

Medical Writing

Non-Clinical Health Writing

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Themes of upcoming issues of *Medical Writing*

December 2014: The theme will be '**Post-approval regulatory writing**'. This issue will include articles on post-approval documents and pharmacovigilance, and the Guest Editor will be Lisa Chamberlain-James. *The deadline for feature articles has passed.*

March 2015: The theme will be '**Readability & plain language**'. Topics will include plain language, general fundamentals of good medical writing, how to target your audience, editing for clarity, and readability of patient materials, websites, regulatory documents, and more. *The deadline for this issue is October 24, 2014.*

If you would like to submit an article, have ideas for issue themes or articles, or would like to discuss any other issues, please write to editor@emwa.org.

Non-clinical health writing

Phillip Leventhal

Editor-in-Chief, Medical Writing



We medical writers have a unique and valuable skill set, which includes, most notably, the ability to understand and clearly communicate complex medical information. We are also experts at working with multifunctional teams, compiling detailed documents, and following specific regulations and guidelines. These skills should be transferrable to other domains, but which ones and how? This issue, 'Non-clinical health writing', describes areas tangential to medical writing in which medical writers can work.

The issue begins with three articles on veterinary medical writing. **Nicola Parry** describes opportunities in veterinary writing, and **Susanne Goebel-Lauth** outlines the veterinary regulatory structure and dossier content requirements in Europe. **Anna Romero** rounds off this section with an article on the specialty of translation in veterinary medical science.

Cosmetic products are another little-known area that could benefit from the help of a medical writer. As **Lorine Preud'homme and colleagues** explain, new regulations harmonising the rules for cosmetic products, their registration, and testing were recently put into place. Medical writers are well-positioned to prepare the dossier for cosmetic products because we are familiar with presenting necessary information, formulating key messages, and telling a product story with a clear, complete, and consistent approach.

Chemical products also have very specific regulations and documents that could be managed well by an experienced medical writer. **Lorraine Tilbury** and **Phillipe Adrian** first describe REACH chemical dossiers, through which chemical substances are approved in Europe, and in a second article, **Dr Tilbury** explains pesticide regulations and the preparation of pesticide dossiers in Europe. She explains that because these documents have many similarities with clinical regulatory documents, with a little training, a medical writer could easily cross over into these fields. Finally, although nanomaterials are currently covered by existing regulations for small-molecule pharmaceuticals and medical devices, their

Editorial

Correspondence to:

editor@emwa.org

increasing use may lead to specific regulations or at least, as **Simone Lerch** puts it, to 'nanomedical writing' as a specialisation in the medical writing profession.

Alisa Davis next tells us about medical writing for *in vitro* diagnostics, which are used to evaluate human samples for biological analytes. She describes how this area will become increasingly important for pharmaceutical writing, although medical writers should be aware that the regulations and writing for *in vitro* diagnostics differs from those for pharmaceuticals. Linked to this are bioanalytical reports, which describe drug concentrations in biological samples and are used as the basis for toxicokinetic and pharmacokinetic evaluations. **Alexander Nürnberg** describes these and how medical writers can assist in their preparation. He concludes that due to a good overview of the drug development process, medical writers have valuable expertise in placing bioanalytical reports in the perspective of a clinical trial or submission package.

Also in this issue...

In this issue, past and current Section Editors for Out on Our Own, **Sam Hamilton** and **Alistair Reeves**, respond to a Letter to the Editor from **Duncan Marriott** questioning the value of the freelance salary survey. As part of their response, Sam and Alistair provide a new article comparing the costs of salaried and freelance medical writers working in Europe.

In addition, **Laura Colladi Ali** continues her Profiles section with an interview of Fernando Navarro. Also, **Khushboo J. Nagdev** and **Ashish R. Agrawal** present key factors a pharmaceutical company should look into when outsourcing medical writing services, and **Amanda Hindle and colleagues** provide guidance for professional medical writers in working with authors to develop high-quality, ethical clinical manuscripts.



President's Message

Julia Donnelly

Correspondence to:

president@emwa.org

Dear medical writers,



Having embarked upon my year-long journey as president of EMWA, this is my first opportunity to update the members about the achievements, plans, and aspirations of the outgoing and new Executive Committee (EC).

The Budapest Conference was, as I am sure all attendees will agree, a huge success. The venue was stunning, although the weather couldn't quite match the view. I learned about flocking drones and deconstructed goulash during the Welcoming Presentations and was fortunate enough to attend the full-day symposium on 'Transparency of clinical data - where does medical writing fit in?' The packed auditorium was treated to fascinating presentations and interactive discussions from a panel of international experts and speakers. The educational committee delivered a comprehensive scientific programme including over 50 workshops and seven new topics - as usual, feedback from the workshops has been very good confirming that EMWA delivers high-quality training and great value for money.

At the Annual Meeting, I was able to thank Andrea Rossi, Alistair Reeves, and Jo Whelan who were retiring from the EC as President, Conference Director, and Educational Officer, respectively, and welcome Sam Hamilton, Slavka Baroncova, and

Barbara Grossman. Our first EC meeting was lively and informative. In addition to receiving reassuring financial, journal, PR, and educational updates, it was gratifying to hear that the newly launched website is being so well received and that we are on target with future conference organisation. New initiatives for the coming year include publication of the 3-year EMWA strategy, introduction of expert seminars and E-learning, and expansion of the recently introduced webinar programme.

While we are between conferences, I would like to remind you all about the Geoff Hall Scholarships, which have recently been launched for 2014. Please see our website for the title of this year's essay and details on how to apply. This is a fantastic opportunity for new writers, as the successful applicants will benefit from 2 years of free membership and free conference registration. I would also like to encourage members to get involved with our association and to contact me or any of the EC if you would like to discuss opportunities or suggestions.

Our autumn conference this year will be in Florence - a fantastic opportunity to combine a beautiful and cultural setting with education, networking, and fun. We might even get some winter sun!! I look forward to seeing many of you there. In the meantime, enjoy your summer.

Best wishes,
Julia Donnelly

EMWA social media team

Laura Carolina Collada Ali

Correspondence to:

Laura Carolina Collada Ali
laura.collada@ontranslation.it

As most of you already know, EMWA is currently using social media to interact with its members on a daily basis, to share information and promote discussions. Social media are not just sources of information but also ways of interacting with others.

If you are not already following EMWA on social media, we would like to invite you to join in. It is a great way of staying in contact with EMWA colleagues, following up on interesting discussions, and staying up to date with EMWA news.

Changes to the EMWA social media team



We would like to welcome *Simon Page*, who will be in charge of the EMWA LinkedIn Company Page. Simon is a Publication Manager at Costello Medical Consulting, Cambridge, UK. His experience spans the fields of medical com-

munications, publications, medical affairs, and market access. Simon's current role is focused on strategic publications planning and oversight, through which he has driven the delivery of numerous manuscripts and international congress submissions. Simon will focus on working with the EMWA social media team to raise the online profile of EMWA.

Thanks to our team members

We also want to thank *Karin Eichele*, who is in charge of the EMWA Facebook account, which now has more than 600 followers; *Julianne Chaccour*, who is in charge of the EMWA Twitter account, which has more than 800 followers; and *Maria Koltowska-Häggström*, who is in charge of the EMWA LinkedIn Discussion Group, which has over 3000 members.

However, we could always use more support. If you think you have something to offer, no matter how small, please contact the EMWA Public Relations Officer (Laura C. Collada Ali, pr@emwa.org).

Opportunities in veterinary writing

Nicola M. A. Parry^{1,2}

¹Parry Medical Writing, Inc., Northborough, MA, USA

²Massachusetts Institute of Technology, Cambridge, MA, USA

Correspondence to:

Nicola Parry
Parry Medical Writing, Inc.
Northborough, MA, USA
nicola@parrymedicalwriting.com

Abstract

Unlike medical writing, 'veterinary writing' does not exist as a defined career path. However, writers are inevitably also required in this field and play important roles in different areas of the veterinary profession for creation of scientific and non-scientific documents. Scientific writing may involve production of regulatory and research-related documents, disease- or drug-related educational and promotional literature, and materials such as abstracts, journal articles, and posters for publication. Non-scientific writing may involve production of print-based and online materials for consumers about medicines and pet health. Numerous opportunities therefore exist for medical writers and veterinarians to embed themselves in various areas where writers are essential to the veterinary profession.

Keywords: Veterinary, Veterinary writing, Scientific writing, Non-scientific writing, Translation

Introduction

Although the field of writing for the veterinary profession is less formalised than its medical counterpart, written communications are as important here as in the medical profession.

Veterinary writing encompasses a similarly wide array of activities that also fall into two major categories: scientific and non-scientific. Scientific writers concentrate on written communications for professional veterinary clinical and scientific audiences, while non-scientific writers typically produce non-technical materials.

As in the medical communications profession, writers who work on veterinary-related materials may produce original materials or edit other writers' work or may have combined roles of writing and editing.

In this article, I hope to introduce you to some of the opportunities available for writers who would

like to break into writing for the veterinary profession (Figure 1). While these terms are not formally recognised, I will use the term 'veterinary writing' to refer to writing for this profession and 'veterinary writers' to refer to writers who produce these materials.

Scientific veterinary writing

Regulatory writing

In the US, for example, medical writers in pharmaceutical and biotechnology industries produce numerous regulatory documents involved in helping a new product, such as a drug or medical device, progress from clinical trials through US FDA approval. These may include study protocols, clinical trial reports, summaries of efficacy and safety data, literature reviews, investigator brochures, Investigational New Drug documents, and New Drug Application submissions.¹

Animal drugs proceed through a similar, regulated process. A company must submit a New Animal Drug Application (NADA) to the Office of New Animal Drug Evaluation (ONADE) in the Center for Veterinary Medicine within the FDA. NADA documents include supporting data that establish a drug's effectiveness and safety as well as information on its chemical components and pharmacology.²⁻⁵

Investigational New Animal Drug documents are also required if an unapproved new animal drug will be used for research. These comprise the discovery phases of the drug, explanation on its components and intended use, data from laboratory animal studies on safety and efficacy, and the results of any pilot studies. The company submits these data to the ONADE for FDA review for safety and efficacy.³⁻⁵

Although companies that produce animal drugs may already have regulatory medical writers on staff, the need to prepare documents for regulatory

submissions for these drugs nevertheless presents a unique opportunity for writers with a veterinary background because of their expertise in this field.

Clinical research

Opportunities for veterinary writers are also abundant in research settings, such as in academia or in government institutions. Writers can help veterinary clinicians and researchers prepare high-quality, scientific copy to communicate their science in a wide range of publication types, such as clinical or scientific research papers, literature reviews, abstracts, and conference posters. They may also help veterinary clinicians and scientists develop and write grant proposals to obtain funding for important research studies.

Additional opportunities exist within contract research organisations. During drug development, before a new drug can be tested in the target species, it must undergo rigorous pre-clinical testing or non-clinical trials. This phase involves testing both *in vitro* and *in vivo* in suitable animal models and collecting important pharmacological data (drug dosing, safety, and efficacy).⁶ Writers develop documents from these data to facilitate risk assessment by the regulatory authorities as they evaluate whether the drug is suitable for testing in its target species.

Journals

Positions are also available at peer-reviewed veterinary and scientific journals for veterinary writers and may include those of editor-in-chief, managing editor, and manuscript editor.

Publication planning in veterinary journals is increasingly following guidelines on editorial independence produced by the World Association of Medical Editors and the code on good publication practice of the Committee on Publication Ethics.⁷ Veterinary writers therefore have an important role to play in promoting the development and editing of clinical publications in close conjunction with authors.

As is the case for most professions, there are numerous trade publications (print and online) in circulation in the veterinary profession. These also offer many opportunities for writers and can be a lucrative niche for freelance writers with a veterinary background.

Marketing materials for veterinarians

Writers are also needed by pharmaceutical and biotechnology companies to help develop the communication strategy and publication plan that runs alongside the clinical development process and supports the commercialisation of the company's

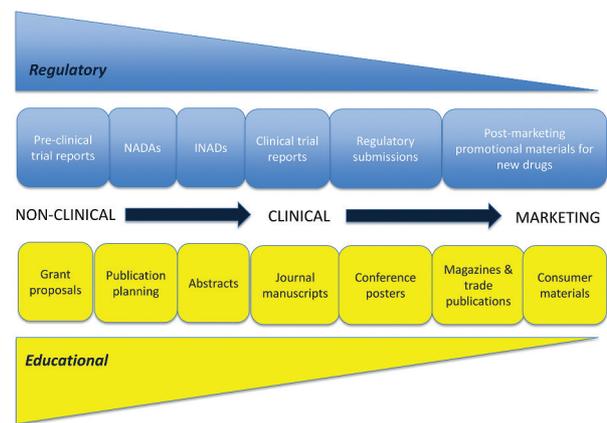


Figure 1: Opportunities for writing in the veterinary field (see text for abbreviations).

products. This plan helps to introduce the drug to veterinarians and to ensure that it remains on their radar during its lifecycle. Writers can be particularly effective in this part of the campaign if they have a veterinary background. In addition to producing written scientific marketing documents to communicate the company's information to veterinarians, they may also play a role in tracking the developments of competing companies that produce drugs in the same therapeutic area and in monitoring their competitors' communication strategies and publication activities.

Veterinary writers may also assist in disseminating clinical and scientific data on a veterinary product to veterinarians at conferences and in veterinary journals.

Veterinary translation

Translation is a field that often goes hand-in-hand with writing and although some professionals work solely as translators, some writers may also provide translation services.

As with medical documents, translation of documents is required in the veterinary field. Ideally, this should take place during the writing process to enhance the quality of the translated material.

The work of writers may be translated into any language. For example, documents written in English may be translated into any of the EU languages to meet local requirements in some European countries. Veterinary writers who provide translation services have a key role to play in this process and may work on documents such as packaging leaflets for drugs, protocols for clinical trials, clinical and scientific materials for publishing, and textbooks. Inaccuracies may be introduced during the translation of any document and could potentially have serious consequences. Veterinary experts who provide translation services can therefore significantly

reduce the potential for errors compared with linguists without a veterinary background.⁸

Non-scientific veterinary writing

Promotional materials

Promotional writing is often commonly known as marketing writing and may cover a range of content from journal advertisements to direct-to-consumer materials and marketing brochures for veterinarians.

Veterinary writers may be involved in development of numerous types of direct-to-consumer marketing materials. Pharmaceutical companies and pet insurance companies, for example, rely on writers for content to help communicate about their products to farmers and owners of pets or competition animals. Direct-to-consumer marketing materials are also used by other businesses such as pet food companies, veterinary clinics, and boarding kennels and catteries. Writers may produce content on veterinary products for print and web-based media platforms.

Magazines and trade publications

There are also many mainstream magazines and trade publications available (in print and online) for the pet/animal industry. As publications are written on a consumer level, this offers many opportunities even for writers without a veterinary background, can lead to regular and long-term freelance writing assignments, and may serve as a stepping stone into other areas of writing in the veterinary field.

Veterinary translation

Written materials may need to be translated into different languages for consumers, as well as for veterinarians. For example, these may include marketing documents about medicines, pet foods, or pet insurance; packaging leaflets to accompany medicines; or animal health brochures provided by veterinary clinics. And as previously mentioned, given the risk of serious consequences as a result of inaccurate translation, involving veterinary experts at this stage can significantly reduce the potential for errors.

Qualifications needed for veterinary writing

Inevitably, the basic attributes required to succeed in veterinary writing are similar to those for medical writing (Figure 2). However, additional qualifications required to break into veterinary writing will vary depending on the category of writing involved.

For those interested in scientific veterinary writing, a degree in veterinary medicine will inevitably be advantageous when applying for positions or

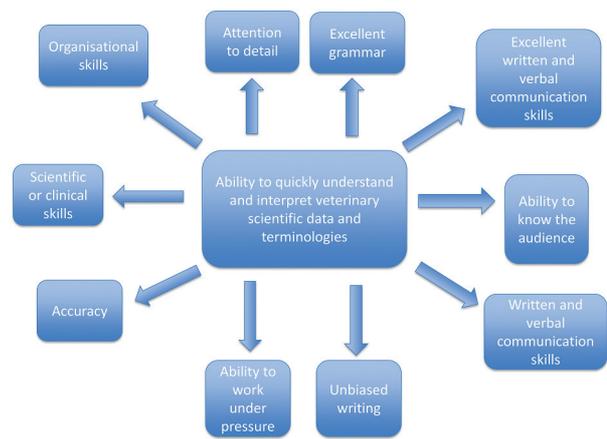


Figure 2: Attributes required to succeed in veterinary writing.

freelance projects, although not necessarily essential. Veterinarians with a graduate degree or specialty qualification may also find it easier to break into certain areas of veterinary writing.

