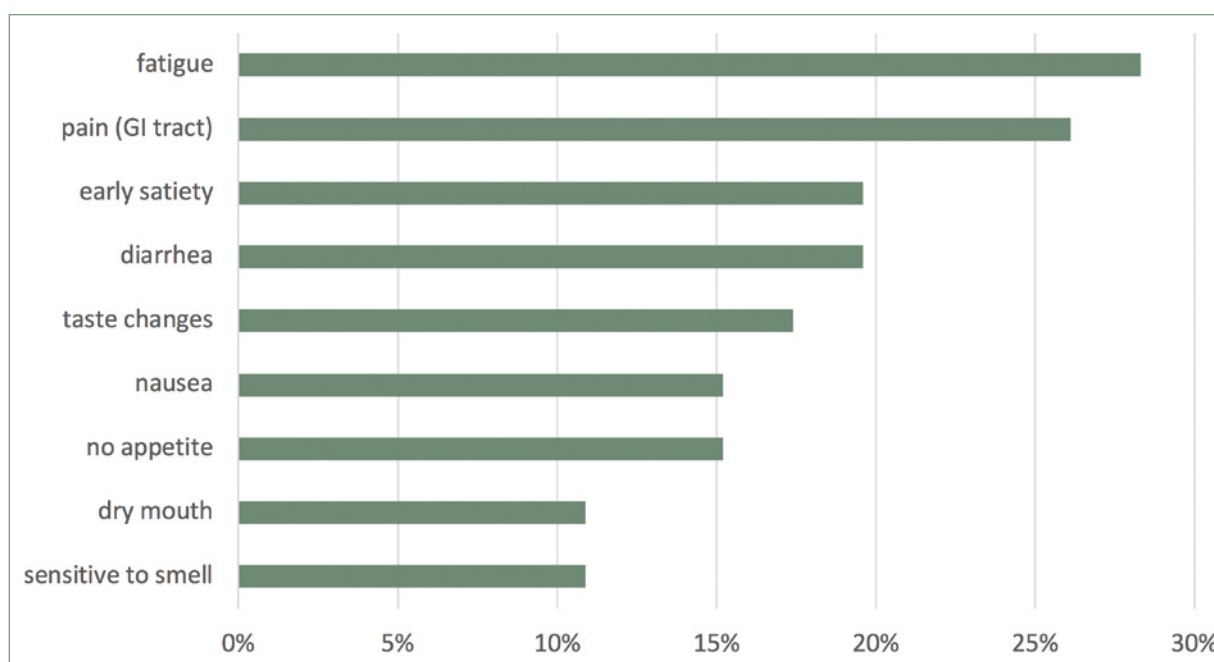


Fig. 2: **Nutrition related symptoms** (prevalence > 10 %)
 GI tract = gastrointestinal tract

