

Out On Our Own

Section Editors:

Sam Hamilton
Medical Writing Services
Limited, Newcastle Upon
Tyne, UK
sam@
samhamiltonmwservices.
co.uk

Kathryn White
Cathean Limited Medical
Writing Consultancy,
Tring, UK
Kathryn@cathean.co.uk



Editorial

Welcome to the first issue of Out On Our Own (OOOO) for 2013. First, a big thank you to Raquel Billiones for her tremendous work as sub-editor, and in coordinating the content of OOOO over the past 2 years. Raquel will still be contributing and in particular, to the regular Toolbox feature, which, in this issue, describes the application of QR codes – those little black and white maze-like squares – in medical and scientific fields.

We are also pleased to report the much-anticipated results from the Freelance Business Survey 2012. This is the fourth survey of its kind, initiated in July and closed in September 2012, with 123 responses. This regularly conducted survey helps maintain awareness of typical freelance charges and our main business activities. Thank you to Anne McDonough for authoring the report and to Alistair Reeves for his ongoing support with this initiative.

Amy Whereat's and Ann Bless' articles echo the medical education theme of this issue of MEW. Amy describes the opportunities available to medical writers in the field of teaching spoken medical English. With our command of scientific English and ability to communicate clearly, our skills-base allows us to offer this niche service. Ann shares a day in her teaching life with us as she works with a small group of biomedical researchers.

We invite you to submit any humorous photos you may have lurking on your hard-drive for publication in OOOO. The photos must feature comical or witty text in English (or otherwise captioned with a translation). Maybe you have strange road or street signs in your area or have seen something amusing while on holiday. Thank you to Raquel for submitting the first one to get you in the mood!

And finally, we look forward to catching up with you in person. Make a date in your diary to join us at the Freelance Business Forum in Manchester on Friday, 10 May 2013 at 17.45.

The fourth EMWA freelance business survey

Introduction

This fourth survey follows those conducted in 2003, 2007, and 2010.¹⁻³ The first survey was conducted with a paper questionnaire distributed to both freelancers and small businesses with up to seven employees at the Freelance Forum during the EMWA conference in Lisbon in 2003. In 2007, the survey was conducted in electronic form and addressed to only freelancers, or those engaging in freelance activities in Europe. These practices continued for the 2010 and 2012 surveys. Response had grown steadily over the administrations from 63 respondents in 2003 to 101 in 2007 and 130 in 2010.

Methods

The EMWA Freelance Team developed the 2012 web-based survey by starting with the 2010 instrument and revising the questions to correct anomalies in data collection and to account for changes in the medical writing field. The 10-question survey was produced on SurveyMonkey, and user testing was conducted before release. The instrument allowed only one response per computer and did not allow respondents to change answers once the survey had been submitted. EMWA sent an e-mail with the survey web link to all members, and an announcement was also posted on EMWA's LinkedIn page.

The survey was open to anyone conducting freelance medical writing activities of any kind in Europe (respondents did not have to be EMWA members) and was available from 12 July to 21 September 2012.

Results were analysed using SurveyMonkey’s analysis component and Microsoft Excel. The results of this survey were compared with the results of previous surveys as appropriate; comparison was not always appropriate because the content of some questions had changed or the responses were newly grouped.

For the results provided in Tables 1 to 4, respondents were asked to complete a fixed series of categories giving percent values that totalled 100 and to enter zeros for any categories that did not apply. Many respondents left categories that did not apply blank, and others entered zeros as requested. Blank cells were therefore regarded as equal to zero, and the mean per category was calculated by dividing the sum of the responses for that category by the total number of responses to the question and not the number of positive (i.e. not equal to zero) responses to that category. This method ensured that the sum of the means over all categories equalled 100. The 2007 and 2010 results were recalculated in the same way to preserve comparability. This recalculation explains differences from the previously published figures for 2007 and 2010; differences did not result in shifts in the proportional relationships between categories within each year.

Results

Number of responses and countries

The number of respondents in 2012 decreased slightly to 123. The specific country of residence of

respondents was not collected this year; instead a question was asked about residence and work in Europe. Most respondents (84, 68%) reported that they were based in a European country and worked for clients in different countries, 32 (26%) reported that they were based in a European country and worked solely for clients in their country of residence, and 7 (6%) live outside Europe but worked for clients based in Europe.

Types of freelancers and hours worked

Fig. 1 displays types of freelancers who responded and their membership in EMWA.