Other qualifications, such as veterinary nursing certification or a degree in animal science, will also be useful. And just as in the medical writing field, individuals with any science degree can also succeed in veterinary writing.

For those interested in the less technical non-scientific veterinary writing, a veterinary or science qualification is typically unnecessary, although certainly will be advantageous. Writers who pursue this track often have a degree in a discipline such as communications, English, or journalism.

And if you are already established as a medical writer in either the scientific or non-scientific track, you already have a head start for getting into veterinary writing. Indeed, many medical writers already work in this arena. However, it is important to note that despite many commonalities with the medical field, writing for the veterinary profession can introduce challenges for even a medical writer with experience in a variety of medical writing categories and therapeutic areas. Among other things, veterinary medicine has many of its own specialised terminologies, as well as a unique framework with respect to regulatory submissions. Although not insurmountable hurdles, these pose very different challenges to a medical writer.⁹

Summary

The veterinary profession is a niche with a similar scope of writing needs as the medical field. However, there is no defined 'veterinary writing' speciality or structured educational pathways to take in order to gain recognition as an expert in

this field, as is the case with medical writing. Additionally, job openings for ‘veterinary writers’ are not advertised, *per se*. Consequently, persistence, networking, and marketing are key to finding employment as a writer in this area, just as in the medical writing field. Hopefully this article has provided an outline of some of the many opportunities available for writers who wish to break into writing for the veterinary profession, whether or not they have a veterinary background.

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Author information

Nicola Parry is a freelance medical writer living in the United States, in the Greater Boston region. She is also a veterinarian and is board-certified by the American College of Veterinary Pathologists.

Veterinary regulatory writing in Europe

Susanne Goebel-Lauth

Kiedrich, Germany

Correspondence to:

Susanne Goebel-Lauth
Kiedrich, Germany
susanne.goebel-lauth@gmx.de

Abstract

Regulatory writing for the veterinary pharmaceutical industry is in many ways similar to other types of regulatory writing, but there are also clear differences. This article outlines the veterinary regulatory structure in Europe and, in particular, dossier content, competent regulatory authorities, as well as registration procedures. Adjacent fields of regulatory writing are addressed and an overview of typical documents is given. Furthermore, specific veterinary regulatory information sources for medical writers are provided.

Keywords: Veterinary medicinal product, Regulatory affairs

Writing for the veterinary pharmaceutical industry is like being a 'minor species' among medical writers. Most colleagues work for the human pharmaceutical industry and most seminars or workshops deal with topics specific for human medicinal products, such as the Clinical Trials Directive or the Common Technical Document (CTD) format for regulatory submissions. Many aspects of writing for the animal health industry are, of course, similar to other areas of medical writing, but there are also very specific topics to consider.

In veterinary medical writing, there is, for example, not only a patient to consider, as in all clinical studies, but also the owner of the patient. Furthermore, for veterinary health products, a considerable part of the registration dossier deals with human food safety because livestock animals produce food for human consumption, an aspect that medical writers or regulatory affairs professionals for human pharma do not touch. Another example is the importance of environmental safety testing because animals may be kept on pastures and may expose the environment directly to substances that present a potential hazard for the environment. This is a minor aspect

to be considered in registration dossiers for human medicinal products.

The product dossier for veterinary medicinal products

Veterinary registration dossiers follow the Notice to Applicants (NtA) structure as laid out in Eudralex volume 6B,¹ and do not yet follow the CTD structure. It is, in general, acceptable to use the CTD format, but in this case, a correlation table to the NtA structure must be provided. Also, it is possible to have a hybrid dossier consisting of an NtA structure for most parts and, for example, a CTD module for the quality documentation. The exact format of the dossier should be discussed in a pre-submission meeting with the competent regulatory authority.

When it comes to details of the content of the dossier, there are some differences between pharmaceutical and immunological veterinary medicinal products. However, the general dossier structure for both is as follows:

- Part 1: Administrative information and summary of the dossier.
- Part 2: Quality documentation.
- Part 3: Safety documentation (for pharmaceutical products, this comprises also residues documentation).
- Part 4: Efficacy documentation.

Part 1

Important documents in part 1 of the dossier, for which the regulatory affairs department might seek the help of a medical writer, are the detailed and critical summaries (expert reports) of the quality, safety, and efficacy documentation; the summary of product characteristics; and the product information literature (labelling and package leaflet). Specific aspects to consider when writing the latter for veterinary medicinal products were addressed in an earlier article.²

Dossier parts 2, 3, and 4 may each have a written introduction, but this is not mandatory in the age of e-submissions. The parts can consist only of the individual study reports or literature references.

Part 2

Part 2 of the dossier deals with the physicochemical, biological, or microbiological documentation for the individual components and the finished product. This is usually the part of the dossier that contains the most sensitive information with regard to protecting intellectual property.

Part 3

Part 3 of a pharmaceutical (i.e. a non-immunological) product covers the safety of the product to the user, the consumer (of foodstuffs produced by animals), and the environment. It contains mainly the toxicological studies performed in laboratory animals, especially the no-observed-effect levels. Based on these studies, a user risk assessment is performed and, for products intended for food-producing animals, an acceptable daily intake of potential residues in edible tissues is calculated.

Based on the acceptable daily intake, maximum residue levels for the active substance and its metabolites are determined for each relevant food commodity (e.g. edible tissues and milk from cattle or edible tissues and eggs from poultry). Such a setting of maximum residue levels follows a separate registration procedure and has a separate dossier.

Dossiers for products intended for use in food-producing animals have an additional Part 3B, which contains residue depletion studies in the target animal species. This is used to determine the time that needs to elapse between administration of the veterinary medicinal product to the animal and slaughter or milking of the animal, the so-called withdrawal period. This is the time between administration of the active substance to the animal and the decline of any potential residues in foodstuffs of animal origin below the respective maximum residue levels.

Furthermore, an environmental risk assessment is performed, which can be based on an extensive set of studies, especially for livestock animals that are kept on pasture or for fish that are kept in open water.

The focus of part 3 of an immunological product is the assessment of the potential risks that may result from the exposure of human beings to the veterinary medicinal product, for example during its administration to the animal. When such products consist of live organisms, especially those

that could be shed by vaccinated animals, the potential risk to unvaccinated animals must be evaluated. On the other hand, residue depletion studies are not normally necessary, except when certain adjuvants or preservatives are used.

Part 4

Part 4 describes the efficacy of the product in the target animal species (i.e. patient). This can be companion animals such as dogs or cats and livestock animals such as cattle, pigs, horses, and poultry. For immunological as well as pharmaceutical products, the focus is confirming the clinical dose through laboratory studies and field trials. For pharmaceutical products, part 4 furthermore includes pharmacological information such as the mode of action, potential resistance of antimicrobial or antiparasitic substances, pharmacokinetic particulars, the tolerance in the target animal species, and the determination of the clinical dose.

Competent regulatory authorities

Depending on the European country, the competent regulatory authority for the assessment of veterinary dossiers can be the same as for human medicinal products, or it can be a separate authority. The EMA, for example, has departments for human as well as veterinary medicinal products (covering immunologicals and pharmaceuticals). In Germany, however, veterinary pharmaceutical products are regulated nationally through the Federal Office of Consumer Protection and Food Safety, whereas the competent regulatory authority for veterinary (as well as human) immunological products is the Paul Ehrlich Institute. For environmental safety aspects, the German regulatory authority consults the Federal Office for the Environment.

There are also Member States of the European Union (EU) that differentiate between topical antiparasitic veterinary medicinal products, which are regulated through agricultural agencies, and other veterinary medicinal products, which are handled by either the competent regulatory authority for human medicinal products or a specific veterinary one.

Registration procedures

The registration procedures for veterinary medicinal products are, in general, the same as for human medicinal products. Small companies that focus on the local market in a certain country sometimes still choose the national registration procedure, namely application and product licence only in one EU country. Larger companies usually use the

European registration procedures, namely the mutual recognition procedure, the decentralised procedure, or the centralised procedure:

- *Mutual recognition procedure:* Many products that are currently on the market were registered years or decades ago when there were only national registration procedures in individual countries. The mutual recognition procedure must be used when a marketing authorisation holder now wants to extend such an existing product licence to other EU countries. A so-called Reference Member State is nominated which will evaluate the registration dossier and this assessment will then be accepted by the so-called Concerned Member States of the procedure.
- *Decentralised procedure:* Where a company intends to licence a new product in more than one European country, the decentralised procedure is usually chosen. The system of Reference Member States and Concerned Member States applies for this procedure, too, but the application is sent simultaneously to all involved countries.
- *Centralised procedure:* Applications for the centralised procedure are submitted to the EMA. There are some products that fall under the mandatory scope of the centralised procedure, such as veterinary medicinal products developed using certain biotechnological processes. Others fall under the optional scope, such as products containing new active substances. A marketing authorisation following the centralised procedure is granted by the European Commission and is valid for the entire Community market.

For veterinary medicinal products, generic (pharmaceutical) or biosimilar (immunological)

products can be registered and bibliographic applications (i.e. most of the dossier is based on literature references) can be made.

Areas adjacent to veterinary medical writing

There are some adjacent fields of regulatory writing for veterinary medicinal products, such as writing for pesticidal products, biocidal products, or medical devices.

The words pesticide and biocide are often used incorrectly as synonyms. From a regulatory point of view, pesticides are used to protect plants or crops from pests and diseases or control weeds. Biocides are used to control harmful or unwanted organisms through chemical or biological means either in the surroundings (houses, stables) by impregnating clothes or parasite barrier nets, or by direct application on human skin. Common examples of such products are disinfectants, wood preservatives, and insect repellents. Both fields are regulated by separate European legislation.

There is a grey area between veterinary biocidal products and antiparasitic products or disinfectants used on animals or in animal husbandry. For certain products, there is a choice whether to register a product through the animal health or the biocides regulations. Here, it often depends on the focus of the company that wants to register the product and on the expertise of their regulatory affairs department.

The term ‘medical device’ is not established for veterinary use in the EU and there is no European registration procedure for such products. In the USA, these products are known as ‘veterinary devices’ and are regulated by the Food and Drug Administration.

Table 1: Information sources for veterinary regulatory writing

Source	Description
Volume 5 of Eudralex ¹ (‘The rules governing medicinal products in the European Union’)	The main piece of European legislation with regard to applications for marketing authorisation for veterinary medicinal products, Directive 2001/82/EC ³ as amended, is published on this website of the European Commission in all official European languages
Volume 6 of Eudralex ¹	The registration procedures as well as the presentation and content of the dossier are described here
Volume 7 of Eudralex ¹ and the EMA’s website ⁴ and the VICH website ⁵	The scientific guidelines prepared by the EMA’s Committee for Medicinal Products for Veterinary Use are no longer directly published on the European Commission’s Eudralex website ¹ (formerly in Volume 7) but on the EMA’s website. The EMA’s website also covers the guidelines established by the International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH) ⁵
Volume 8 of Eudralex ¹	The legal framework for the establishment of maximum residue limits for medicinal products for veterinary use is provided here
Volume 9 of Eudralex ¹ IFAH-Europe ⁶	The pharmacovigilance guidelines are published here International Federation for Animal Health (IFAH) Europe represents manufacturers of veterinary medicines, vaccines, and other animal health products in Europe (veterinary industry association)

A further adjacent field of veterinary regulatory writing is preparing pharmacovigilance documents. Pharmacovigilance may be part of the regulatory affairs department, but it can also be self-standing or integrated into the clinical development department.

Information sources for veterinary regulatory writing

For someone who is new to veterinary regulatory writing, it is essential to have a good overview of the regulatory structure, legislation, and guidance documents. Table 1 lists the main information sources for veterinary regulatory writing.

Conclusion

Veterinary medical writing is a diverse field with some parallels to medical writing for human pharmaceuticals and other adjacent fields. However, focused training is limited, so a background in veterinary medicine, biology, or agricultural science is valuable, especially for understanding the specific

diseases, treatment routines, animal husbandry systems, and terminology.

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Author information

Susanne Goebel-Lauth is a veterinarian, working as a senior regulatory affairs manager in a large veterinary pharmaceutical company. She is responsible for the regulatory strategy, compiling safety and efficacy files for new veterinary medicinal products, and defending existing product licences.

Exploring veterinary science, a little-known translation specialisation

Anna Romero

Freelance Scientific Translator and Copywriter, Barcelona, Spain

Correspondence to:

Anna Romero
Freelance Scientific Translator and Copywriter
Barcelona, Spain
onehealthtranslations@gmail.com

Abstract

Although closely linked to human health, veterinary science remains a relatively unexplored field for medical translators. The key to the specialisation may lie in the translators' ability to answer several key questions:

- Who is the end reader?
- What is the context?
- How is the document organised?

Only then will they be able to adapt the terminology and register (or tone) to the target audience (mainly veterinary surgeons, pet owners, or farmers), make the best translation decisions for the text's context, and make sure they use the right industry references. All these aspects are vital to ensuring high-quality translations in this field and to building long-term relationships with veterinary customers.

Keywords: Veterinary science, Animal health, Veterinary readers, Context, Veterinary market, Regulatory documents

In any modern society, there is an enormous need for medical and health information and, thus, an equally great need for specialised medical translators and editors.¹ Veterinary science is no exception. It plays a vital role in environmental protection, food safety, and animal health, as well as in public health. Indeed, at least 60% of all known human infectious diseases, and 75% of emerging human diseases, originate in animals.²

Despite the inextricable link between human and animal health, veterinary science remains a relatively unknown field for medical translators, just as it does for medical writers.³ Nevertheless, it is an extremely specialised field in its own right, in which mere extrapolation from human medicine is not enough.^{4,5} There is thus a clear need for specialised veterinary translators.

This paper aims to offer interested medical translators an introduction to the specialisation and to certain key aspects that will help them produce high-quality translations in the field. To this end, it will analyse how to successfully approach veterinary texts by replying to three of the classic questions of journalism: who, what, and how. Unsurprisingly, like journalism itself, translation is a communicative act.

Who is the end reader of my translation?

One of the first questions a translator needs to answer is 'who am I writing for?' Indeed, both the choice of terminology and the register of the final text should be driven by the end readers' characteristics: 'who are they and what do they know?'⁶ Failing to take the readership into account when making translation decisions can distort or obscure a text's intended message and, thus, diminish the quality of the translation. In veterinary science, there are three main audiences to consider.

The first audience consists of veterinary surgeons. These are professionals who have completed a specialised degree encompassing a wide variety of fields: from animal nutrition, parasitology, and bovine reproduction to equine medicine, dermatology, animal behaviour, and anaesthesiology. Not only is the specialised knowledge they have acquired diverse, so is the practice of the profession itself: veterinary surgeons may work in clinical practice, research organisations, academia, industry (nutrition, diagnostic, or pharmaceutical companies), or government. When they are the target audience, the translation will be very demanding in terms of content and specialisation.

At the other end of the spectrum lies the second potential audience: pet owners. This non-specialised, heterogeneous group includes anyone who owns a cat or dog (the so-called 'small animals'), a

horse, or other species such as ferrets, snakes, or parrots (the ‘exotic animals’). A wide variety of documents target this group, from leaflets on diagnostic tests and web pages on specific diseases to pet food booklets or information on emerging diseases. All these texts share a common challenge: the terminology and register need to be carefully adapted to the layman’s language.

Somewhere in between vets and owners lies the third, rather unique, potential audience: farmers. While they lack vets’ formal academic training, they have a deep knowledge of their animals (mainly cattle, swine, or poultry) gained through practical experience such as regularly monitoring their performance and growth. The terminology of texts targeting farmers must thus be chosen carefully, as a profusion of lay terms could in some cases be regarded as offensive.

So why is becoming familiar with these readers so important to ensuring the quality of the final text? Experience suggests that specialised translation is more than just specialised terminology. Sometimes a discipline’s most common terms can pose its greatest pitfalls.