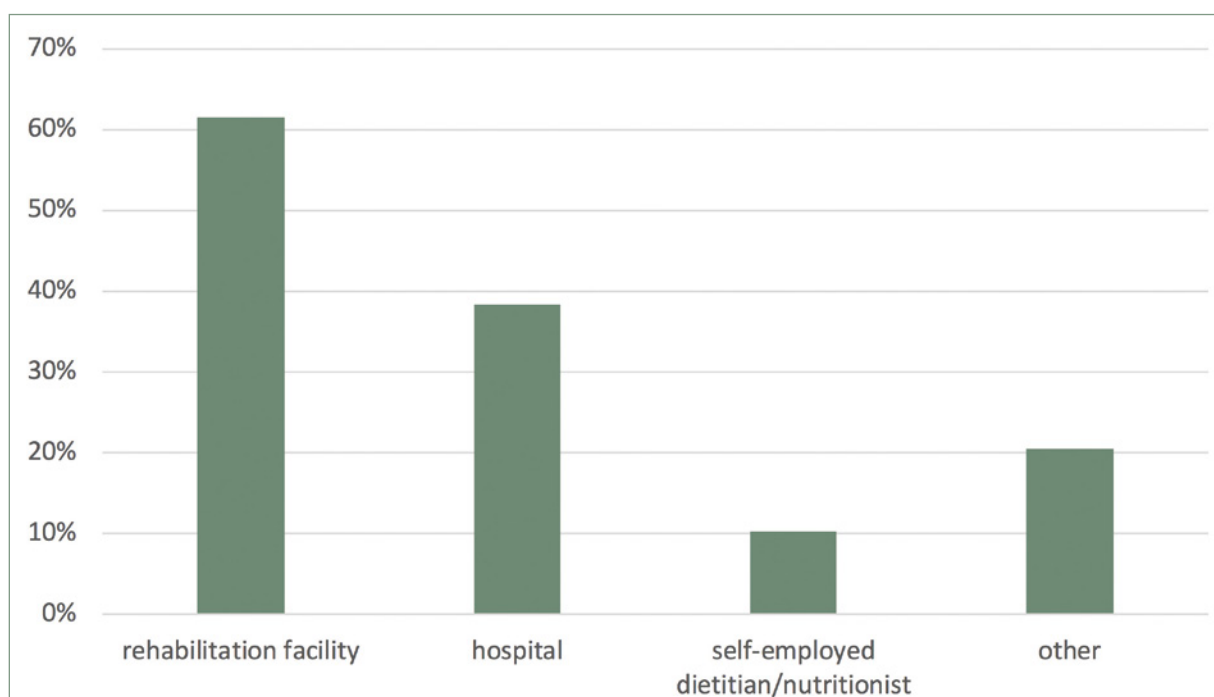


Fig. 3: **Location of nutrition counselling**

tian or nutritionist and 8 participants (21%) received counselling elsewhere (for example during cooking class, at an oncological clinic or at a lecture) (♦ Figure 3).

Of those respondents who received counselling many were counselled multiple times ($n = 16$; 41%), especially those with a high PG-SGA score. The majority of respondents ($n = 38$, 97%) received counselling after their surgery (thereof 24 [63%] after some days or weeks and 14 [37%] after some months) while just 5 (10%)

were (also) counselled before or during other cancer treatments (e.g. chemotherapy). Nearly half of the respondents who received counselling ($n = 19$; 49%) didn't receive any during the last one or two years.

General practitioners and oncologists referred only one fifth of all respondents to a dietitian. About half of the respondents were asked nutrition related questions by their physi-

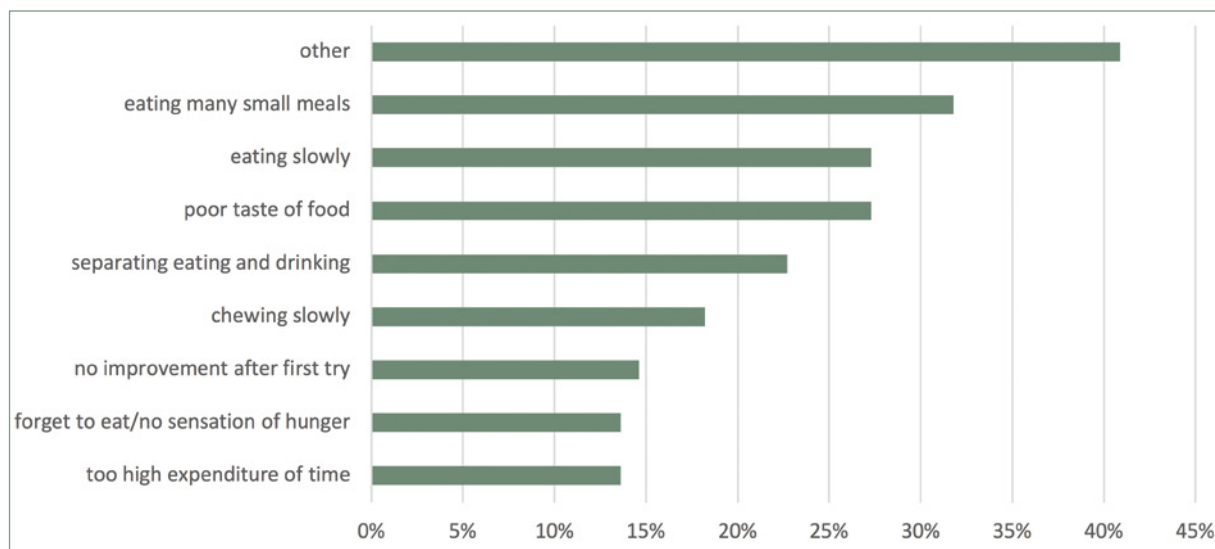


Fig. 4: Difficulties in implementing dietary recommendations (prevalence > 10 %)

cian, for example whether they lost weight ($n = 26$; 54%) and whether they experience any nutrition related symptoms ($n = 27$; 56%). However, less than one third of the respondents were asked whether their food consumption or activity level has reduced since the operation.

According to the reported data, more than half of the respondents who received nutrition counselling, mentioned that they couldn't apply the provided recommendations completely ($n = 22$; 56%). In particular, they had difficulties consuming many small meals throughout the day ($n = 7$; 32%) and eating slowly ($n = 6$; 27%) (♦ Figure 4).