Six respondents did not answer the question. Most respondents (78, 67%) work full-time freelance, 30 (26%) work part-time freelance, and 9 (8%) respondents are employed by a company (full- or part-time) and also do freelance work. Among the three categories, 99 (85%) are EMWA members. These results are similar to those from past surveys.

The number of hours worked has remained steady over the last three surveys. Of 118 respondents to this question, 56 (47%) work 30 or fewer hours per week on average, 55 (47%) work 31 to 50 hours per week, and 7 (6%) work more than 50 hours per week.

Sources of work

Respondents were asked to indicate their sources of work (totalling 100%) from a list of categories, and the results are shown in Table 1.

Results from 2012 followed a pattern similar to those in the previous surveys. Repeat business accounted for half (50%) the respondents’ work,

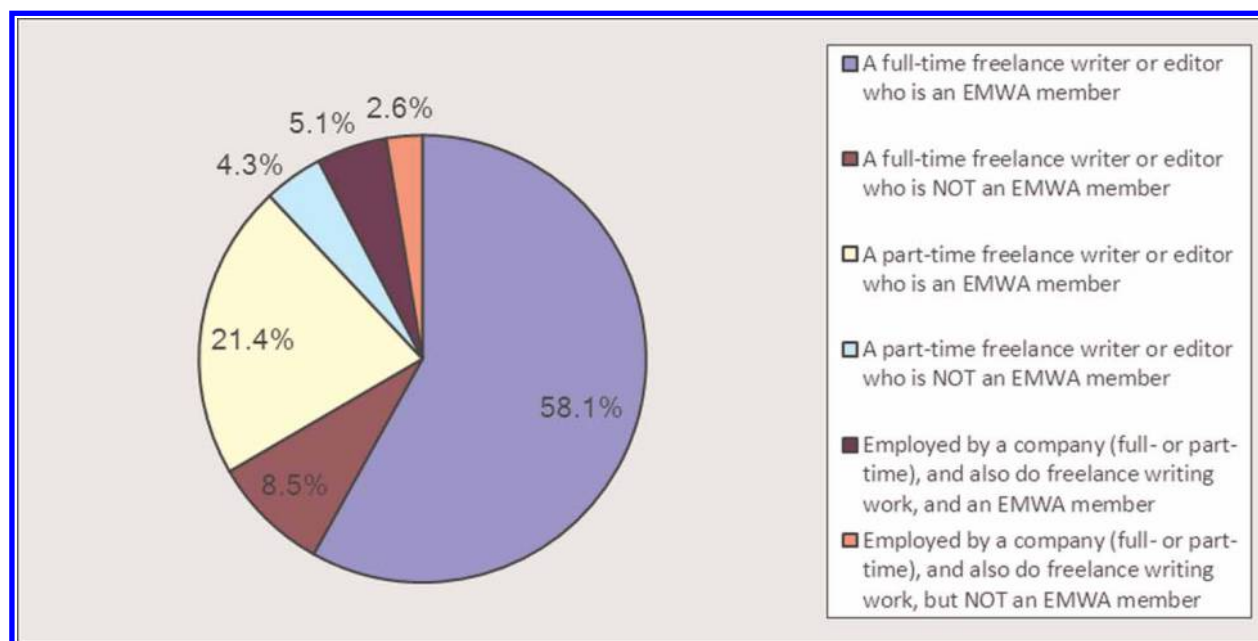


Figure 1: Types of freelancers and EMWA membership in 2012 (N = 117).

Table 1: Sources of freelance work from the past three surveys

Source	Mean % of work		
	2012 N = 110	2010 N = 123	2007 N = 77
Longstanding customers	50	46	41
Referrals from colleagues	17	16	16
Referrals from customers	13	13	9
Own advertising, including website, if you have one	7	7	6
EMWA freelance directory	4	6	7
Clients who searched the internet 'looking for a medical writer'	4	—	1
Other freelance directories	1	3	1
Contract research organisations/agencies	—	5	15
Networking with EMWA colleagues	—	2	—
Others	4	2	3

—, category not present in that year's survey.

and referrals from both colleagues (17%) and customers (13%) remained important sources of work. Freelance directories, including EMWA's, played a smaller role than in past years.

Types of work providers

In a new question this year, respondents were asked to indicate their types of work providers (totalling 100%) from a list of categories, and the results are shown in Table 2.