Take the example of veterinary surgeons. These readers may be called ‘veterinarians’ (the preferred term in the USA), ‘veterinary surgeons’ (in the UK), ‘practitioners’ or ‘clinicians’ (if they work in clinics), ‘veterinary physicians’, or simply ‘vets’. In many languages, and depending on the context, a single term covers all of these English alternatives (such as ‘*veterinario*’ in Spanish), whereas literal translations of the different English variations (e.g. false friends such as ‘*cirujano veterinario*’ in Spanish) can sound awkward, create confusion, or even change the meaning of the text. By understanding ‘who our reader is’, we reduce the risk of inaccurately translating many of these common specialised terms.

As mentioned earlier, the end reader also greatly influences the choice of terminology. It is worth noting that it is not just a matter of following the source text: what constitutes a lay or scientific term in one language is not always the same in another. In English, for example, both vets and owners use the term ‘heartworm disease’ to refer to the condition caused by the roundworm *Dirofilaria immitis*. This is not the case in languages such as Spanish, in which two different terms are used. Only by bearing in mind who their reader is can specialised Spanish translators make the right terminological choice for a document targeting vets (*filariosis*) or pet owners (*enfermedad del gusano del corazón*).

While some might argue that failing to make these terminological distinctions is not a major issue, there

is no denying that a text that takes them into account conveys a much higher degree of specialisation and, thus, quality. That, in turn, is something that readers and clients alike are bound to notice.

Now that we have addressed the question of *who*, it is time to turn to *what*, specifically: ‘what is the context of the original and how can understanding its challenges help us in our work?’

What is the context of my original?

The decision to specialise in a new field can be quite tough for a translator. In animal health, the first documents received will offer mere glimpses into a much broader world. Eventually, one hopes, these glimpses will come together to paint a portrait for the translator of the veterinary universe as a whole. Only then will he or she understand not only what is being said (the words) but also what has been left unspoken (the context).

To illustrate this idea, imagine that you receive a marketing piece from a US customer on a medicinal product used to treat coccidiosis in poultry. The text mentions that the product has a withdrawal period of 0 days. You start the translation, bearing in mind who your end reader is and choosing the right terminology. Will that be enough? Probably.

But let’s consider the same example from another perspective. You start the translation and, after a bit of research, learn that coccidiosis is the most prevalent disease affecting the US broiler industry.⁷ You now understand why a short withdrawal period is such a big selling point for veterinary pharmaceutical companies: the shorter it is, the faster farmers can sell the meat from their animals and earn a profit.

Would you approach the translation the same way in the first and second scenarios? Clearly, the translator in the second scenario has a much broader understanding of the context, and the quality of his or her translation can only benefit from that. Texts do not exist in a vacuum; they are framed by the trends and key concepts that shape the field they deal with. By familiarising themselves with this context, translators will thus be better equipped to understand the ‘unspoken’ aspects of each text and to take the best decisions accordingly.

As translators, understanding this specific context also offers us insight into the veterinary market as a whole. Being aware of the challenges posed by this market allows us to better grasp our customers’ needs and, thus, improves our communication with them. Ultimately, it is this knowledge that will allow our customers to look to us as truly specialised partners.

For instance, veterinary translators know that in recent years farm animal welfare has engendered increasing concern. The EU has approved several directives in this regard, covering broilers, laying hens, pigs, and calves.⁸ Their implementation has impacted (or will impact) the economics and operations of EU animal husbandry. It is thus not surprising – and can even make for interesting observations to share with our customers – to receive, for example, documents dealing with alternatives to the surgical castration of male piglets, a once routine procedure that will be definitively abandoned from 1 January 2018 because of welfare concerns.⁹

Such challenges and trends are the reason we suddenly find ourselves receiving more documents on a given topic. Recognising them not only leads to a better informed translation process, but also conveys a much more specialised image of our work in our exchanges with customers. It is not always easy to keep abreast of these market trends, but, as in any specialised field, the effort pays off by helping us build long-term relationships with our customers. It is also what makes translation such a passionate and rewarding career: we are not merely language specialists; we are constantly learning about our field.

Is understanding our readership and the context of our project enough to start building our veterinary expertise and ensure quality? Not quite. We have one more question to consider: how?

How is my source text organised?

As in other specialised fields, when you receive a veterinary text to translate, you must ask yourself whether the source document follows an official structure or format. Especially where regulatory documents are concerned, the original may be using a specific ‘regulated’ wording or template that, if an official translation exists, will need to be reproduced in the target language too.

One of the best known examples for both medical and veterinary translators is the product information (PI) included in the market authorization application for medicinal products. When drafting this document, pharmaceutical companies must use the latest version of the template published in their language by the European Medicines Agency;¹⁰ the template includes the wording for each section and subsection, as well as several standard sentences of the PI.

As for the medicinal product’s dosage form, route of administration, and container, the terms chosen for the PI must be included in the approved list of

standard terms published by the European Directorate for the Quality of Medicines and Healthcare.¹¹

As both the PI templates and the list of standard terms are available in all EU languages, a translator receiving the PI for a medicinal product for veterinary use will need to refer to these official documents too. There is no shortcut: if they are not followed, the translation will be of no use to the customer, as it will not be compliant with the requirements set by the regulatory authorities.

Medical translators familiar with medicinal products for human use should be cautious with veterinary PIs. Whereas some of the sections from the PI for human medicines are quite similar to those from the vet PI, other information, such as the target species or withdrawal period, is not applicable to humans and, thus, not included in the human template.

Likewise, they will notice how different the standard terms for veterinary medicines are from those for human medicines. In short, they must be ready to immerse themselves in a world of premixes for medicated feeding stuff, spot-on applicators, in-ovo injection devices, teat dip solutions, and drinking water/milk use, among many other things, for those will be their companions on the road to veterinary specialisation.

In addition to the veterinary pharmaceutical sector, other key fields in veterinary science have regulatory documents as well. One very recent example is animal nutrition. This field underwent a major legislative change in 2010 when Regulation (EC) 767/2009,¹² which aims to simplify feed legislation, came into force. The new regulation sets out new requirements for the labelling and marketing of feeds and pet food.

For veterinary translators, this new regulation, along with its associated legislation, has emerged as an essential reference. Its approval has led to the establishment of a specific set of ‘compliant’ terms and headings that need to be used in some of the label sections.

As Regulation (EC) 767/2009 is, of course, available in all official EU languages, it goes without saying that when translating a label, translators must take all the ‘regulated’ terms from the version of the regulation in their language to ensure a linguistically ‘compliant’ label.

Not following the official formats or regulations can have several consequences for our customers. In the examples given, it can lead to delays in a medicinal product’s approval or, in the case of ‘non-compliant’ labels, to a waste of time (due to negotiations with national authorities) and money (fines).¹³ Quality in ‘regulated’ documents is by no means

subjective: it is closely linked to the translator's capacity to recognise and follow official wording to fully meet the customer's needs.

Conclusion

Human health is affected by animal health and vice versa. This reality brings together not only scientists from different disciplines but also specialised translators and editors. Veterinary science is an important, and long neglected, field of specialisation for any life sciences translator.

As seen in this paper, veterinary specialisation requires much more than simply choosing the right words in the target language. Not only must translators consider who their target audience will be in order to use the appropriate terminology and register, they must also constantly review the context, market trends, and regulatory documents affecting the sector in order to consistently take the best translation decisions and fulfil their customers' needs.

In short, veterinary translations require both taking a questioning approach to the original and a strong commitment to continuous learning in the field. It is this questioning approach that will allow translators to unravel the complexity of the originals, a key step to both high-quality translations and, in the long term, a steady workflow.

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Author information

Anna Romero is a scientific translator with undergraduate degrees in biology and translation and a master's degree in scientific communication. Since 2007, she has specialised in veterinary science, one of her passions. She has recently started a freelance career after being Head of Production at a specialised veterinary translation agency.

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Cosmetic regulatory writing

Lorine Preud'homme, Audrey Depues, Sophie Noiset

Biorius, Manage, Belgium

Correspondence to:

Sophie Noiset
Biorius, Rue de la Crorière
10 A, Manage 7170
Belgium
info@biorius.com

Abstract

On 11 July 2013, a new regulation for cosmetics was applied in Europe, Regulation (EC) 1223/2009, replacing Directive 76/768/CEE. This new regulation clarifies the roles and responsibilities of all stakeholders and introduces new notions such as cosmetovigilance and online notification. Compliance and safety of cosmetic products must now be clearly documented for them to be placed on the EU market. Professional medical writers are well positioned to help prepare the documentation needed for cosmetic approval according to this new directive.

Keywords: Regulation, Cosmetic, Safety, Compliance, EU market

Prior to 2013, cosmetics were approved in the EU according to Cosmetics Directive 76/768/EEC, which set forth the main requirements for their composition and labelling. Previously, each EU member state was allowed to apply the guidelines according to their needs. Owing to growth of the cosmetics market and differences in the interpretations of existing regulations in Europe, in 2008 the European Commission decided to harmonise its numerous cosmetics directive amendments. The goal, according to the European Commission, was to have 'a robust, internationally recognised regime, which reinforces product safety taking into consideration the latest technological developments, including the possible use of nanomaterials'.¹ New regulations, described in Regulation (EC) No 1223/2009,² went into force on 11 July 2013.

Regulation (EC) No 1223/2009

The new regulation made the following important changes to the previous directive:

- Strengthened safety requirements for cosmetic products
- Required manufacturers to follow specific requirements in the preparation of a product safety report prior to placing a product on the market

- Introduced the concept of a Responsible Person
- Centralised notification of all cosmetic products placed on the EU market
- Stipulated that the manufacturer needs to notify about its product only once, via the EU Cosmetic Products Notification Portal (CPNP)
- Introduced reporting of serious undesirable effects
- Described new rules for the use of nanomaterials in cosmetic products

Importantly, one requirement that was not changed in the new regulation is that animal testing of cosmetic products is not permitted in the EU.

Definition of a cosmetic product

The new guidelines also provided a definition of what a cosmetic product is:

Cosmetic products are substances or mixtures of substances intended to be placed in contact with the external parts of the human body (epidermis, hair system, nails, etc.) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in good condition or correcting body odours.

To classify a product as a cosmetic, the product must meet the definition according to function, presentation, mode of application, and composition. With the exception of composition, the other criteria are evaluated according to the claims made on the label. To be a cosmetic, the manufacturer cannot refer to treating, preventing, or alleviating a disease. A product that deviates from the definition for any of these criteria can be considered as a non-compliant cosmetic product and may be assigned another category (e.g. medical device, room fragrance, or general consumer product) covered by other regulations. Products that do not fit into an alternative category become 'non-classified' or

'borderline products', and in these cases, interpretation of which category they fit into may differ between member states.

The Responsible Person and the Distributor

The guidelines defined two new clearly defined individuals that must participate in the approval of cosmetic products: the Responsible Person and the Distributor.

- The *Responsible Person* is someone dedicated to ensuring compliance of the products with the rules in the Regulation, notably, requirements for human health, safety, and consumer information. The Responsible Person has the following responsibilities:
 - Ensuring that the labelling is compliant with Article 19 of Regulation (EC) 1223/2009, language requirements are fulfilled, and the date of minimal durability has not expired;
 - Ensuring that the storage or transport conditions are compliant with the regulation;
 - Maintaining a product information file accessible to the public authorities;
 - In the case where a product is non-compliant, taking steps to make it compliant, withdraw it from the market, or recall it to the manufacturing company wherever the product is available;
 - Informing the competent authorities when the product presents a risk to human health.

For a product manufactured in the US, the manufacturer must mandate a designated third party based in the EU as the Responsible Person; when the product is imported, it can be the importer or a designated third party; and for a product where the Distributor places its name on or modifies a product, the Distributor must be the Responsible Person.

- The *Distributor* is the person to whom the cosmetic product is supplied. They must be listed for 3 years following the date on which the batch of the cosmetic product was made available to the Distributor. The same applies to all other persons involved in the supply chain. The Distributor is responsible for:
 - When a product is suspected to be non-compliant, stopping making the product available and ensuring that necessary measures are taken;
 - If there is a risk to human health, providing the information to the Responsible Person and to the competent authorities.

The CPNP

The European Commission also created the CPNP (http://ec.europa.eu/consumers/sectors/cosmetics/cpnp/index_en.htm), an Internet site for notification with the ambitious challenge of creating an online database for all cosmetic products marketed in the EU. Responsible Persons must register each product placed on the EU market in the CPNP. Once the product has been registered, a CPNP number of notification is allocated, which serves as proof of registration. The website is also used for notification about substances that might be defined as nanomaterials.

The new regulation also clarified the concepts of 'undesirable effects', 'serious undesirable effects', and the specific responsibilities for each individual. It also describes the so-called 'cosmetovigilance' system for recording all undesirable health-related effects of cosmetic products. The cosmetovigilance records are regularly evaluated and are to be used for eventual product safety re-assessment and determination if further steps are needed, such as withdrawal of the product from the market.

Contents of the Product Information File for registration of a cosmetic product

Before a product can be registered in the CPNP database, the following safety and stability information must be provided in a Product Information File (PIF), also known as a Product Information Pack:

- All active substances and subcomponents including antioxidants, preservatives, and additives
- The toxicological profile of its ingredients; the formulation with the exact percentages of raw materials
- The physico-chemical and microbiological characteristics of the substances and the finished product
- Compilation of all analysis certificates and Material Safety Data Sheets for each raw material
- All technical data that can be obtained from toxicological databases
- Data from preservative challenge and stability tests, although as of 7 November 2013,¹ finished products may not require preservative challenge testing as long as it can be shown that the product's environment will not support microbiological growth.

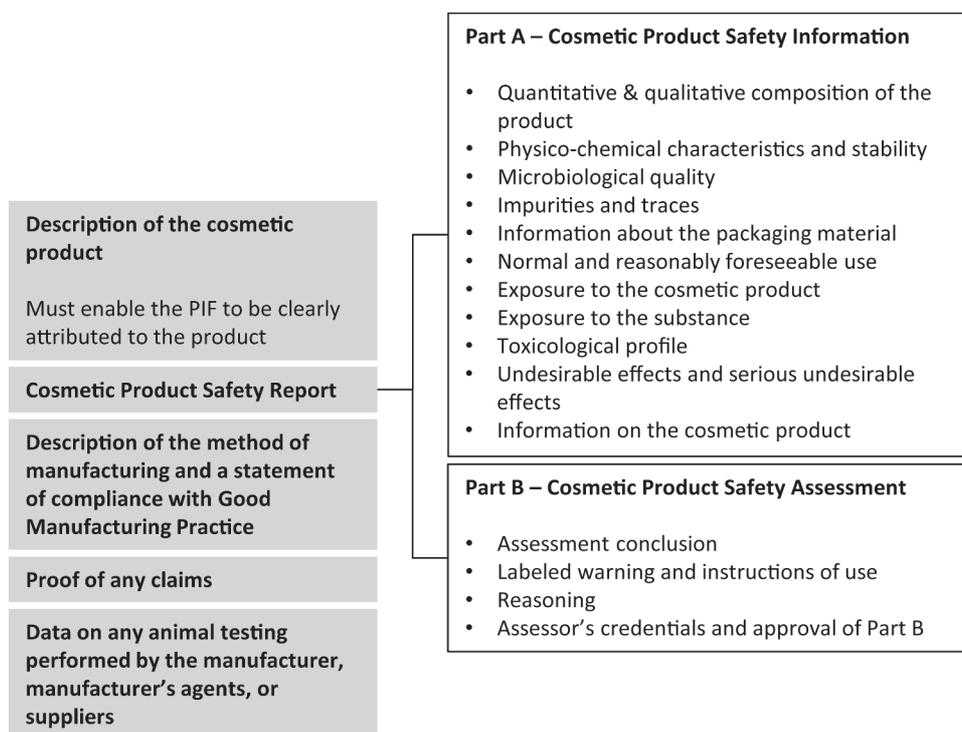


Figure 1: Makeup of a PIF. Adapted from COLIPA Guidelines on the Product Information File (P.I.F.) requirement.³

EU Regulation (EC) 1223/2009 also stipulates that the PIF contains:

- A statement of water quality
- A Good Manufacturing Practice certificate
- A description of the filling and packaging process
- The manufacturing method
- The batch number
- The Material Safety Data Sheet of the finished product
- The materials used for the packaging
- A non-animal testing statement for the finished product
- The tests performed on the finished product, such as tests performed in human subjects and other efficacy tests.

The makeup of the PIF is summarised in Figure 1.

Safety assessment

The above information is examined by a Safety Assessor on behalf of the Responsible Person. The Safety Assessor must have a diploma or other evidence of formal qualifications awarded on completion of a university course of theoretical and practical study in pharmacy, toxicology, medicine, or a similar discipline, or a course recognised as equivalent by a member state. Vrije Universiteit in Brussels, for example, organises a yearly training course on how to perform safety assessments of cosmetics in the EU.