Overall, nutrition counselling was perceived as supportive and regarded as very important ($n = 32$; 82%). Most respondents ($n = 26$; 67%) reported an improvement of their symptoms due to the provided dietary advice. 24 patients (62%) stated that nutrition counselling helped them to achieve their weight goals. 34 respondents (87%) reported that the dietitian or nutritionist could answer their main questions completely or mostly.

Of all participants stomach cancer support groups were the most used sources for nutrition information ($n = 33$; 69%), followed by dietitians and other qualified nutrition specialists ($n = 28$; 58%). Moreover, these two sources are the ones most trusted by the respondents. In addition, brochures, books and the internet are widely used (♦ Figure 5).

Limitations

The number of cancer support groups who actively participated and the size of the study population are limited, even though the survey was widely disseminated and offered online in order to increase the number of potential respondents. While the results give an indication, they may not reflect the general situation of all patients with stomach cancer who underwent surgery in

Germany. Moreover, respondents who are interested in nutrition or sought help through support groups may have been more likely to participate in this survey. The high mean age of the study population led to the fact that most patients chose to complete the survey on paper, which may have contributed to the low response rate of the online survey.

Discussion

Need for nutrition intervention

Our results show a great need for nutrition interventions among cancer patients who underwent gastric surgery. More than half of the respondents required an intervention according to the triage recommendations set out in the PG-SGA, despite the fact that a large part of respondents received surgery over a year ago. Similarly, Lee et al. [9] identified a continuous nutritional status decline within one year after total gastrectomy. The etiology of this nutritional decline is postulated to be due to decreased stomach volume, rapid intestinal transit time and malabsorption. The commonly symptoms our survey population mostly experienced included fatigue, pain in the gastrointestinal tract, early satiety, and diarrhea (♦ Figure 2) and reflect this proposed etiology.

In contrast to expert recommendations to ensure early, appropriate and continuous nutrition support to cancer patients [7, 10], only 5 respondents (10%) were counselled before or during cancer therapy. Thus, the opportunity

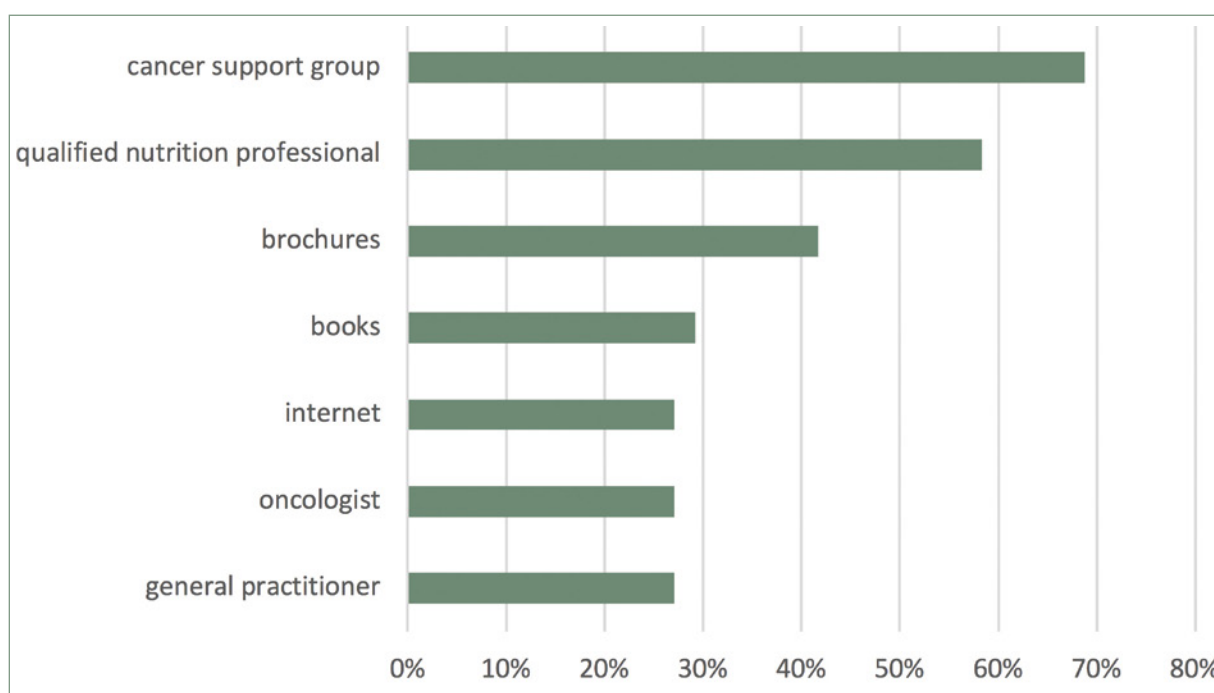


Fig. 5: Common sources for nutrition information

is missed to improve the nutritional status of this population prior to and directly after surgery as recommended in the Guidelines on Clinical Nutrition in Surgery. Moreover, continuous follow up care should be provided to maintain or improve the nutritional status [7]. Our results identified a lack of follow-up, since half of respondents didn't receive any counselling in over a year. Anyway, the results of the PG-SGA, the great weight loss and the high prevalence of nutrition related symptoms clearly demonstrate the need for continued and regular nutrition follow-up post discharge as recommended by the American Society for Enhanced Recovery and Perioperative Quality Initiative [10].