Pharmaceutical companies (28%) and medical communication agencies (24%) were the most common providers of work to the respondents,

Table 2: Types of work providers in 2012 (N = 107)

Type of work provider	Mean % of work
Pharmaceutical companies	28
Medical communications agencies	24
Academic institutions or academia-based individuals	16
Contract research organisations	10
Publishing companies	5
Medical devices companies	4
Non-profit organizations	3
Biotechnology companies	3
Work placement agencies	1
Others	6

Table 3: Types of activity from the past three surveys

Type of activity	Mean % of work		
	2012 N = 105	2010 N = 122	2007 N = 75
Writing	61	55	62
Editing	15	14	14
Translation	6	11	6
Consultancy work	6	8	3
Training events	4	4	4
Quality control	3	4	4
Proofreading	3	3	3
Electronic publishing	0*	1	1
Others	2	2	2

*The value for this year was 0.4 (five respondents reported this activity from 5 to 15% of workload).

while academia (16%) and contract research organisations (10%) were also large providers.

Types of activity

Respondents were asked to indicate their types of work activity (totalling 100%) from a list of categories, and the results are shown in Table 3.

Writing (61%) and editing (15%) continue to be the major activities for respondents.

Types of documents

Respondents were asked to indicate the types of documents on which they work (totalling 100%) from a list of categories, and the results are shown in Table 4.

New response categories were used in 2012, so the responses cannot be compared directly with those from earlier years, but scientific articles (36%) and clinical trial and regulatory documents (34%) continue to dominate the workload of respondents.

Hourly charges for medical writing and related activities

The respondents were asked to provide average hourly charges for medical writing and related activities in euros for the categories listed in Table 5. Just over three-quarters of the respondents (93, 76%) provided this information. Two respondents entered implausible hourly rates. These values are listed below and were excluded from the analysis:

- Writing: €507, €250
- Editing: €507, €300
- Consultancy work: €507, €400
- Quality control: €250
- Proofreading: €507, €220
- Translation: €200

Table 4: Types of document in 2012 (N = 101)

Type of document	Mean % of work
Articles for scientific journals and the scientific press	36
Documentation used for non-clinical and clinical testing, including all documents contributing to or submitted for drug/medical device approval	34
Marketing materials, including congress materials and proceedings	7
Presentations	6
Educational materials for patients and health professionals, including audiovisual media	4
Medical and scientific text books	2
Training documentation	2
Websites	2
Post-marketing documentation (e.g. periodic safety update reports, pharmacovigilance)	2
Standard operating procedures	1
Product information	1
Consultancy documentation	1
User manuals for devices	0*
Others	2

*The value for this year was 0.1 (two respondents reported working on this type of document for 1 and 5% of workload).

One other respondent provided a project rate rather than an hourly rate, and this information was excluded.

Table 5 summarises the average hourly rates for 2003, 2007, 2010, and 2012.

Hourly rates in 2012 for all activities were approximately the same as or lower than those in the previous surveys going back to 2003. The highest rates in categories other than consultancy work and other were €125/hour for translation and €135/hour for

writing, editing, quality control, and proofreading. For writing, 12% of respondents and for editing, 6% of respondents achieved rates of at least €100/hour. Some respondents, however, charged low hourly rates for all activities surveyed. For editing, 12% of respondents reported rates of less than €50/hour; for writing, editing, translation, quality control, and proofreading, the proportion was between 3 and 7%.

Since respondents had been asked for average hourly rates, they were also asked to indicate whether they charge different fees for different client groups. Response counts in Table 6 show whether the fee charged to each client group is lower than, the same as, or higher than hourly rate reported as the average rate, or whether the respondent does not work for that client group.

For all client groups except academia and non-profit organisations, the majority of respondents who worked for that client group said that the average rate reported was the same as charged for that client group. Of respondents who work for academic institutions or academia-based individuals, 56% reported charging lower fees to this client group; the figure for non-profit organisations was 62%. ‘Pharmaceutical companies’ was the client group for which the largest proportion of respondents (38%) reported charging higher than average rates, followed by other (25%), medical device companies (21%), and biotechnology companies (20%).