For specific questions related to the safety of cosmetic substances, the Safety Assessor consults the Scientific Committee on Consumer Safety, an independent committee of scientific experts. Based on this opinion and toxicological data, the European Commission delivers an opinion.

Medical writing for the cosmetic industry

Medical writers with experience in clinical and regulatory writing for the pharmaceutical industry are familiar with presenting necessary information, formulating key messages, and telling a product story with a clear, complete, and consistent approach. Such medical writers are therefore well placed to assist cosmetic companies in compiling a PIF; the advantage of an experienced medial writer is to reduce the amount of time needed to produce the documents and to minimise questions and delays during registration. Although some international cosmetic companies have well-established regulatory and pharmacovigilance departments, many smaller companies may have to rely on outsourcing. Thus, cosmetic regulatory writing is an opportunity for both medical writing agencies and freelance medical writers.

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Conflicts of interest

The interpretation of Regulation (EC) 1223/2009 requirements is according to Biorius experts and is not binding in any way. Biorius is not related to competent authorities and shall not be considered as part of Belgian governmental bodies.

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Author information

Lorine Preud'homme has been a Safety Assessor and Regulatory Manager at Biorius since 2011.

Audrey De Pues is a Senior Regulatory Specialist at Biorius and has been with the company since 2009.

Sophie Noiset is a Quality & Operations Manager and a Senior Consulting Expert at Biorius and has been with the company since 2009.

REACH chemical dossiers? Yes, please!

Lorraine F. Tilbury¹, Philippe Adrian²

¹Global Regulatory Communications, Pernay, France

²CEHTRA, Sainte-Eulalie, France

Correspondence to:

Lorraine F. Tilbury
Global Regulatory
Communications, LD Garget
37230 Pernay, France
globalregcom@gmail.com

Abstract

Medical writing knowledge and skills can be applied relatively easily to other areas of technical regulatory writing, with a bit of home study. One such area is in the compilation and write-up of REACH (Registration, Evaluation, Authorisation, and restriction of Chemicals) chemical dossiers. A concise overview of the legislation, requirements, and dossier content is provided, with links to guidance documents available online for further study.

Keywords: Regulatory dossier, REACH, Chemicals, Non-medical

In today's volatile economy, medical writers would be wise to consider diversifying their portfolio so that their client base is not limited to writing for the pharmaceutical industry. There are many other regulated sectors that require the same skills and, with a bit of effort, are within reach of an experienced medical writer. 'Registration Dossiers' for chemical substances in the European Union (EU) is one area with an increasing demand for skilled technical writers of the calibre of medical writers. The legislation governing these chemical substances is called REACH, which is short for Registration, Evaluation, Authorisation, and restriction of Chemicals.

What is a REACH dossier?

REACH legislation requires that EU manufacturers and importers submit a registration dossier on the chemical substances that they manufacture or import into the EU in quantities greater than 1 metric tonne per year. The REACH dossier consists of a technical dossier and, depending on the amount produced, may require, in addition, a Chemical Safety Report. The REACH regulation is complex; the legislation contains 17 annexes (Table 1).

The REACH dossier is evaluated by the European Chemicals Agency (ECHA), based in Helsinki, Finland. ECHA has published several guidance

documents, factsheets, practical guides, webinars, and user manuals that provide an explanation of the dossier format and guidelines for summarising data in the dossier.

When is a REACH dossier required?

A registration dossier is required for chemical substances that are not considered exempt from REACH legislation and that are manufactured or imported into the EU in quantities exceeding 1 metric tonne per year. Exemption criteria are defined in Article 2 of the REACH legislation, with some specific listings of exempted substances in Annexes IV and V. Confirmation of exemption of a substance is not always straightforward; typically a technical writer would be contacted to compile a REACH dossier after the decision of non-exemption is already made. Substances can be considered exempt if they are 'generally considered safe' or consist of natural-based materials (e.g. plant extracts, water, oxygen, some hydrates, and natural elements). Some substances can also be considered exempt because they are covered by other EU legislation, such as food, pesticides, medical devices, and pharmaceutical products.

REACH dossier content and format – general principles

Once the non-exemption of a chemical substance is confirmed, a REACH registration dossier is required, consisting of two parts:

- A technical dossier that is required for all non-exempt chemical substances regardless of the amounts produced or imported, and
- A Chemical Safety Report that is required for substances placed on the EU market in quantities at or exceeding 10 tonnes per year.

The registration dossier is extensive and contains all necessary information including Robust Study Summaries for all of the tests that are submitted.

Table 1: REACH legislation annexes

REACH legislation annex	Annex content*
I	General provisions for the Chemical Safety Report (chemical safety report)
II	Requirements for the compilation of Safety Data Sheets
III	Criteria for substances registered in quantities between 1 and 10 tonnes per year
IV	Exemptions from the obligation to register in accordance with Article 2(7)(a)
V	Exemptions from the obligation to register in accordance with Article 2(7)(b)
VI	Information referred to in Article 10 (the information required for registration)
VII	Standard information requirements for substances manufactured or imported in quantities of 1 tonne or more
VIII	Standard information requirements for substances manufactured or imported in quantities of 10 tonnes or more
IX	Standard information requirements for substances manufactured or imported in quantities of 100 tonnes or more
X	Standard information requirements for substances manufactured or imported in quantities of 1000 tonnes or more
XI	General rules for adaptation of the standard testing regime set out in Annexes VII–X
XII	General provisions for the downstream user Chemical Safety Report
XIII	Criteria for the identification of PBT and vPvB substances
XIV	List of substances subject to Authorisation
XV	Dossiers
XVI	Socioeconomic analysis
XVII	Restrictions on the manufacture, placing on the market and use of certain substances, mixtures, and articles

*Many of the annexes have been updated and adapted as legal positions are clarified by the Commission and as interpretations evolve, and of course to include new or amended legislative controls for chemicals of concern. The amending regulations are published online and have been conveniently compiled by the ReachReady consulting group on their website: http://www.reachready.co.uk/reach_faq_free.php#text.

The REACH legislation defines the format and content of the dossier. A useful reference is the unofficial consolidated version,¹ which incorporates the changes made up to 10 June 2013. The amount of substance placed on the market in the EU determines the amount of test data and subsequent hazard and use assessments; the higher the amount, the more data required in the registration dossier, as outlined in Annexes VI–X of the REACH legislation. Table 2 lists the legislation annexes that specify the data requirements according to tonnage produced, from 1 tonne per year to 1000 or more tonnes per year (see also Article 12 of the REACH legislation). ECHA has published detailed guidance documents describing the registration dossier content and format, the dossier submission process, and the procedure for updating registration dossiers. This will be described briefly in the subsequent sections of this article.

The format of the technical dossier must be compliant with the requirements of the International Uniform Chemical Information Database (IUCLID), as stated in Article 111 of the REACH legislation. This software is used to capture, store, submit, and exchange data on chemical substances, according to the format of the Organisation for Economic Cooperation and Development

Harmonised Templates.² All the information required under Article 10(a) for the technical dossier and under Article 10(b) for the Chemical Safety Report must be documented in the recommended reporting formats specified in IUCLID. IUCLID 5 is the latest version of this software, which is available for free (at <http://www.iuclid.eu>). The dossier can be prepared with other software, as long as they produce the exact same format.

Submission of the dossier to ECHA in the IUCLID 5 format is done through the ECHA electronic portal, REACH iT.³ Within 3 weeks after submission, the ECHA will conduct a completeness check, consisting of two parts:

- A Technical Completeness Check to check if all the elements required by REACH have been provided, and
- A Financial Completeness Check to check the payment of the fee.

ECHA has developed software so that registrants can check the dossier completeness before submission. This software is available as an IUCLID 5 plug-in, called Validation Assistant, at the IUCLID 5 website.⁴ ECHA strongly recommends that applicants verify the validity of the dataset and the final

Table 2: Legislation annexes that apply for a given amount produced or imported per annum

Tonnage per year	Annex VI	Annex VII	Annex VIII	Annex IX	Annex X	Annex XI
1–10	X	X + Annex III				X
10–100	X	X	X			X
100–1000	X	X	X	X		X
≥1000	X	X	X	X	X	X

dossier with the Validation Assistant tool before submitting to ECHA. Chapter 5, *Technical Completeness Check (TCC)*, of the *ECHA Data Submission Manual Part 05 – How to complete a technical dossier for registrations and PPORD notifications*⁵ provides details on the installation and use of the Validation Assistant.

Contents of the technical dossier

The first part of the registration dossier is the technical dossier. The technical dossier contains the following information:

- The identity of the manufacturer/importer.
- The identity of the substance and information on the manufacture and use of the substance.
- The classification and labelling of the substance.
- Guidance on its safe use.
- (Robust) study summaries of the information on the intrinsic properties of the substance derived from applying Annexes VII–XI.
- An indication as to whether the information on manufacture and use, the classification and labelling, the (robust) study summaries, and/or, if relevant, the Chemical Safety Report has been reviewed by an assessor.
- Proposals for further testing, if relevant.

For substances registered in quantities between 1 and 10 tonnes, the technical dossier shall also contain exposure-related information for the substance (main use categories, type of uses, significant routes of exposure).

In their *Guidance on Registration* document,⁶ ECHA provides detailed guidance on the IUCLID templates, the selection of information, the level of detail of the data to include, and the type of summary to prepare in the technical dossier.

Contents of the Chemical Safety Report

The second part of a REACH registration dossier, for chemical substances manufactured or imported in quantities of 10 tonnes or more per year, is the Chemical Safety Report. Annex I, Section 7 of the REACH legislation describes the general provisions for assessing substances and preparing Chemical Safety Reports.

The Chemical Safety Report is used to document:

- The intrinsic properties and hazards of a chemical substance.
- The conditions of manufacture and use which are needed to control the risks to human

health and the environment throughout the life cycle of the substance.

- The expected emission/exposure of man and environment resulting from manufacture and use throughout the life cycle of the substance.
- The characterisation of risks following such emission/exposure.

The Chemical Safety Assessment is part of the Chemical Safety Report. It is a detailed summary of all the available information on the environmental and human health hazard properties of the substance, together with an assessment of exposure and risk (where such an assessment is required) to demonstrate that the risks from the exposure to a substance during its manufacture and its use are controlled when specific operational conditions and risk management measures are applied.

The Chemical Safety Report should be a readily understandable, stand-alone document, with the principles, assumptions, and conclusions applied to the hazard and exposure assessments clearly documented; it should include the key data used to conduct the assessment, so that there is no need to revert to the underlying substance dataset in IUCLID.

The Chemical Safety Report can be submitted separately or as part of a joint submission with other applicants covering all uses associated with the chemical substance.

General advice and detailed guidance on preparing a Chemical Safety Report, with recommendations to avoid common deficiencies, can be downloaded from the ECHA website.⁷

Resources to develop competency in REACH dossier writing

Many resources are available online to learn about the content and format of REACH registration dossiers, including actual sample dossiers that were created by ECHA to aid applicants in preparing an acceptable dossier. ECHA has prepared 15 different Practical Guides that cover everything from how to report robust study summaries to how to report weight of evidence and how to communicate with ECHA in a dossier evaluation. All of these guides are accessible online on the ECHA website.⁸ An example of a Chemical Safety Report prepared with a fictitious chemical substance that covers most of the required topics has also been developed by ECHA and is available on their website.⁹

Conclusion

While the breadth and depth of REACH legislation and dossier requirements can seem daunting at first

glimpse, the overall structure, content, and requirements do not differ all that much from those of a pharmaceutical dossier. Consequently, an experienced medical writer, with a bit of home study and perhaps a course or two on the topic, can add REACH dossier compilation and write-up skills without too much effort. There are many courses available in Europe that can provide the basics in REACH dossier compilation and write-up. For example, CEHTRA¹⁰ is an organisation that provides training on the collection of data and write-up of REACH dossiers. ECHA also provides a series of webinars on the topic.¹¹ Some of these courses are taught by the national officials who evaluate REACH dossiers. Attending one of these courses can thus provide a good initial introduction, hands-on practice in writing portions of the REACH dossier, and valuable personal contacts that can be a further source of information after the course.

Acknowledgements

The authors wish to acknowledge Phil Leventhal for the suggestion to include this topic in *Medical Writing*.

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Author information

Lorraine Tilbury is a veterinarian specialised in toxicology and Board-Certified by the American Board of Toxicology since 2000. After providing regulatory toxicology, regulatory affairs, and medical writing expertise to several multinational Fortune 500 corporations and to some successful start-ups, Lorraine created her own consulting business, Global Regulatory Communications, in 2013.

Philippe Adrian obtained his PhD in Soil Science in 1985 in France followed by a post-doc position in Germany. After

working for several years in multinational companies, he created with a colleague a consultancy company named CEHTRA (Centre for Environmental Health, Toxicology and Risk Assessment). He is now their managing director in charge of the environmental risk assessment of various chemicals, including Environmental Risk Assessments for human and veterinary pharmaceuticals. CEHTRA offers training for all regulatory activities involving chemicals. More information is available at info@cehtra.fr.

Pesticide dossiers, an opportunity for medical writers

Lorraine F. Tilbury

Global Regulatory Communications, Pernay, France

Correspondence to:

Lorraine F. Tilbury
Global Regulatory
Communications, LD
Garget, Pernay 37230
France
globalregcom@gmail.com

Abstract

Pesticides, also known as crop protection products, are approved for sale through a process similar to that for authorising human medicines. For example, the toxicology data submitted are nearly identical to the nonclinical data generated for a drug, and the environmental risk assessment is similar in many ways to the risk assessment for human medicines. Consequently, an experienced medical writer could prepare a pesticide dossier. This article briefly describes the regulatory requirements for preparing a pesticide dossier and where to find detailed guidance and examples to help a medical writer with this type of regulatory document.

Keywords: Regulatory dossier, Pesticides, Chemicals, Non-medical

Pesticides, or crop protection products, ensure acceptable quality and yield for the farmer at an affordable price for the consumer. Even organic agriculture uses certain authorised pesticides, as long as they are obtained from natural sources.¹ Pesticides are evaluated and approved through a process similar to that used for the evaluation and approval of human drugs. Consequently, an experienced medical writer with access to the appropriate resources can compile and prepare pesticide dossiers.

Regulatory authorisation of pesticides

In the EU, pesticides are approved according to Regulation (EC) No 1107/2009 of the European Parliament and the Council. The approval process can take place at three levels:

1. The pesticide active substance is evaluated for approval at the EU level. This includes at least one pesticide product for one representative

agricultural use. The evaluation is conducted by one EU member state, referred to as the Rapporteur Member State. A subsequent peer review is carried out by the European Food Safety Agency.

2. If the active substance is approved, additional formulations containing the pesticide active substance (plant protection products) are approved at the national (member state) level.
3. The plant protection product dossier evaluations can be coordinated by one member state on behalf of a group of member states belonging to the same agricultural zone. This is called a zonal assessment. The agricultural zones are defined in legislation guidance documents and consist of the North, Central, and South zones (Figure 1).

Plant protection products and the active substances they contain can only be approved in the EU if the data demonstrate under the proposed conditions of use:

- sufficient efficacy against the targeted disease or pest;
- an acceptable risk to human health; and
- an acceptable risk to the environment.

The procedure is therefore similar to that for human drugs; however, the agencies involved and the format and content of the dossier differ.

Elements of a pesticide dossier

Countries belonging to the Organisation for Economic Co-operation and Development (OECD) adhere to a harmonised content and format for pesticide dossiers.² The pesticide dossier consists of a Summary Dossier and a Complete Dossier (Figure 2).

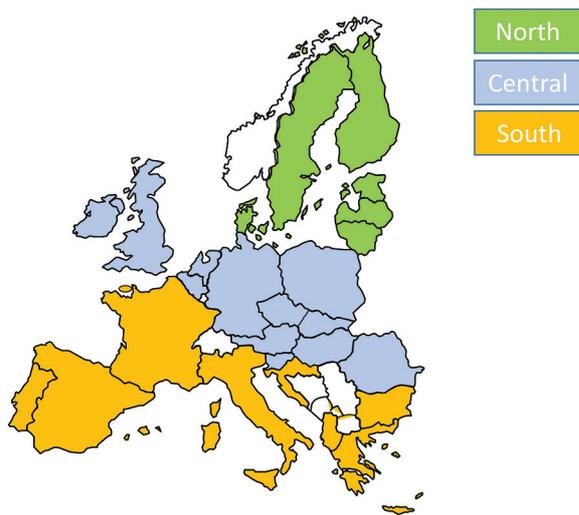


Figure 1: European Union pesticide product dossier approval zones.