Clinical nutrition teams need to be expanded, in order to provide the best possible care to this population in the pre- and postoperative and to continue delivery of nutrition care during further therapeutic interventions. As patients come in for medical follow up care, nutrition care provided by dietitians specialized in oncology should continue to be offered in an outpatient setting. This is particularly important considering our participants were struggling with many nutrition related symptoms and weight loss months, even years, after the surgery.

Utility and perception of nutrition counselling

Our results show that respondents perceive nutrition support as an integral part of their therapy. 39 respondents (81%) received nutrition counselling at least once during some stage of their disease. However, general practitioners or oncologists only referred one fifth of respondents to a dietitian or other qualified nutrition professional for nutrition care. The low referral rate indicates the need for increased awareness among surgeons, oncologists and general practitioners about risks of malnutrition and the importance of nutritional therapy. Routine screening is required to detect patients in need as well as a close cooperation between dietitians and physicians to enhance nutritional care. Lack of referral to qualified

nutrition professionals may also prompt patients to obtain information from less reliable sources as they must get information on their own accord. Our data show that 28 respondents (58%) received nutrition information by a qualified nutrition professional and 13 (27%) by their oncologist or general practitioner respectively. These sources were more frequently used compared to the findings of Maschke et al. (dietitian: 38.5%, physicians: 9.8%) [8]. However, many respondents obtained nutrition information from sources with a high variability in quality and content, such as brochures ($n = 20$, 42%), books ($n = 14$, 29%) and internet ($n = 13$, 27%). Most commonly, nutrition information exchange takes place within cancer support groups ($n = 33$, 69%) (♦ Figure 5). While this opportunity to exchange information with other survivors provides great potential, it also poses risks if the information content is not guided by a qualified nutrition professional. Maschke et al. found similar results of commonly used sources for nutrition information (print media: 68.5%, self-help groups: 58.7%) [8].



The majority of respondents claimed that nutrition counselling provided them support in the management of symptoms and the achievement of weight goals. These results indicate that nutrition care, when delivered, can provide patients with the support needed. However, the survey also reveals difficulties in the translation of nutrition recommendations into practice. For example, patients found it difficult to consume the recommended amounts of small meals and eating slowly. Even though these two recommendations seem to be easy to understand and appear from a practitioner's point of view to be practical and easy to implement, these results indicate that they are apparently not as easy for patients to incorporate into their daily lives as expected. The results simultaneously illustrate the need for individualized strategies adapted to patient's socio-economic status and considering psychosocial aspects. Such comprehensive care can only be provided within the context of medical nutritional counselling provided in the context of models such as the nutrition care process [11–13].

Conclusion

Patients with gastric cancer who underwent surgery are in need for continuous nutrition care. Medical nutrition counselling needs to be provided on a continuous basis and not just during hospitalization or at the rehabilitation facilities. As the nutrition problems that arise during and after surgery are often complex, it is necessary for those patients to be accompanied by a dietitian specialized in the field of oncology. Adequate and easily available nutritional care requires increased awareness of malnutrition, closer collaboration between physicians and dietitians or other qualified nutrition professionals as well as individualized dietary strategies.

Conflict of Interest

The authors declare no support from any organization for the submitted work. Nicole Erickson has received honoraria for participating in symposia for CSL Behring, Fresenius, Baxter, Havas Lynxx Group, Nutricia and GHD. She also received project funding from the Techniker Health Insurance company. Volker Heinemann has received honoraria for participating in symposia and advisory boards for Merck, Amgen, Roche, Sanofi, Boehringer Ingelheim, Celgene, Sirtex Medical, Baxalta, SERVIER, Halozyme, MSD, Bristol-Myers Squibb, MSD Oncology, Lilly and Taiho Pharmaceutical. He has also received research funding from Amgen, Roche, Merck, Celgene, Boehringer Ingelheim, Sirtex Medical, Shire and Servier and travel support from Merck, Roche, Sirtex Medical, Amgen, SERVIER, Shire, MSD and Bristol-Myers Squibb. None of these activities were related to the content of this article. The remaining authors declare no conflict of interest.

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