Charges for training

Thirty-three (27%) respondents provided information on charges for training. All charges were to be given in euros as average rates for the time periods in question. Again, some respondents entered implausible values. One respondent

Table 5: Hourly rates for medical writing and related activities from all four surveys

Activity	Hourly rate (€) ^a										
	2012			2010			2007		2003 ^b		
	N	Mean (SD)	Median (range)	N	Mean (SD)	Median (range)	N	Mean (SD)	Median (range)	N	Median (range)
Writing	85	77 (23)	75 (20-135)	96	79 (27)	80 (11-200)	76	76 (23)	75 (29-140)	55	80 (20-160)
Editing	59	69 (25)	70 (10-135)	72	68 (22)	65 (25-130)	52	71 (26)	75 (29-140)	48	70 (20-150)
Consultancy work	33	93 (33)	82 (25-175)	33	106 (52)	87 (50-300)	26	105 (50)	91 (29-250)	26	105 (20->160)
Quality control	26	70 (27)	68 (20-135)	35	73 (28)	74 (10-150)	26	73 (31)	65 (30-150)	21	75 (20->160)
Proofreading	25	64 (28)	60 (5-135)	38	63 (26)	59 (20-140)	34	69 (29)	62 (125-140)	24	55 (20-150)
Translation	24	63 (23)	60 (10-125)								
Electronic publishing	2	80 (1) and 135 (1)		10	93 (21)	93 (63-125)	3	65 (2) and 200 (1)		5	60 (20-150)
Others	8	90 (48)	85 (25-175)								

SD, standard deviation; –, category not present in that year’s survey.

^aInclusion of the implausible values from two respondents hardly affects the median values. The mean (SD) values are as follows: writing 84 (54), editing 80 (68), consultancy work 102 (62), quality control 77 (43), proofreading 86 (93), translation 68 (35).

^bMean and standard deviation were not calculated for the 2003 results.

Table 6: Fees compared with average hourly rate for different client groups in 2012 (N = 92)

Client group	N	Fees compared with average hourly rate (%)			Do not work for this client group (%)
		Lower	Same	Higher	
Pharmaceutical companies	88	0	45	27	27
Academic institutions or academia-based individuals	84	33	25	1	40
Medical communications agencies	84	11	42	7	40
Medical devices companies	83	1	25	7	66
Contract research organisations	83	10	34	4	53
Non-profit organisations	81	22	14	0	64
Publishing companies	81	6	22	2	69
Work placement agencies	80	2	13	1	84
Biotechnology companies	79	0	25	6	68
Others	69	4	9	4	83

Table 7: Charges for training from all four surveys

Source	Hourly rate (€) ^a										
	2012			2010			2007		2003 ^b		
	N	Mean (SD)	Median (range)	N	Mean (SD)	Median (range)	N	Mean (SD)	Median (range)	N	Median (range)
Whole day	23	932 (457)	900 (400–2040)	21	766 (502)	950 (500–2500)	19	815 (406)	1000 (400–2300)	16	955 (850–>1150)
Half a day	16	437 (233)	338 (200–820)	27	390 (271)	500 (120–1200)	15	510 (238)	475 (200–1000)	14	517 (475–775)
Hourly	13	85 (29)	80 (45–128)	27	83 (33)	85 (50–200)	7	107 (62)	100 (46–200)	8	NC (40–190)
Hourly rate for preparation	5	84 (22)	70 (70–120)	18	73 (27)	80 (50–143)	8	84 (34)	84 (48–150)	3	NC

NC, not calculated; SD, standard deviation.

^aInclusion of the implausible values from three respondents results in the following values for median, mean (SD): whole day 400, 557 (430), half day 850, 1009 (760).

^bMean and standard deviation were not calculated for the 2003 results.

entered very high rates of €4000 for a whole day of training and €2000 for a half day of training, and two respondents gave lower rates for a whole day than for half a day (€500 and €1000, €300, and €600); these values were also excluded from the analysis. One respondent gave a range for the half-day rate, and the average in the range was used. Table 7 summarises the average training rates for 2003, 2007, 2010, and 2012.

Mean whole-day and half-day rates were slightly higher in 2012 than in previous years, but median values were slightly lower.

Discussion

This paper presents nearly a decade's worth of data on work patterns and rates charged by medical writers in Europe. Responses from the 123 respondents to the 2012 survey were similar to those for past surveys as measured by hours worked, sources of work, and types of work providers, activities, and documents. A new question in this survey revealed that nearly three-quarters of respondents are working for clients outside the country in

which are based whether they were in a European country or outside Europe.

For all categories of activities, the remuneration rates reported have generally remained the same or decreased slightly since the first survey in 2003. An analysis of changes in individual writers' rates cannot be discerned from these data since different individuals may have participated in every year's survey. Additionally, fluctuating conversion rates between the euro (the currency used for the surveys) and currencies in which the respondents charge may also confound the interpretation of the data. Nonetheless, the overall trend observed – or more correctly the lack of a trend – as well as the very low rates charged by some respondents present a concern for freelance medical writers working in Europe.