The Summary Dossier is presented in tiers of increasingly high-level summaries and evaluations:

- Tier 1: Reference lists of submitted studies
- Tier 2: Summary and evaluation of the active substance and formulation data
- Tier 3: An overall assessment of the application and conclusions.

The Complete Dossier includes the Summary Dossier, the individual study reports, and

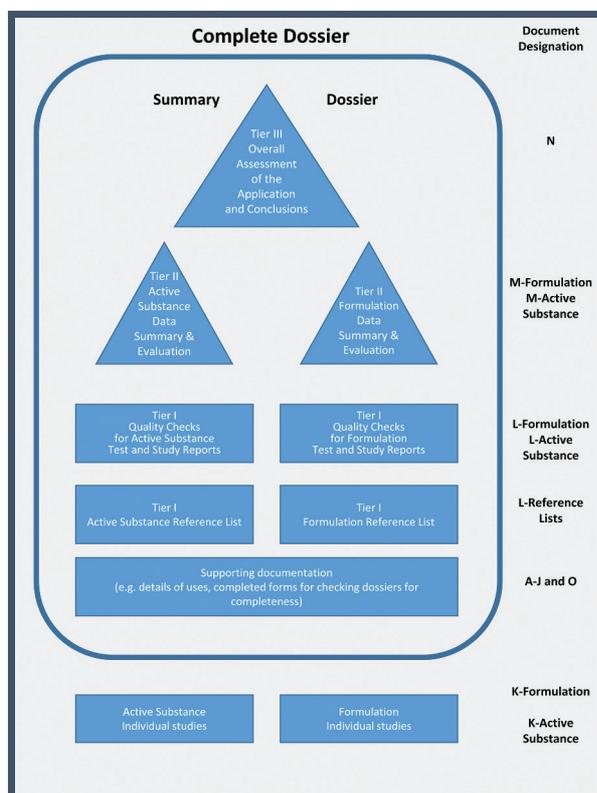


Figure 2: OECD dossier structure and format.

supporting documentation (administrative forms, completeness checks, details of agricultural uses). Each dossier section is assigned a letter A to O. The OECD provides extensive guidance for the preparation and presentation of Plant Protection Product dossiers and the active substances they contain on their website.³

Pesticide dossier content and format

The Pesticide Active Substance Dossier

A Complete Dossier will resemble the diagram presented in Figure 2. It will therefore contain an Active Substance Dossier, and a Formulation Dossier for products containing the active substance. A detailed guidance document that includes templates to prepare several dossier sections is available for download on the European Commission’s Directorate General for Health & Consumers website.⁴ Examples (with confidential information removed) of Active Substance Dossiers that have been submitted and are undergoing evaluation can be consulted on the European Food Safety Agency website.⁵ These examples provide useful insight into the content and format of actual Pesticide Active Substance and Formulation Dossiers.

Pesticide Active Substance Dossiers are submitted in an electronic XML format called Computer Aided Dossier and Data Supply (CADDY), which allows for the exchange, archiving, and evaluation of complex dossiers. The software is available for free online⁶ and includes an XML conformity checker and ‘demo dossiers’ to illustrate the CADDY-XML mechanism. The submission procedure and technical explanations for the preparation of an Active Substance Dossier are available on the European Commission Directorate General for Health & Consumers website.⁷

The Pesticide Product Dossier

The Pesticide Product Dossier is a stand-alone dossier that is submitted at the member state level to obtain authorisation to sell a pesticide product containing active substances that are already approved at the EU level. The templates and guidance for preparing Pesticide Product Dossiers are the same as those for preparing Pesticide Active Substance Dossiers.

The format of a Pesticide Product Dossier may be slightly different if a zonal assessment of the dossier is considered. In this situation, the Pesticide Product Dossier contains two separate sections:

- A Product Core Dossier section, which is identical to the sections pertinent to a pesticide product dossier

- A National Addendum Product Dossier, which has the same format but contains country-specific requirements that are not covered in the Product Core Dossier. It is important to verify the country of submission and to identify the nature and status of any country-specific requirements. For example, Scandinavian countries have a specific approach to the assessment of environmental metabolites specified in their North zone-specific guidance document.⁸

The general tendency in the EU is evolving towards a more harmonised approach to dossier content and format. Still, because of the diversity of the EU, country-specific national addenda may still remain in addition to the Core Product Dossier. Consequently, 6–12 months before submitting a Pesticide Product Dossier, be sure to contact the member state about whether national addenda are needed and whether there are any country-specific procedures. The European Commission publishes and regularly updates a list of member state representatives that can be contacted about this.⁹

Resources for developing competency in pesticide dossier writing

Many resources are available for developing competency in pesticide dossier writing, from online examples to training courses. Regular conferences provide updates and discussions on the evolution of dossier formats, guidelines, and data requirements. Four sources seem to be the most frequently consulted or attended: training events taught by the official experts of the United Kingdom Chemicals Regulation Directorate, who evaluate pesticide dossiers in the UK;¹⁰ the biannual AgChemForum Conferences, which are organized by Informa;¹¹ the European Crop Protection Association's annual Regulatory Conference;¹² and the European Food Safety Agency online database of guidance documents and pesticide dossiers.¹³

Conclusion

Pesticide dossiers are an interesting and valuable opportunity for medical writers. Despite the different formats and procedures, there are many similarities with pharmaceutical dossiers. Perusing the available resources and attending training sessions specific to the topic may take time, but medical writers possess the skills and knowledge that can allow them to become proficient in pesticide dossier writing.

Acknowledgements

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Conflicts of interest

The listing of any sources of information or training courses does not imply any endorsement by the author.

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Author information

Lorraine Tilbury is a veterinarian specialised in toxicology and certified by the American Board of Toxicology since 2000. Lorraine created her own consulting business, Global Regulatory Communications, in 2013 after providing regulatory toxicology, regulatory affairs, and medical writing expertise to several multinational Fortune 500 corporations and to some successful start-ups.

Nanoapplications – From geckos to human health

Simone Lerch

nspm Ltd, Meggen, Switzerland

Correspondence to:

Simone Lerch
nspm Ltd, Luzernerstr. 36
6045 Meggen
Switzerland
simone.lerch@nspm.com

Abstract

Nanotechnology, the manipulation of matter on a molecular scale, is all around us in our everyday lives. Chocolate, non-dairy creamer, and sunscreen are examples of consumer products with a high content of nanoparticles. Nanotechnology holds great potential for environmental applications like wastewater treatment and nanobionic engineering of plants. Due to their unique and adaptable properties for targeted therapeutic payload delivery, nanoparticles are also emerging as promising tools for innovative pharmaceutical treatment. Nevertheless, licensing regulations specifically for nanomaterials are lacking, and the long-term effects of nanoparticles on both the environment and human health need to be further clarified.

Keywords: Nanoparticles, Nanotechnology, Medicine, Gecko, Titanium dioxide

Why does the gecko not fall from the ceiling?

Geckos are able to scurry up walls and stick to ceilings, apparently unaware of the laws of gravity. Why does the gecko not fall from the ceiling? It is not glue, suction, or static electricity that prevents it from falling – it is specific nanostructures. Geckos possess approximately two million ‘nanohairs’ (setae) that grow from small pads on their toes, terminating as even smaller ‘gripping hairs’ (spatulas). These nanohairs greatly increase the area that comes into contact with a surface, leading to high van der Waals forces between the gecko and the ceiling (see Figure 1A and B).¹ Pushing down on the feet generates shear forces that bend the setae to further increase the contact area, enabling the gecko to stick to the ceiling. Relaxation of the feet allows the feet to be lifted off the ceiling surface.

Nanostructured surfaces that increase adhesion forces, such as those demonstrated with the gecko, have inspired the development of products including reusable dry glue.¹ This glue uses nanotube

bundles as synthetic setae (see Figure 1C and D), and possesses adhesive capacities nearly four times higher than that of gecko feet. It even sticks to Teflon.

What is nanotechnology?

Nanotechnology is generally defined as the manipulation of matter on a molecular scale, typically in the range of nanometres (1 nm = 10⁻⁹ m). Nanomatter is typically smaller than a cell, but bigger than a small molecule (see Figure 2). The European Union (EU) defines nanomaterials as ‘natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50% or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm–100 nm’.² Nanoparticles can be engineered in specific ways as spherical, cylindrical, rod-, or tube-like forms,³ consisting of metallic,⁴ polymeric,⁵ or biological (DNA,⁶ amino acids⁷) materials, or as a combination thereof.^{8,9}

Several unique properties allow nanoparticles to be used successfully in various practical applications. Nanoparticles have a large surface-to-volume ratio in comparison to their original bulk material, enabling them to strongly interact with their surroundings. Chemical and biological degradation is much faster in nanoparticles than in their original bulk material due to the larger contact surface area. The degradation is, however, much slower in comparison to the smaller molecular structures in solution. Interestingly, for inorganic nanoparticles, the melting point is strongly dependent on the size of the particles.¹⁰

Nanoparticles can also increase the solubility of hydrophobic compounds^{5,11} and be used as delivery vectors in the field of nanomedicine.¹¹ As they are in the size range of the wavelength of visible light, some nanoparticles exhibit different colours depending on their size.¹² In addition, nanoparticles that interact with light energy are utilised in cancer

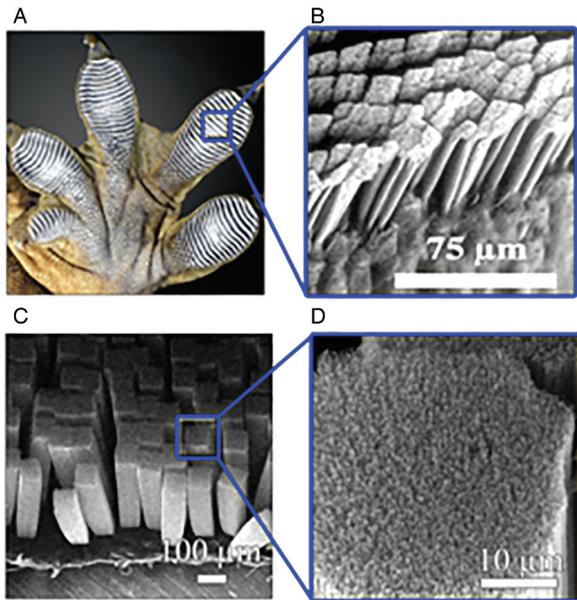


Figure 1: Gecko and synthetic setae. (A) Picture of a gecko foot showing the setae arranged into lobes on the foot. (B) Scanning electron microscope (SEM) image of gecko setae terminating into thousands of smaller spatulas (gripping hairs). Side view (C) and an SEM image (D) of synthetic setae. Image gratefully used with permission from Prof. Dhinojwala.¹ © National Academy of Sciences.

therapy to create localised heat to destroy diseased tissue.¹³ The advantageous characteristics of nanomaterials have driven implementation of nanotechnology in various settings including the food industry, consumer products, the medical sector, and environmental fields. Nanoapplications represent a new subject area in need of expert medical writers. This paper, therefore, aims to give an overview of recent scientific findings in the field of nanoapplications and their opportunities for the medical writing community.

Food industry and consumer products: we consume nanotechnology products on a daily basis

The potential uses of nanotechnology have led to its increased presence in food and consumer products. For example, nano-sized titanium dioxide (TiO₂) and zinc oxide (ZnO) particles, typically smaller than 100 nm, are frequently used in sunscreen as an inorganic sun blocker (up to 10% by weight¹⁴). They reduce the undesired opaqueness usually found in sunscreens containing larger TiO₂ and ZnO particles in the size range of micrometres.¹⁵ Nanoparticles also provide certain properties to food. Due to their ability to absorb UV radiation, they can be used as coating for confectionaries to prolong shelf-life. They also introduce a white colouring to chocolate, non-dairy creamer, and sauces, and improve the flowability of salt. Foods with the highest TiO₂ nanoparticle contents include candies, sweets, and chewing gum,¹⁴ in which TiO₂ nanoparticles are mainly used as a whitener. In the USA, a typical adult may be exposed every day to up to 1 mg of titanium per kilogram of body weight – around 10¹² particles.^{14,16} The potential negative consequences of nanoparticle ingestion in humans will be mentioned later in this article.

Medical sector: therapeutic and diagnostic applications

Nanomedicine describes the application of nanotechnology in medicine. The first generation of nano-oncological therapeutics is already on the market. A characteristic of this first generation is the use of so-called passive targeting. Due to their increased molecular weight compared with small molecules, nanoparticles have a greater tendency

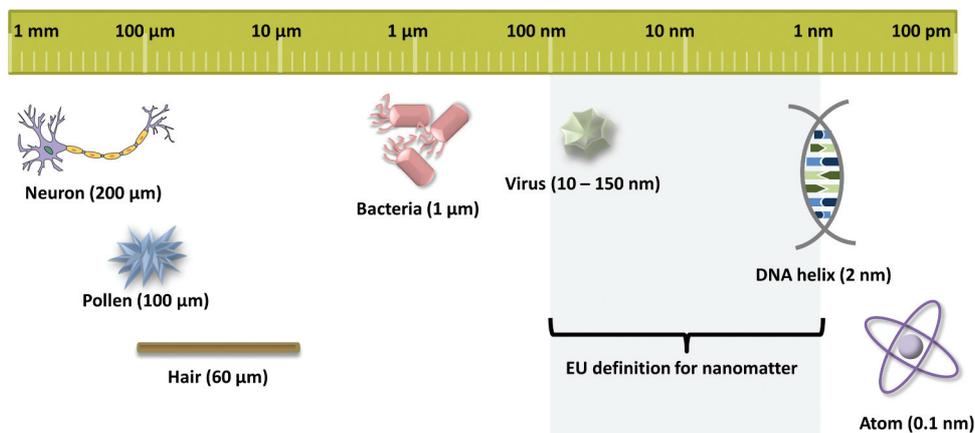


Figure 2: Explanatory scale of typical micro- and nano-sized objects. The EU defines nanomaterials as particles in the range of 1–100 nm.²

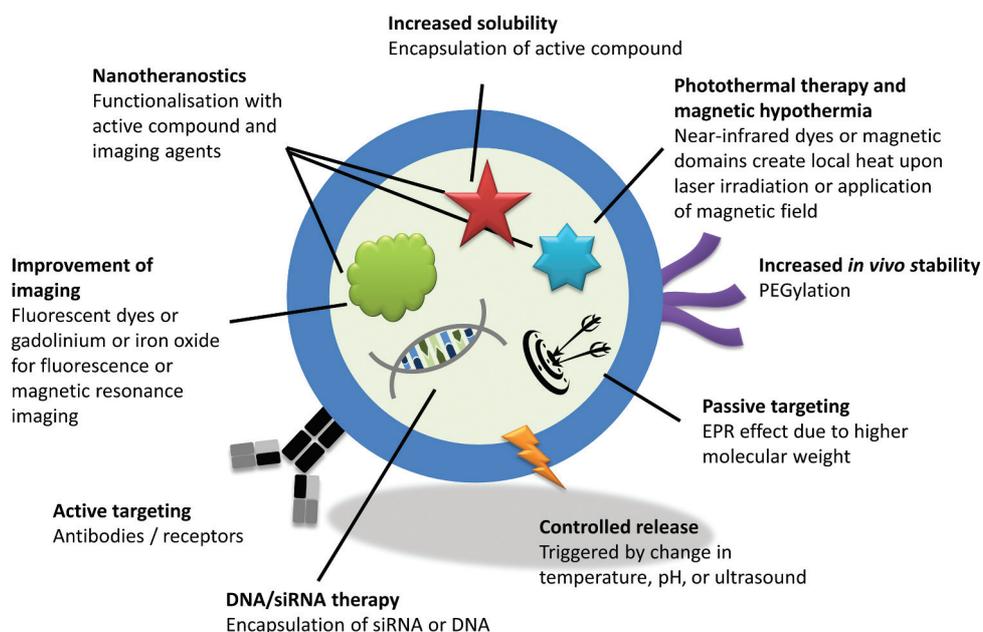


Figure 3: Potential for use of nanotechnology in medicine. Schematic representation of the nano-toolbox: potential modifications for nanoparticles to increase efficacy and safety in medicine.^{5,11,13} EPR, enhanced permeability and retention; siRNA, small interfering RNA.

to passively accumulate in tumour tissue that has increased vascular permeability.¹⁷ This is a phenomenon described in the literature as the enhanced permeability and retention effect (see Figure 3).

Albumin-bound paclitaxel and liposomal doxorubicin, pioneer drugs of the first generation of nanotherapeutics, were licensed by the EMA for the treatment of metastatic breast cancer (MBC) in 2000 and 2009, respectively.^{5,18,19} Polyethylene glycol (PEG)-functionalised liposomal doxorubicin provided comparable efficacy to doxorubicin in a phase III trial in women with MBC, with significantly reduced cardiotoxicity ($P < 0.001$), myelosuppression, vomiting, and hair loss.²⁰ In another phase III trial in women with MBC, albumin-bound

paclitaxel demonstrated significantly higher response rates compared with standard paclitaxel ($P = 0.001$), longer time to tumour progression, and a favourable safety profile.²¹

Second-generation nanotherapeutics are in development, with the aim to increase the specificity and timely release of the therapeutic agent.³ Nanoparticles are typically endocytosed by cells into endolysosomal vesicles (see Figure 4) depending on their size, shape, volume, and, particularly, surface characteristics.^{3,22} These properties may also be used to specifically guide the nanocompound to a location of interest *in vivo*, thus decreasing the concentration threshold at which these agents have a therapeutic effect.¹¹ To increase nanoparticle localisation, molecules such as antibodies can be introduced to particle surfaces,

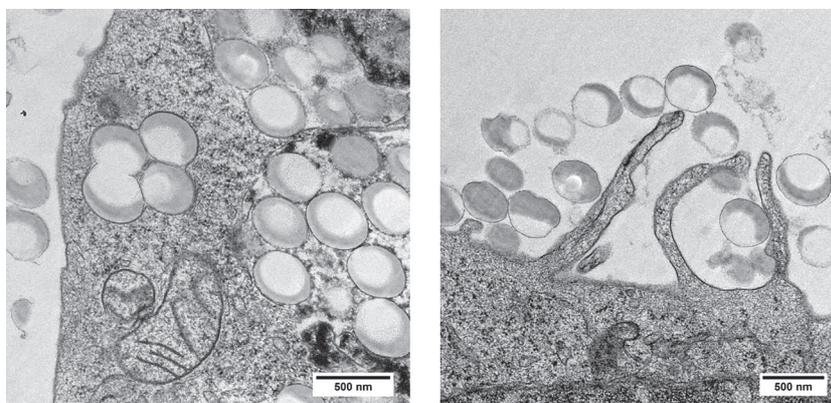


Figure 4: Transmission electron microscope images of HeLa cells after incubation for 24 hours with 603 nm, positively charged, polystyrene particles.²² Reprinted with permission from Elsevier.

which are then used to target overexpressed cancer cell antigens. Adding a protective layer of macromolecules such as PEG to the nanosurface expands its stability, and encapsulation of active compounds increases solubility *in vivo*.⁵

In addition to chemotherapeutic drugs, DNA and small interfering RNA (siRNA) can also be used as active compounds.¹¹ For example, a recently published study demonstrated the potential of siRNA-loaded polymeric nanoparticles to target intestinal inflammation. CD98 siRNA-containing nanoparticles demonstrated a therapeutic effect by decreasing artificially induced colitis in a mouse model.⁹

The active and passive accumulation of nanoparticles in tumour tissue can also improve imaging. This is achieved by using nanoparticles to carry cargo (e.g. gadolinium) that is easily detected by magnetic resonance imaging. A nanoparticle with cargo of both active compound and imaging agent (termed a 'nanotheranostic') provides a dual approach for imaging and therapy.¹¹

The above modifications to nanoparticles constitute important tools for nanomedical scientists in the development of nanotherapeutics.

Nanomedicine: regulatory status and medical writing

The unique properties of nanomedicines pose additional challenges for regulation and approval.²³ Currently, nanomedicines are regulated by the EMA and FDA under the same procedures used for the assessment of small-molecule pharmaceuticals or medical devices.²³ As the EMA regulates the approval of pharmaceutical products and medical devices differently, the question arises as to how the assessment of nanotheranostics can be integrated into these procedures.²⁴ In addition, a lack of definitions for nanomaterials and limited standard nomenclature and reference material challenge the regulatory communities.²³ Draft guidance papers that have been issued by the FDA and EMA²³ are expected to represent precursors for regulatory requirements specific for nanomedicines.

The development of generic equivalents to nanomedical products, called 'nanosimilars', is even more ambitious than the development of biosimilars. The nanosimilar needs to express the same complex physicochemical properties as the patented drug (e.g. *in vitro* leakage rate and liposomal size distribution), which in turn require the establishment of sophisticated analysis methods. Three years after the last patent expired for the successful liposomal doxorubicin Doxil[®], only one generic

(Lipodox[®]) has been approved by the FDA (but not the EMA).²³

For the medical writing community, the writing of (regulatory) documents for nanoapplications and nanosimilars demands extensive knowledge, not just of the clinical indication and of specific regulations but also of the relevant physics, chemistry, and material science background. Given the expected increase in nanomedical developments and the complex nature of the topic, 'nanomedical writing' might even evolve as a job specialisation in the medical writing profession.

Environmental fields

Nanoparticles in the environment can stem from natural sources (forest fires or volcanic eruptions), accidental release (vehicle exhaust or industrial processes), or intentional use of engineered products.²⁵ Industrial applications of engineered nanoparticles include the medical sector, ground water remediation, and nanobionic engineering of plants.

Nanotechnology holds great potential for advancing wastewater treatment.²⁶ Examples of current and potential applications include the absorption of heavy metals by oxidised carbon nanotubes, the reduction of contamination by addition of metal oxide nanoparticles to filter membranes, and nanophotocatalysis with TiO₂ particles to remove trace amounts of microbial pathogens.²⁶

By introducing single-walled carbon nanotubes into chloroplasts of nano-engineered plants, it is possible to promote more than three times higher photosynthetic activity than that of controls. Nanotubes absorb light over a broad range of wavelengths in the ultraviolet, visible, and near-infrared spectra not normally captured by chloroplast antenna pigments.²⁷ They are also able to transfer electrons to the photosynthetic machinery of the chloroplasts. Nanobionic engineering of plant function can thereby contribute to the development of biomimetic materials to better utilise available light.²⁷

Potential adverse effects on human health and the environment

Despite their common occurrence in everyday life, the long-term effects of nanoparticles have not been fully investigated, and guidelines on how to evaluate and quantify these effects are lacking.²⁵ In an attempt to establish guidelines, stakeholders including the Organisation for Economic Co-operation and Development (OECD) and the EU are attempting to define the impact of nanomaterials on both human health and the environment.²⁵

Dietary nanoparticles may detrimentally affect human health. A pilot study found that a reduction in dietary TiO₂ microparticles (including nanoparticles under 0.1 µm in size) led to an increase in disease remission in patients with Crohn's disease.¹⁶ Once ingested, some of the degradation-resistant TiO₂ microparticles were absorbed across the gastrointestinal mucosa and some accumulated in macrophages, potentially causing local inflammation that leads to Crohn's disease. A significant reduction ($P = 0.002$) in the disease activity index was observed in patients with lower numbers of lumen microparticles when compared to controls. This would suggest an association between dietary uptake of nanoparticles and inflammatory bowel diseases.¹⁶

Once released, nanoparticles may enter the marine environment through the sewer system and accumulate in various consumers throughout the food chain. A recent study reported that polystyrene nanoparticles have an effect on both fat metabolism and the ingestion behaviours of crucian carp.²⁸ This effect is possibly due to a disturbance in fat metabolism connected to accumulation of apolipoproteins on the nanoparticle corona.

Certain nanoparticles can also negatively affect plants. For example, accumulation of TiO₂ nanoparticles has been associated with reduced hydraulic conductivity (the ease with which water can move through pore spaces) in maize root cell walls, thus leading to reduced transpiration and leaf growth.²⁹

Future perspectives

Nanotechnology has found its way into many facets of everyday life, including food and consumer products, the medical sector, and environmental fields. This article outlines some of the trends to date. Nanotechnology is a sophisticated tool that can build, characterise, and utilise nanoscale structures across a range of disciplines to create new and innovative applications.

Exposure of humans, animals, and plants to nanoparticles can be beneficial, but also potentially detrimental. Extrapolation from controlled experiments in an artificial setting should be conservative. Therefore, it is important to determine the quantity of exposure and long-term effects of engineered nanoparticles in ecosystems. Regulation and specific guidance on nanoparticle testing are needed for the future. For medical writers, the anticipated regulatory development and the interplay of several scientific disciplines for nanomedicines demand a broad scientific background, and might provide

an opportunity for specialised expert writers in the field.

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Author information

Dr Simone Lerch investigated pH-dependent nanoparticles and nanoparticles of different sizes for cellular applications during her PhD at the Max Planck Institute for Polymer Research in Mainz, Germany. Since 2012, she has worked as a medical writer for nspm ltd, a medical communications agency located near Lucerne, Switzerland. The beautiful alpine region provides plenty of opportunities for Simone to enjoy climbing, hiking, and skiing.

Medical writing for *in vitro* diagnostics: A different approach for the 'hidden' side of healthcare

Alisa M. Davis

Roche Diagnostics International Ltd., Rotkreuz,
Switzerland

Correspondence to:

Alisa Davis
Freiestrasse 155
CH-8032 Zurich
Switzerland
davis.alisa@gmail.com

Abstract

Medical writing for *in vitro* diagnostics differs from writing for pharmaceutical products in several ways. The shorter development time and lifecycle of diagnostic assays, different regulatory requirements and approval times, and upcoming changes to European Economic Area regulatory requirements are a few challenges. In addition, the type of data from *in vitro* diagnostic studies and relevant forums for presenting scientific diagnostic data (independently from patient data) can significantly differ from data collected in pharmaceutical clinical trials.

Keywords: *In vitro* diagnostics, Publication planning, Diagnostic assays

Introduction to *in vitro* diagnostics

The category 'medical devices' covers a wide range of non-pharmaceutical healthcare products. The world of *implantable* medical devices and the world of *in vitro* diagnostic medical devices (IVDs) are different. The IVD industry supplies laboratory tests (assays and instruments) used by healthcare professionals, healthcare institutions, or patients themselves to evaluate human samples of various kinds for abundance of any number of biological analytes. The key distinction between IVDs and medical devices is location: while many medical devices are implantable, IVDs by definition are *in vitro* or outside of the human body.

In practical terms, an IVD could be the instrument at your doctor's office used to measure a selection of variables (electrolytes, lipid profiles, blood cell counts) using only a drop of blood; it could also be a battery of automated instruments filling a room, processing thousands of blood samples every hour in large, centralised laboratories or blood banks. It has been reported and widely cited

that laboratory tests are responsible for up to 70% of medical decisions.¹ Traditionally, one would think of many IVDs as having two basic components: the platform or instrument that performs testing, and the assays or actual tests that can be used on a given platform. It is similar to an inkjet printer in a basic way: the printer accepts ink cartridges and the ink cartridge has to be replaced when it is empty for the printer to continue functioning. In addition, the system needs a software component to tell the platform what to do. Just as technology develops at a rapid pace in the communication and information technology industries, so it develops for IVD and laboratory testing software.

What are some important facts about the IVD industry that have relevance for medical writing in comparison to the pharmaceutical industry? First of all, the lifecycle of most diagnostic assays is much shorter than for a pharmaceutical compound, meaning there is a constant cycle of platform, assay, and software updates, with varying frequency. This is comparable to the major version releases for computer operating systems. Indeed, as so much of diagnostics depends on software architecture, the platforms have to keep pace with the breakneck speed of advancement for other digital technologies – no small feat when next generation platforms have to be approved by regulatory authorities. Another important aspect is regulatory approval itself. The requirements in the USA and in other countries are significantly different – at least for now. More on this can be found in the section 'IVD registration timelines'. The study design for IVDs yields a different kind of data to those produced during a Phase II or III clinical study. More on this in the section 'What are IVD data?' below. Finally, IVD data present a special challenge in finding the appropriate scientific information portal for dissemination,

as discussed in the section ‘Who wants to know about IVD data?’.

Contrasts with writing for the pharmaceutical industry

IVD registration timelines

Have you ever wondered what the abbreviation ‘CE’ means? You will find it on most electronic items in your home, as well as many other everyday items. The European Commission website explains CE marking as follows:

The CE marking indicates a product’s compliance with EU legislation and so enables the free movement of products within the European market. By affixing the CE marking to a product, a manufacturer declares, on his sole responsibility, that the product meets all the legal requirements for the CE marking....²

Basically, the manufacturer can ‘self-validate’ an item that qualifies for CE marking by ensuring the item passes a conformity assessment. Only in special cases of ‘high-risk’ IVDs does the assessment have to be performed by a notified body. Once an IVD manufacturer can prove a product has passed conformity assessment, the product can be CE marked and made commercially available. Producing the required data via external validation studies can take <1 year. While the situation in the USA is very different, requiring more data generation and FDA review and approval, the total timeline could still be only a few years.

Contrast this to the situation for pharmaceutical products, which take several years or more than a decade to complete all trial phases, with interim analyses and safety data, before a product can be available on the market. Needless to say, the challenges in publication planning around registration timelines for IVDs are very different from those for pharmaceutical products. However, change is looming for IVD registration in the European Economic Area, due to the recommendation to the EU parliament in response to the scandal over silicone breast implants in France in 2012.³

What are IVD data?

Another significant difference to pharmaceutical products is the type of data used to describe IVDs. Where pharmaceutical endpoints will focus on efficacy, safety, pharmacokinetics, and pharmacodynamics, the diagnostic data landscape will focus on precision, accuracy, and lot-to-lot variability. In addition, the IVD manufacturer should offer data

regarding comparability to similar or predicate (pre-existing) commercial IVDs, so that laboratories are aware of what must be considered if they plan to change platforms or assay manufacturers. These data typically take the form of linear regression analyses comparing two sets of measurements from the same set of test samples.

In addition, testing laboratories themselves often have to undergo certification by participation in quality assessment schemes. These are independent studies run by academic or hospital centres where samples are sent to participating laboratories every month or several times per year. Participating laboratories measure the samples and report the platform type and results to the study centre. All results are analysed for mean and median concentrations determined according to assay type or measuring principle, platform type, whether the sample was a patient blood sample or a ‘spiked’ sample, etc. Data from these schemes are a very helpful and unbiased measure of how well platforms and assays perform in the field in different laboratory environments and are an important part of evaluating any new platform or assay.

On the other hand, there are areas where IVD and clinical data may overlap. Pharmaceutical documents or publications may include diagnostic data from haematology and clinical chemistry assays as required for safety data, as well as laboratory qualification data described above. However, unless diagnostic criteria are critical for defining a claim for a product, this information is likely to be in the background where patient outcomes are the primary focus. One other similarity to pharmaceutical trials is the comparison to a ‘gold standard’ method, which is comparable to the ‘standard of care’ concept for clinical trials. Any new platform or assay must demonstrate acceptable or improved performance when compared to the gold standard method. This can often be challenging due to the rapid changes in biomedical and imaging technology, making an adequate comparison between newer and older methods difficult even when the gold standard method is inferior.

Who wants to know about IVD data?

As mentioned above, laboratory technology and clinical chemistry results are often ‘hidden’ behind the treatments that are prescribed as a result of these tests and the associated patient outcomes. Not surprisingly, diagnostic data are generally not headline-grabbing. There are a number of journals with a focus on ‘medical laboratory technology’, with the Thomson Reuters Journal Citation

Reports[®] Science Edition (2012) listing 32 journals in this category (<http://thomsonreuters.com/journal-citation-reports/>). The impact factors of 27 of these 32 journals are below 3, indicating the high degree of specialisation in this field. However, a different breed of diagnostics known as companion diagnostics or personalised healthcare has been pushing the boundaries of how IVDs are perceived. Here, assays such as assessments for specific genetic mutations can be used to identify patients who will benefit the most from a pharmaceutical product with a very specific mode of action related to the mutation in question. Such IVDs may be required for prescription of a pharmaceutical product and garner attention from much higher profile journals, as they are used for a specific intervention and affect patient outcomes. This trend, as well as more emphasis from the healthcare industry in general on preventative medicine, health economics, and healthcare payers, may mean that publication of diagnostic assays and data alone in connection with patient outcomes will become more important in the near term.