Acknowledgements

Thanks to Alistair Reeves and Dr Anja Loos, Statistician, for advice on data handling. Thanks to all the respondents for taking the time to complete the survey.

References

1. Reeves A, Drees B. EMWA freelance and small business survey 2003. TWS 2004;13(1):11–13.
2. Reeves A, Hamilton S. EMWA freelance business survey 2007. TWS 2007;16(3):138–40.
3. Reeves A. Third EMWA freelance business survey 2010. TWS 2010;19(2):147–9.

Anne McDonough, Raquel Billiones,
Sam Hamilton
Anne@McDonoughCR.com

Teaching medical English: An opportunity for medical writers

English is the lingua franca of medical research and international business. Yet many highly experienced health professionals are unable to communicate effectively in Shakespeare's tongue! Clinical experts are often required to share their knowledge at international conferences, at multinational work groups, or with potential investors. Also, opinion leaders and rising stars who effectively express themselves in English are preferred by the pharmaceutical industry to collaborate in research and medical affairs. In other words, good spoken and written English is necessary to be recognised and respected as an opinion leader in global medical research and business.

Although many clinicians and researchers can read articles in English, many struggle to write clearly, and others are completely tongue-tied when presenting to or discussing with an international audience. In many professional situations, a solid command of spoken English is needed to be able to present work, respond to criticism, and influence others. Being unable to do this is a lost opportunity: sloppy communication in English makes the opinion leaders appear incompetent to an international audience.

This is where medical writers can help. As professional communication experts in English, we are well placed to provide this specialised training.

What skills do you need to teach medical English?

Knowing how to teach language is one of the most important skills required. A language teaching qualification is very useful. Strong communications skills are also essential. Having a good knowledge of English grammar and medical vocabulary is useless if you are unable to communicate it effectively to your learners! Listening skills are equally valuable. Learning is more effective when learners practise speaking for themselves. Additionally, an understanding of 'pharma speak' and culture may be useful when advising a learner on appropriate content or language tone. So, language learners can actually benefit from a broad mix of technical and professional skills.

Knowledge of English grammar and vocabulary

To teach medical English, you obviously need excellent English language skills. Knowledge of English language structure and being able to explain the use of different sentence constructions is essential. Many learners will have a good knowledge of the vocabulary in their field, but they will have difficulty producing the grammatical scaffolding that holds the vocabulary together. Word order differs between languages, such that when transposed directly in English, the sentence may sound strange, and being able to explain why can help. Learning to use tenses correctly in verbal situations is essential for good communication. You will also need to convince the learner that spoken English is stronger when the sentences are shorter and more direct, and that flowery adjectives and long clauses distract the listener from the key message being communicated.

Familiarity with your learner's own language and culture

Being bilingual is useful for identifying problems and tailoring your training to work on common mistakes. For example, the French often say 'the characteristics of the patients' where 'patient characteristics' are better. Also be aware of false cognates, which are words that look the same but have different meanings, such as, *evolution* in French, which means *development*, whereas *evolution* in English is more often used to refer to Darwin's theory of evolution. Understanding differences between the learner's culture and Anglophone culture can be useful too. Again using the example of the French, they have a Cartesian way of thinking and like a logical construction to their argument, but in an international setting, getting straight to the point may be more effective.

Understanding of pronunciation patterns

In spoken language, part of the speaker's power comes from the way their voice is used. Vocal techniques such as stress and pause add *emphasis* and retain the attention of the audience. In English, the stress is more on the key words and less on the

grammatical words. Inflection (the music of our voice) changes: for example if we are asking a question, the inflection goes up at the end of the phrase and if we are making a statement it goes down. Use of pause gives the speaker time to think, and the listener time to absorb. Many presenters are unaware of this 'music' and transpose the music of their native language to the English words. To the listener, this may sound at best monotonous or at worst staccato, which may distract the listener from the key message.

Strong presentation skills

Being a teacher means using good presentation skills, all of the time. Be a model for your learners. Use clear language and give clear instructions. Use appropriate body language and good voice control. By being a confident speaker yourself, learners gain confidence in you. Leading by example helps learners to try and *look* confident themselves. Teaching learners to *look* confident when they speak, even if they do not feel so confident makes them look more knowledgeable.