Conclusion and parting thoughts

While the opportunity (or burden?) to write lengthy clinical study reports, patient narratives, and outcome publications still remains in the pharmaceutical realm, an understanding of diagnostics and their impact on healthcare will become

increasingly important for pharmaceutical writing, as personalised healthcare or targeted cohort selection will rely on more and more sophisticated assays. Who knows, as you dive into the world of IVD data, you might discover a passion for instrumental precision lying dormant within.

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Conflicts of interest

Alisa Davis is an employee of Roche Diagnostics International, Ltd. All views and opinions expressed in this article are solely those of the author and do not necessarily reflect those of her employer.

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Author information

Alisa Davis obtained her PhD in Biophysics and Biophysical Chemistry from The Johns Hopkins University in Baltimore, MD, USA. After several years of postdoctoral research and writing at the University of Zurich and the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland, she fully transitioned to a career in medical writing in 2010.

Writing bioanalytical reports

Alexander Nürnberg

Worms, Germany

Correspondence to:

Alexander Nürnberg
Worms, Germany
mail@nuernberg.su

Abstract

Bioanalytical reports are usually written by bioanalysts. Medical writers offer a valuable contribution to bioanalytical reporting, increasing the efficiency of document development and improving the quality of data presentation. This article covers essential aspects of reporting bioanalytical results, including the key parameters of bioanalysis, regulatory requirements, and the content and structure of bioanalytical reports. It will also be of interest to medical writers who deal with bioequivalence and other pharmacokinetic trials.

Keywords: Bioanalysis, Bioanalytical reports, Regulatory requirements

Bioanalysis serves the determination of drug concentrations in biological samples and thus provides the primary data for toxicokinetic and pharmacokinetic evaluations. The validity of such evaluations depends directly on the validity of the underlying bioanalytical measurements. Accordingly, bioanalytical studies should be properly documented and reported, with bioanalytical reports presenting evidence of the quality of the obtained data. Moreover, bioanalytical reports should be closely aligned with the respective non-clinical studies or clinical trials and should be seen in the context of the regulatory submission as a whole. These considerations pose a great challenge to bioanalytical laboratories, which usually produce study reports on their own.

Medical writers can greatly assist in the preparation of bioanalytical reports, providing expertise in presenting data and in the management of complex documents. With their good overview of the drug development process, medical writers are able to place those reports into the perspective of a clinical trial or a submission package. A good insight into bioanalysis allows medical writers to consider bioanalytical issues while developing a clinical trial protocol and to coordinate clinical and bioanalytical reporting at the end of a clinical trial. This integrative approach is especially beneficial

for trials that depend heavily on bioanalysis, such as bioequivalence trials.

However, medical writers rarely contribute to bioanalytical reports. With this article, I am challenging this tradition, as I am convinced from my experience that the quality of bioanalytical reporting considerably improves upon the involvement of medical writers. Nevertheless, getting started with bioanalytical reports can be difficult. For this reason, I do not provide a comprehensive guide here (in any case impossible within the article format), but rather concentrate on the most important background information and the essential features of the three key documents for regulated bioanalysis:¹ the method validation report, the sample analysis (analytical) report, and the bioanalytical part of the Common Technical Document.

Bioanalysis

Broadly speaking, the very task of any bioanalytical investigation is providing concentration data. A great deal of scientific effort, however, focuses on ensuring the quality of these data. Before sample analysis, validation experiments need to demonstrate the validity of the bioanalytical method. During sample analysis, the performance of the method needs to be constantly monitored to confirm the acceptability of the obtained concentration results. Regulatory guidelines^{2,3} systematically describe parameters of a bioanalytical method that need to be validated and monitored. To avoid repetition, I elaborate here on only a few important points.

Accuracy and precision represent the key parameters of a bioanalytical method. They are assessed by measuring samples with known concentrations of the analyte, so-called quality control (QC) samples. Accuracy (the closeness of the determined value to the accepted true value) is calculated by comparing the measured concentration of a QC sample to its nominal concentration, whereas precision (the degree of scatter between measurements) is evaluated from repeated measurements of the same QC sample. Both values determine the

acceptability of a single bioanalytical experiment (analytical run) and the overall validity of the bioanalytical study results.⁴

The method performance during sample analysis is additionally controlled by reanalysis of incurred samples (study samples from dosed animals/subjects). Deviations between originally measured concentrations and those determined in incurred sample reanalysis (ISR) are evaluated according to predefined criteria.^{3,5} ISR failure implies lack of reliability of the obtained data and requires laboratory investigation.^{3,6} ISR should not be confused with study sample reanalysis: the results of ISR are not used to generate concentration data but solely to control the reproducibility of the obtained results.

Importantly, the accuracy and precision of the method refer to the specific range of concentrations for which they were established. A concentration outside this range can still be determined, but with uncertainty regarding the accuracy and precision of the measurement. High concentrations do not pose a significant problem because such samples can be analysed after dilution down to the validated range. Low concentrations, however, cannot be brought up to the validated range. Therefore, bioanalytical laboratories do not report quantitative data for concentrations below the lower end of the validated range (the lower limit of quantitation, LLOQ), with such values being set to 'missing', zero, or $\frac{1}{2}$ LLOQ in pharmacokinetic models. Thus, the LLOQ is an important parameter of a bioanalytical assay that directly influences the validity of pharmacokinetic evaluations. For this reason, it should be clearly stated in both bioanalytical and clinical reports.

Historical background

The development of regulated bioanalysis is a good example of the successful interaction between industry and regulatory bodies. Intensive dialogue has led to clearly written and widely accepted guidelines and ensured a high degree of harmonisation between regulatory requirements. The harmonisation of the method validation procedures started in 1990 at the first bioanalytical method validation workshop cosponsored by the American Association of Pharmaceutical Scientists, the FDA, and others and continued at the second workshop in 2000.⁷ The results of both workshops were implemented in the FDA guidance² published in 2001, which was the first regulatory guideline on bioanalysis.⁸ The FDA guidance was followed in 2003 by the detailed guide⁹ of the Brazilian Health Surveillance Agency.

The rapid advance of bioanalytical methods in the 2000s necessitated further regulations to address methodological developments. Two more workshops held in 2006⁴ and 2008¹⁰ dealt with these issues, preparing the ground for the new EMA guideline on bioanalytical method validation. This guideline,³ issued in 2011, was well accepted by the bioanalytical community.⁸ It introduced new developments, such as ISR, and had an elaborated description of ligand-binding assays, but was otherwise considered to be in line with the FDA regulations.⁸ In May 2012, the Brazilian agency updated its guide on bioanalysis and, lastly, the FDA published the draft revision of its guidance,⁵ which mostly implemented methodological advances but also covered new topics, including the analysis of biomarkers and examples of report tables.

Regulatory framework

Bioanalytical guidelines

The comprehensive guidelines^{2,3,5,9} define the regulatory framework for bioanalytical method validation and sample analysis in non-clinical studies and clinical trials. As outlined above, they are largely compatible, with the differences reflecting technical advances rather than differences in regulatory views. The bulk of these guidelines describes experimental conduct; however, they also set forth requirements for bioanalytical documentation and the content of final reports. Any writer engaged in the preparation of bioanalytical reports should be familiar with these guidelines and know the definitions provided therein.

In addition, regulated bioanalysis can also come within many other regulations.^{11,12} Some of them cover trial-specific requirements, whereas others, most notably Good Laboratory Practice (GLP), apply, at least partially, to the majority of bioanalytical studies. Commonly encountered trial-specific regulations are bioequivalence guidelines,^{13,14} which set additional (stricter) requirements on conducting and reporting bioanalytical studies in support of bioequivalence claims. Another example is the bioanalytical specifications for therapeutic proteins.¹⁵ General principles to be considered in regulated bioanalysis include GLP and Good Clinical Practice (GCP), although the application (and applicability) of these principles is not always straightforward. It is therefore worthwhile to discuss the role of these principles in bioanalytical studies at some length.

Good Laboratory Practice and Good Clinical Practice

GLP is a quality system designed for non-clinical studies.^{16,17} Although most bioanalytical

laboratories run under GLP conditions, it remains somewhat uncertain, to what extent GLP is applicable to bioanalysis.^{1,8,16} Sample analysis in non-clinical studies clearly requires GLP compliance;^{2,3,5} method validation experiments and clinical sample analysis may, however, fall outside the scope of GLP.^{1,16} It may also be difficult to fully apply the principles of GLP to clinical bioanalysis,^{16,17} even if following the principles of GLP is clearly required by the regulator (e.g. bioequivalence trials¹⁴). The European Bioanalysis Forum recommends, therefore, to use GLP for all bioanalytical studies and to claim GLP compliance for non-clinical sample analysis.⁸ Claiming GLP compliance presumes verification (monitoring) by the GLP authority,¹⁸ which, under the European Union legislation, does not cover clinical sample analysis.¹⁹

Being a non-clinical standard, GLP does not address the safety and rights of the trial subjects. Although bioanalysis of human samples is subjected to the same ethical provisions as the clinical part of a trial, GCP lacks clear guidelines for the processes at bioanalytical laboratories and thus cannot be easily applied to bioanalysis (of note, some regulators' positions can be found in the GCP inspection procedures for the bioanalytical part of bioequivalence trials²⁰). Therefore, so-called Good Clinical Laboratory Practice guidelines^{17,21,22} have been issued, which combine the principles of GLP and GCP, thereby providing a framework for the analysis of clinical trial samples under GLP conditions.

Requirements for bioanalytical reports

The bioanalytical guidelines^{2,3,5,9} specify regulatory standards for the content of the final report. They do not, however, provide any guidance on the report structure. Lack of a dedicated guideline leads to a wide variety of bioanalytical report formats, which results in inefficiency at many stages, including report writing, preparation of submission summaries, and, not least, regulatory review. Aiming to standardise the presentation of bioanalytical reports, the Global Bioanalysis Consortium has been developing a high-level report structure, with the first recommendations being recently published.¹

Common Technical Document

The presentation of bioanalysis in the Common Technical Document has been criticised by the Global Bioanalysis Consortium due to a lack of standardisation and uniformity that hinders efficient review.¹ Currently, summaries of bioanalytical methods are contained in Sections 2.6.4.2 and 2.6.5 for non-clinical studies and Section 2.7.1 for clinical

studies. Section 2.7.1, however, covers bioanalysis performed in biopharmaceutical trials (e.g. bioequivalence¹⁴) and thus may not be suitable for bioanalytical information from other pharmacokinetic trials.¹ The Global Bioanalysis Consortium, therefore, proposes¹ a separate section 'summary of bioanalytical methods' with tables showing method validation parameters and links between clinical trials and respective bioanalytical studies (validation and sample analysis). The EMA,²³ and more recently the FDA,⁵ have provided templates for such summary tables, which should be considered in the preparation of bioanalytical study reports.

Bioanalytical reports

Bioanalytical laboratories issue two types of reports: the method validation report and the analytical report. These reports can be prepared separately or be combined. For example, a method validation report can be appended to an analytical report, especially if a per-study validation was performed. In any case, the analytical report must contain a reference to the applicable validation report(s).³

I discuss here some specific features of bioanalytical reports; given the limited scope of this article, I refer the reader to the cited guidelines and publications for detailed information.

Title page

It is advisable to provide on the title page the identifier of the non-clinical study or the clinical trial whose samples were analysed (bioanalytical studies often have different identifiers). This eases attribution of the bioanalytical report and creation of summary tables for regulatory submissions.

Within GLP, regulators sometimes require more than one signed report.²⁴ The identification (original 1 or 2) must be present in such reports and can be placed on the title page.

GLP compliance and quality assurance statements

A GLP compliance statement must be included in the final reports of studies performed under GLP. This, however, may not be applicable to the bioanalysis of clinical samples, as discussed above. For such studies, the bioanalytical community proposed a more general regulatory statement that avoids claiming GLP compliance and should contain reference to Good Clinical Laboratory Practice guidelines.^{1,8} Huntsinger¹⁸ provides examples of GLP compliance statements.

In addition, the final report of GLP-compliant studies must be inspected by quality assurance

and a quality assurance statement must be included in the report.

Study summary table

A summary table containing key parameters of the study can substantially facilitate preparation and review of higher-level summaries, submission packages, and clinical trial reports. The table can be designed from templates provided in the guidelines^{5,23} and may be further aligned to specific regulatory requirements (e.g. bioequivalence summary for Health Canada²⁵).

Method description

The validation report should provide detailed information on the bioanalytical method, whereas the sample analysis report may contain a short description of the assay procedure with a reference to validation reports.^{3,5} The Global Bioanalysis Consortium suggests including a brief method description in the text and putting detailed information in the appendices.¹

Compounds

Reference items and internal standards should be listed in the report along with the data required by the regulators (e.g. origin, purity). Certificates of analysis can be included in the appendices, if available.

Preparation of calibration standards and QC samples

The report should describe the preparation of calibration standards and QC samples, including storage conditions. Regulatory requirements,^{2,3,5,25} however, differ in the level of detail required in this section. The bioanalytical community favours a very general description, with specific information being stored in the raw data.¹

Sample receipt and storage

This section is present, by definition, in the analytical report only (except for some validation experiments that require subject samples too). Its goal is to show that the storage conditions and period are fully covered by the validation (stability) experiments. At minimum, it should contain a table with the longest storage period and conditions, although, again, the extent of the required information varies between guidelines^{2,3,5,25} and even between recommendations of bioanalytical societies.^{1,4,8} This section can also contain a brief statement that the laboratory was informed in a timely manner if a subject withdrew informed consent (as required by Good Clinical Laboratory Practice guidelines).

Experimental phase

Analytical experiments should be sufficiently described in the report, including, in particular, the acceptance criteria for an analytical run.^{1,3,4} Criteria for sample reanalysis should be predefined (e.g. in a standard operating procedure) and clearly stated in the report^{2,3,5,8} (regulators are very sensitive to this issue). As with the method description, the text in the report can be brief, with detailed information given in the appendices. Experimental starting and completion dates must be indicated in GLP studies.

Results

This section contains a description of the study results with references to data tables in the 'Tables' section at the end of the report. The basic results to be presented in both types of reports include the number of analytical runs (all versus valid), experimental dates, precision and accuracy of calibration standards and QC samples, and, if applicable, assay linearity (clearly, validation reports contain more elaborated presentation).

The analytical report should include a summary of the sample analysis (number of analysed and re-analysed samples, reasons for reanalysis, number of samples with valid results) and, if applicable, a summary of ISR.

Appendices

The report appendices can include the study plan, standard operating procedures, representative chromatograms (validation reports) or serial chromatograms of sample analysis (analytical reports), certificates of analysis, method validation reports (if not provided as standalone reports), and any other supportive documents (e.g. laboratory investigation reports).

Conclusion

The notion of medical writers preparing bioanalytical reports may seem unorthodox at first glance, for these reports are usually, if not exclusively, written by bioanalysts. But think of clinical trials – you would hardly find anyone in the industry who would insist on clinical reports being written by investigators. Medical writers provide valuable contributions to clinical reports and they surely can do the same for bioanalytical reporting.

Acknowledgements

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Conflicts of interest

The author is an employee of CRS Clinical Research Services Mannheim GmbH. The information

provided in the article should not be used to make decisions regarding bioanalysis, such as which guidelines to follow or what kind of quality system to use. Such responsibility rests solely with bioanalysts, laboratory management, and sponsors, and involves many other considerations.

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Author information

Alexander Nürnberg is a chemist holding a PhD in Pharmacology. Since 2012, he has been working as a medical writer at an early phase contract research organisation. Along with clinical study protocols and reports, he has written numerous bioanalytical reports for non-

clinical and clinical studies, including studies with biotherapeutics, endogenous compounds, and rare matrices. His responsibilities include the development and maintenance of in-house bioanalytical report templates.

Letter to the Editor

Because you're worth it?

To the Editor – I read the recent article on the fourth EMWA freelance business survey¹ with great interest and some considerable concern.