Medical knowledge

As with medical writing, general medical knowledge and a good knowledge of different specialities will allow you to come up to speed quickly with the learner's specific subject matter. But do not waste too much preparation time learning about the subject.

Industry knowledge or experience

Being able to provide professional assistance beyond language teaching is a plus. Industry knowledge and experience may be valuable because you can use it to help your client improve the content of their presentation, giving them that extra edge. For example a clinician may need help pitching presentations to different audiences within a company, such as marketing, research, and business development. Knowledge of good clinical research practices may also be an advantage when working with hospital research teams. Marketing experience may be useful in preparing convincing presentations or selling research ideas to investors. Graphic experience may be invaluable in designing a slide set. Medical writing experience may be important when advising on written materials or slide presentations. Medical writers often have extensive professional experience and therefore can provide more than just language skills.

A passion for teaching

Like many professional roles, having a passion for what we do makes all the difference. To be a

successful teacher, you need to enjoy working with people and help them achieve their goals. You also need to be a good listener to quickly understand the learners' needs. Being enthusiastic and encouraging will also make you a more effective teacher and will help the learner overcome a lack of confidence, shyness, fear, or stress associated with public speaking.

Training

Teaching, like other skills, can be learned and improves with practice and regular auto review. A language teaching qualification, such as TEFL (Teaching English as a Foreign Language) or CELTA (Cambridge Certificate in Teaching English to Speakers of Other Languages) is helpful to learn specific pedagogical techniques. These courses also cover most major grammar rules and specific issues for non-native English speakers. Alternatively, there are many books written on effective teaching methods (see the bibliography for a selection of my favourites).

Is it worth teaching medical English?

Teaching medical English is complimentary to medical writing, especially for freelancers. Such a service could be useful to gain new or maintain existing clients and often, medical English teaching develops into medical writing, or vice versa. Clients realise that they are too busy to produce all of the work they need. Once they know that you are an expert in medical English, they will probably turn to you for help with other projects. Most organisations have separate training budgets, particularly, in industry, which has to be spent each year before either June or December. If already working as a medical writer, you may be able to obtain an extra contract for medical English lessons from such a budget. Medical schools and universities usually offer a variety of medical English courses. Some are tailored to patient consultation vocabulary and others more to research communications. Also, some small research teams and clinicians are keen to increase their international profile and may be able to dedicate a part of their English translation budget for language training. However, these groups are hard to contact directly, so finding them requires well-developed networking skills! Nevertheless, it does pay to be inquisitive and look out for supplementary budgets and for training needs.

Although general English teaching is often poorly paid, medical English is considered a highly specialised service, so you can demand the upper end of the scale. For example, in France, teaching at a

university starts at €40 per hour. However, rates vary from about €65 per hour for a research team, to €150 per hour for an industry training workshop. As for any professional service, rates may be negotiated on an hourly basis or as part of a total package that includes other medical writing or editing jobs.

Teaching requires time for preparation, which is usually factored into the hourly rate. It is not the *done thing* to pay for preparation time. Having said that, *some* organisations may accept a slightly higher hourly rate if the course is new. The good news is that once the training materials are developed, they can be used again for other clients. So, as preparation time is an investment, keep your course materials and lesson plan clearly filed and labelled for further use.

Training periods are erratic. The advantage of this is that a workshop might fill up some down time between projects or when deadlines change. In Europe, the peaks are similar to those for medical writing, i.e. September (back-to-school fever) and around January (New Year's resolutions). If possible, plan ahead of time to avoid clashes with other deadlines. Industry clients tend to lock in dates early and researchers tend to work on an *ad hoc* basis. The quiet summer break is a good time to work on training materials.

Speaking the speech

Spoken English is needed today for researchers and clinicians to be successful in global medical research. Non-native English speakers may have valuable

ideas, yet are disadvantaged when trying to communicate them. Medical writers are well placed to help these health professionals to achieve their goals. It can be an extremely rewarding experience and for freelance writers, in particular, teaching medical English is a great way to bring in new clients.

Acknowledgement

Thanks to Phil Leventhal for his interest in what I do and for encouraging me to put it down on paper and then promptly editing the resulting text! Thanks also to Anu Alahari for her very kind and constructive comments.

Bibliography

Some bedside reading that inspired me along the way¹⁻⁶:

1. Sikora K, James N. Top-up payments in cancer care. *Clin Oncol* 2009;21(1):1-5.
2. Anderson C, Kilduff GJ. Why dominant personalities attain influence in face to face groups. *J Pers Soc Psychol* 2009;96(2):491-503.
3. Murphy R. *English grammar in use*. 3rd ed. Cambridge: Cambridge University Press; 2004.
4. Petty G. *Evidence based teaching*. 2nd ed. Cheltenham: Nelson Thornes; 2009.
5. Anholt R. *Dazzle them with style: the art of oral presentation*. Burlington Massachusetts: Elsevier Academic Press; 2006.
6. Hall R. *Brilliant presentations: what the best presenters know, say and do*. Edinburgh: Pearson Education; 2007.

Amy Whereat
amy.whereat@speaktthespeech.fr

The QR code

They are everywhere. These little black and white maze-like squares are almost ubiquitous, in airline boarding cards, in many retail products, even in mugs and T-shirts used as marketing tools. But I never really got to find out what they are for and what they can do until I became a part of a digital contract research organisation and got one on my business card. And I am proud to say – I am now QR-coded (see Fig. 1)!

QR code stands for 'Quick Response' code and it has its roots in the Japanese automobile industry but has caught on like wildfire in other business sectors. It is sometimes referred to as 'the 2D barcode', even though there are many other codes of its kind.

A single QR code can store thousands of alphanumeric characters such as urls, contact details, and text messages. The PCMag encyclopedia gives a short explanation of the 'anatomy' of a QR code.¹

Why care about QR codes?

As medical writers, we should take a closer look at QR codes as they have made their way into the scientific and medical fields. Below are a few nifty uses of the QR code.

Popular and scientific media

The QR code in Fig. 2 links to a BBC radio 4 programme called REPORT on clinical trials,² which



Figure 1: A QR code containing contact details.



Figure 3: A QR code containing a DNA sequence.



Figure 2: A QR code containing a logo and a link.

enabled me to listen to it on my phone. This one even incorporates a logo which personalises the code.

Medical and scientific journals are using QR codes to embed links and additional information in publications. Take the example of the article by Shirani *et al.*³ in the July 18 issue of the Journal of the American Medical Association. At the upper right corner is a QR code with the caption ‘scan for author video interview’.

Healthcare

Some tech-savvy doctors use QR codes to market their services and ‘engage’ their patients. QR codes can contain links to online appointment systems or YouTube patient testimonials.⁴ In Taiwan, the feasibility of digital prescription using QR codes is being evaluated.⁵

Medical information

QR codes are used in France to contain medical information that is vital in case of emergencies. For an annual subscription, a French company will

convert your most important medical and personal data into a QR ‘code d’urgence’. The code is then printed on stickers that can be placed on helmets, cars, wallets, medical IDs, and phones etc. The information is stored on a Ministry of Health-approved server. The code on the stickers can only be read by medical professionals using a restricted app on their smartphones.⁶

Genetic information

DNA sequences may be stored in a QR code as shown in Fig. 3.⁷ The code can be easily stored, exchanged, or printed and used to label biological samples for efficient identification and tracking.

How to read QR codes

Reading QR codes is easier than you think. All you need is a smartphone with a camera and a QR code scanning app. Free scanning apps are available for most smartphones. With your phone, you can scan codes printed on paper, or shown on a computer screen, or a screen of another phone. Depending on the app and the complexity of the code, scanning takes only a few seconds. Once a code is scanned, the alphanumeric information it contains can be transferred to and saved in your mobile phone. For a review of different QR code readers, check out <http://www.cellphone-barcode.com/qr-code-readers/> or http://www.qrstuff.com/qr_phone_software.html.

How to create your own QR code

So now you might want to try your hand in creating a QR code. Well, there are many QR code generators available, some for free, some with price tags. For a



Figure 4: A QR code containing a message.

review of different QR generators, check out <http://qrmedia.us/generators/>.

Finally, I am sending you a secret message in the QR code I generated as shown in Fig. 4. Okay, the end product will never be shortlisted in the Most Beautiful QR Code Competition,⁸ but I still hope the message gets across. So come on, let's get QR coding.

Acknowledgements

Fig. 2 is used with permission from the BBC. Fig. 3 is used under the terms of the Creative Commons

Attribution License. Figs. 1 and 4 were generated using goqr.me.

References

1. PCMag.com. QR code [Internet]. Available from: http://www.pcmag.com/encyclopedia_term/0,1237,t=QR+code&i=61424,00.asp.
2. BBC Radio 4. The report: clinical trials [Internet]. Available from: <http://www.bbc.co.uk/programmes/b018fmr/qrcode>.
3. Shirani A, Zhao Y, Karim ME, Evans C, Kingwell E, van der Kop ML, *et al.* Association between use of interferon beta and progression of disability in patients with relapsing-remitting multiple sclerosis. *JAMA* 2012;308(3):247-56.
4. Dolan PL. The latest health care marketing tool: QR codes. *Amednews* [Internet]. [updated 2011 Oct 20]. Available from: <http://www.ama-assn.org/amednews/2011/10/03/bica1003.htm>.
5. Lin CH, Tsai FY, Tsai WL, Wen HW, Hu ML. The feasibility of QR-code prescription in Taiwan. *J Clin Pharm Ther* 2012;37(6):643-6.
6. DataGear.com. Code D'Urgence: France develops QR codes that could save lives [Internet]. Available from: <http://www.datagear.com/blog/2012/code-durgence-france-qr-code.html>.
7. Liu C, Shi L, Xu X, Li H, Xing H, Liang D, *et al.* DNA barcode goes two-dimensions: DNA QR code web server. *PLoS One* 2012;7(5):e35146.
8. Donahoo D. Wired: the most beautiful QR code competition [Internet]. [updated 2012 Nov 01]. Available from: <http://www.wired.com/geekdad/2012/11/qr-code-comp/>.

Raquel Billiones
rbilliones@clinpace.com

Freelance Foraging



Raquel Billiones
rbilliones@clinpace.com

A day in the life of a teacher of scientific writing

Today, the first day of a 4-day writing course, I face a new group of 12 biomedical researchers from various disciplines. I start by asking, 'While reading a scientific journal, how many of you need to read a sentence at least twice to understand it?' Most of the participants nod and one of them adds 'And this makes me feel so stupid!' I reassure them that the fault is rarely with the reader but with the writer. The ice is partially broken; some of the group smile.

For the first exercise, I ask the group to read four different versions of part of a scientific article adapted from John Kirkman's book *Good Style: Writing for Science and Technology*¹ and to say which of the styles they think is best. A heated discussion follows. One participant, who had chosen the wordiest and most complicated as the best style, announces 'But you *must* understand that *we* scientists write like that!' Silence in the group. This person is obviously a senior scientist.

Taking advantage of the silence, I address the whole group: 'Tell me, does a scientist write for his or her own ego or to communicate?' This sets them thinking. 'To communicate, obviously', say a few. The senior scientist looks a little uncomfortable but manages a smile. We continue discussing the four texts and then I hand out comments made by the members of the Biochemical Society on each of the four styles. The Biochemical Society members voted for the most direct version, with verbs in the active voice, sentences of various lengths, and statements that are not too complex.

I now introduce the first aim of my course: improving readability. We work with examples of clumsy, roundabout, and woolly sentences; empty words; noun clusters; and sentences packed with too much information.

Now it is time for a break. Over a cup of coffee and a croissant, I get to learn about the participants' problems (writer's block, lack of time to write, coping with rejection). I will use this information

to help them with these problems by discussing them in class.

After a break, I introduce the second aim of my course: understanding the structure of a scientific manuscript. I know no better way to introduce the subject of the abstract than to go over the article written by Munise Ohri and Keith Dawes in *The Write Stuff*.² I subsequently hand out a published abstract and ask the participants to write its title. They then choose the title they think is best from among those they have come up with themselves and the original title (without knowing who wrote which title). The original title does not even get one mention. When I tell them which it is they are most surprised. It is three lines long with many unnecessary details.

We next turn to the introduction. Using an example from a paediatrics journal, I ask them to think about whether it tells a story and whether there are too many references, interrupting the flow of the text. The group launches into another lively discussion. As a teacher it is important to realise that participants may learn as much from each other as they learn from you.

On the second, third, and fourth days, we will continue working on the abstract and introduction and will move on to the other sections of the manuscript. But today, the five hours are almost up and I can see that the group is beginning to wilt. Half-an-hour later, I am relaxing in my little garden overlooking vineyards, mountains, and Lake Geneva, and looking back on a good day's work with an enthusiastic group.

References

1. Kirkman J. *Good style: writing for science and technology*. Abingdon, UK: Routledge; 1997.
2. Ohri M, Dawes K. Successful abstract writing: an essential skill for medical writers. *The Write Stuff* 2009;18(1):27-8.

Ann Bless
ann.bless@bluewin.ch