When freelance writers express an interest in working with Rx Communications, one of the first things we ask them is for an indication of the hourly rate they charge. This is by no means a perfect indicator of reimbursement cost as clearly the time taken to complete a project and to what standard are as important, if not more so, to our costs. It is, nonetheless, a useful indicator. Recently I've noticed that many freelancers are charging similar hourly rates, regardless of experience. These rates are very close to the average rate published in the fourth EMWA freelance business survey,¹ so I thought I'd have a look in detail at the survey and compare it to the latest EMWA salary survey,² which focused on salaried medical writers. What was immediately apparent was that the freelancer survey did not include any indication of experience level. This seems to be a massive oversight. The salary survey, on the other hand, broke down average writer salaries into five experience categories. In the past, freelance medical writers would tend to work for a minimum of 10 years (often longer) before becoming freelancers. Lately, however, I have had contact from many freelancers with less than 5 years' experience, including some with no previous experience at all as a medical writer. Do their hourly rates

reflect their relatively low experience, or the EMWA freelance average rate? In my experience it's always been the latter. At the same time, how can an inexperienced freelancer hope to accurately price themselves if the relevant EMWA survey doesn't include the required level of detail?

Comparing the EMWA salary and freelance surveys brings up some interesting figures. The average annual income for a salaried medical writer is €61 505.² Annual incomes aren't given in the freelance survey, although this wouldn't be a fair comparison anyway as nearly half of all respondents to the survey worked 30 hours or less per week; in the salary survey, 76% of female respondents and 95% of male respondents worked full time. To make a *rough* comparison, let's say the average salaried medical writer works 37.5 hours per week and receives 5 weeks' holiday per year. Let's then convert this to a comparable freelancer rate: 37.5 hours per week × 47 working weeks per year × €77 per hour (EMWA freelance average for medical writing¹) = €135 713. This suggests freelancers are charging on average more than double the rate at which salaried medical writers are reimbursed. Of course, this comparison would benefit from some raw data and statistical methodology to give it some weight but it gives us a ballpark figure. Now, I hear you say, aren't freelance medical writers typically more experienced than salaried writers? The answer is

yes, probably (again, I really wish EMWA would add an experience question to the freelancer survey). Having said that, I refer to an earlier point that there appears to be an increasing number of freelancers with less than 5 years' experience. Furthermore, even writers in the highest experience category of the salary survey (>15 years) reported an annual income of 'just' €79 363, still far short of my *pro rata* estimate generated for the average freelancer.

How can I explain this discrepancy? Well, apart from the (potential) differing levels of experience between the two writer groups, salaried writers may be privileged to some additional reimbursement such as bonuses, pensions, or other benefits not reflected in the salary figure. Additionally, freelancers typically have to spend part of their working week on activities such as securing future projects and administration, for which they may not be reimbursed (although at Rx we take on many of these responsibilities so that our freelancers are free to concentrate on what they do best: writing!). Finally, employing an in-house writer will involve additional costs compared with using a freelancer, including the reimbursements mentioned above as well as insurance, provision of IT and a workstation, and training costs.

I have a few issues with the EMWA freelance business survey in its current form. Firstly, as mentioned above, it needs to take into account experience level.

Otherwise, as is the case presently, every freelancer will tend to charge the same hourly rate whether they have 2 or 20 years' experience. Also, the survey relies on the honesty of respondents. This is hard to avoid but runs the risk of some freelancers inflating their rates when responding and then using the results of the published survey to, well, inflate their rates. Great for freelancers, not so good for communications agencies

and pharma. We at Rx Communications don't want to see external writers becoming so expensive that pharma revert to doing all their writing in-house, putting everyone else out of a job. The figures presented in this article suggest that employing an in-house writer is already a lot cheaper for pharma than using a freelancer, assuming the in-house writer is as efficient, of the same standard, and constantly occupied with writing.

Duncan Marriott
Medical Writer
Rx Communications
Flintshire, UK

Duncan.Marriott@rxcomms.com

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In reply – The authors of past reports on EMWA Freelance Business Surveys (FBSs), and in particular the FBS 2012,¹ are open to constructive criticism of the survey and note, with interest, Duncan Marriott's observations and comments.²

In addition, we take the opportunity to respond to other points made in Duncan's letter.

Duncan's specific criticism of the FBS 2012 is

...the freelancer survey did not include any indication of experience level.

This is a valid point. When the FBS was first migrated from the 2007 paper-based survey to the 2010 online survey, cost- and time-saving were key considerations. No budget was allocated for running the 2010 or the 2012 surveys. The 10-question Survey Monkey questionnaire format is free of charge. Additional questions incur cost. The 2012 survey¹ largely followed previous survey formats to allow comparisons to be drawn between the current and past surveys. As interest in the FBS increases year by year, the authoring team accept that expansion of the scope of the survey to include data collection on experience levels is indeed warranted.

Duncan states that

Lately [...] I have had contact from many freelancers with less than 5 years' experience, including some with no previous experience at all as a medical writer.

He then asserts that there

...appears to be an increasing number of freelancers with less than 5 years' experience.

This assertion seems to be based entirely on his employer's recent experience. In the absence of convincing data, we are not able to comment on this. However, we are at a loss to understand why any potential client would consider paying the average FBS 2012 writing rate to an inexperienced freelancer. In the absence of hard data on experience levels, rate negotiation is the logical avenue for pursuit.

Duncan's employer describes itself as a 'boutique medical communications agency'. We therefore deduce that the company is interested in engaging the services of freelance professionals for medical communications work. In the FBS 2012, medical communications agencies provided a mean of 24% of the work of respondents. The other 76% was from other work providers, with pharmaceutical companies accounting for a mean of 28%, academia a mean of 16%, and CROs a

mean 10% of the work. Only a quarter of the work of respondents was from medical communications agencies, arguably providing a starting point for discussion around what might constitute mutually acceptable charges for both service provider and client.

Duncan makes a 'ballpark' calculation that leads to his suggesting that

...freelancers are charging on average more than double the rate at which salaried medical writers are reimbursed.

Our greatest concern is that he makes only cursory mention of incidental employment costs and overheads associated with employing salaried staff, and takes no account at all of the additional costs borne wholly by freelance medical writers. These oversights lead to unrealistic calculations. It is not therefore surprising that Duncan concludes:

The figures presented in this article suggest that employing an in-house writer is already a lot cheaper for pharma than using a freelancer, assuming the in-house writer is as efficient, of the same standard, and constantly occupied with writing.

We wish to bring objectivity to all sides of this interesting debate through our publication in this issue of *MEW*, which includes what we consider to be realistic cost calculations.³

Finally, we note that Duncan states

... the survey relies on the honesty of respondents. This is hard to avoid but runs the risk of some freelancers inflating their rates when responding and then using the results of the published survey to, well, inflate their rates.

Exactly the same could apply to the employed medical writers' salary survey.⁴ Mean hourly rates for freelancers could only be distorted in this way by improbably broad collusion in the freelance medical writing community. The majority of clients respect the ethic, work, and integrity of freelance service providers.

We thank Duncan Marriott for raising these issues.

Sam Hamilton
Section Editor for *Out on Our Own*,
sam@samhamiltonmwservices.co.uk

Alistair Reeves
Former Section Editor for
Out on Our Own,
a.reeves@ascribe.de

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Cost comparison of salaried and freelance medical writers working in Europe

Alistair Reeves¹, Sam Hamilton²

¹*Ascribe Medical Writing and Translation, Wiesbaden, Germany*

²*Sam Hamilton Medical Writing Services Limited, Newcastle upon Tyne, UK*

Correspondence to:

Alistair Reeves
Ascribe Medical Writing and
Translation Wiesbaden
Germany
a.reeves@ascribe.de

Abstract

This is the first systematic comparison of the costs of salaried and freelance medical writers working in Europe. In the absence of official figures for the total costs of employment, we make reasoned assumptions, using mean base figures for salaried and freelance medical writers from published surveys conducted in Europe by the professional organisation for medical writers in Europe, EMWA. In this cost comparison, *annual freelancer earnings* amount to €98 175 and the *annual cost of a salaried writer* to €102 098.

Keywords: Freelance, Employee, Medical writer, Earnings, Cost comparison

Introduction

The European Medical Writers Association (EMWA) conducted surveys of earnings of salaried¹ and freelance members² in 2012. The salary survey reported on mean annual earnings for medical writers and the freelance business survey on mean hourly rates for medical writing. A comparison of these figures to establish whether the costs of the two types of employee are similar is not straightforward because the surveys were designed separately to collect different data and are not directly comparable. A comparison of the raw mean annual salary and the mean hourly rate multiplied by the number of hours in a working year would be distorted, because salaried staff incur costs in addition to their salary. Such costs must be added to an employee's salary to obtain the true cost of employment. This must be considered when comparing the cost of salaried staff and freelancers, because freelancers cover these additional costs in their hourly rate. One publication so far has compared the costs of freelance and salaried medical writers, but failed to take due account of additional costs.³

Comments on this comparison are the subject of a Letter to the Editor by us in this edition of *Medical Writing*.⁴ Our aim with this investigation was to arrive at reasonable estimates for the number of productive days worked, *incidental employment costs*, and *employee overhead* (see Box 1) to enable us to compare the costs of salaried and freelance medical writers based on annual earnings in each group.

Box 1: Salaried employee

Incidental employment costs include employer contributions for health insurance, unemployment insurance, state pension, maternity or paternity leave, and a range of other benefits depending on the country.

Employee overhead includes costs for everything required to keep the employee at work and working effectively, such as administrative support, supervision, human resources, payroll, travel and meal subsidies, provision of a workspace and equipment, IT licence fees, costs for training, liability and other insurances, and workplace service, maintenance, and cleaning costs.

Material and methods

Scope of our calculations

The 2012 EMWA Freelance Business Survey was conducted in EMWA members and non-members, and the 2012 EMWA Salary Survey was conducted in members only. Both surveys were open to individuals in Europe and beyond. However, only a few respondents in both surveys were not working in Europe, so we regarded the overall findings as representative of the situation in Europe.

The mean annual salary per country varied widely between countries in the 2012 survey

(€37 521–€111 578). The overall mean at the individual level was €61 505.¹ The mean freelance hourly rate per country is not calculated by EMWA for reasons of business ethics (possible differences could influence the placement of work based on cost alone and, for countries where EMWA has one or two members only, it would place survey respondent anonymity at risk), but the range and mean for the whole was €77 (€20–€135) in the 2012 survey.² We used the mean overall annual income and the mean hourly rate for our calculations.

We needed to arrive at reasonable estimates of the following:

- Number of productive days worked per year.
- Annual freelancer earnings based on number of productive days worked per year.
- Incidental employment costs expressed as a factor of employee earnings.
- Employee overhead expressed as a factor of employee earnings.
- Annual cost of a salaried writer calculated as gross salary plus incidental employment costs and employee overhead.

Number of productive days worked per year

Office-based salaried employees in Europe do not work an uninterrupted 7.5 hours per day for 365 days. Table 1 shows a typical calculation of the actual number of productive days worked in a year in the UK, adapted from an example published on the website of Techscribe,⁵ a company in the UK that employs technical writers to produce instruction manuals. It was developed together with the UK Business Forums⁶ and the Professionals Contractor Group (PCG),⁷ the largest association of independent professionals in the European Union (EU), representing freelancers, contractors, and consultants from every sector of the economy. After deducting weekends, holidays and public holidays, training, continuous professional development, sick days, and unproductive time,⁸ they conclude

Table 1: Productive working days in a year

Item	Number of days	Running total
Weekdays in a year	261	261
Holidays ^a	32	229
Formal training	5	224
Continuous professional development	5	219
Sick days	7	212
Wasted and unproductive time	42	170

Adapted from Techscribe.co.uk.⁵

^aHolidays include 25 days of annual leave and 7 public holidays. The total may be higher or lower by about 5 days depending on the country.

that employees spend 170.6 days per year working productively.

Our comparison of the remuneration of salaried and freelance employees working full-time assumes that both groups work the same number of productive days. The actual number of days varies from country to country because, for example, some European countries have 30 days of annual leave as a standard, some have fewer, and the numbers of public holidays and average sick days differ.

We took 170 days as a reasonable estimate, aware that there are differences between countries, but assumed that the differences would not be large enough to have a significant effect on our estimates.

Annual freelancer earnings

We calculated this by multiplying the mean hourly rate of €77 by 170 productive days per year and 7.5 hours per day.

Incidental employment costs and employee overhead

Official estimates of incidental employment costs in the EU are published annually by the government

Table 2: Incidental employment cost factors in the EU in 2012

Country	Factor ^a
<i>EU average</i>	1.32
<i>Average for more expensive countries</i>	1.39
<i>Average for cheaper countries</i>	1.22
Sweden	1.52
France	1.50
Belgium	1.47
Italy	1.41
Lithuania	1.40
Czech Republic	1.37
Spain	1.37
Estonia	1.37
Austria	1.37
Slovakia	1.36
Hungary	1.34
Romania	1.31
Netherlands	1.30
Greece	1.29
Finland	1.28
Germany	1.28
Latvia	1.27
Portugal	1.26
Cyprus	1.21
Poland	1.20
Bulgaria	1.19
Ireland	1.18
Slovenia	1.17
United Kingdom	1.16
Luxembourg	1.15
Denmark	1.15
Malta	1.10

Adapted from Destatis.de.⁹

Note: More expensive countries: Sweden to Greece; cheaper countries: Greece to Malta; in terms of incidental employment costs.

^aThe cost of employing a person including incidental employment costs is obtained by multiplying the gross salary by the factor given.

offices responsible for statistics in each country. Table 2 is adapted from the 2012 statistics published by the German Federal Office for Statistics.⁹ It shows that the EU average is a factor of 1.32 for incidental employment costs alone, not including employee overhead. Estimates of incidental employment costs alone from academic and business sources abound on the Internet. Spot checks for different countries showed that the estimates were higher or lower than the country averages and the EU average. We therefore decided to use the EU information as the most reliable figures.

Estimates of the true full cost of employing someone, including incidental employment costs *plus* employee overhead, are difficult to find. Employee overhead differs by country and business sector, and we found no average calculations of employee overhead similar to those for incidental employment costs from official sources.

Table 3: Calculation of true employee cost including incidental employment costs and employee overhead

Item	€	
	Cost	Running total
Recruitment and salary		
Salary	42 000	42 000
Recruitment fee or advertising/selection costs	4200	46 200
National insurance (state health, pension, and unemployment insurance)	4710	50 910
Typical optional benefits		
Private healthcare	1000	51 910
Life insurance	100	52 010
Company pension	1000	53 010
Employee-specific costs		
Software licences	1200	54 210
Training, continuous professional development	1200	55 410
Workstation	9000	64 410
Apportionment of cost of business		
Share of other overheads, such as buildings, kitchen facilities, insurances (death-in-service, key worker, public liability, employer's liability)	1000	65 410
Depreciation on capital equipment (PC, desk, chair, filing cabinet, etc.)	100	65 510
Consumables (paper, toner, coffee, toilet paper)	100	65 610
Administrative overheads (non-project administration, HR, payroll, secretarial)	2400	68 010
Factor to obtain true cost (€68 010/42 000)	1.62	

Adapted from Techscribe.co.uk.⁵

Examples of other costs and overhead not taken into account in this model: maternity and paternity leave, unfair dismissal claims, redundancy, jury service, sick pay, and holiday pay.

We did find some references with estimates of the total cost:

- The Start in Business website¹⁰ says: 'Generally, as a rule, you can estimate the cost of employing a member of staff by taking their salary and doubling it!'
- The French business advice website En20lignes¹¹ says: 'For your provisional budget, take the gross salary and add 64% [...] (22% for salary-related costs and 42% for associated business expenses)'
- The business advice section of the Lexware website in Germany¹² says that an employee earning €40 000 per year costs a total of €68 000, 'which means that a factor of 1.7 should be applied'.

Techscribe publish a freely downloadable spreadsheet, also developed together with the UK Business Forums and PCG, for calculating the cost of employing someone.⁵ A similar 'True Cost of an Employee Calculator' can also be downloaded from the Accounting Services for Business website in the UK.¹³ The Techscribe spreadsheet, simplified by us and completed for a typical UK employee, arrives at a factor of 1.62 for true additional costs (Table 3).

Taking together the incidental employment cost factor of 1.32 in the EU, estimates on the websites given above for the true additional total costs of 2.00, 1.64, and 1.70, and the factor of 1.62 for total costs using the Techscribe spreadsheet, we decided that the midpoint between the EU incidental employment cost factor of 1.32 and the highest estimate we found of 2.0, i.e. 1.66, for total costs would be a reasonable – if perhaps conservative – approximation of incidental employment costs plus employee overhead.

We also calculated the true costs for 'cheaper' and 'more expensive' EU countries in terms of the incidental employment cost factor per country. We did this by calculating the mean for the top 14 countries and the mean for the bottom 14 countries in Table 2. Since there were 27 countries, Greece, at rank position 14, was included in both calculations. The mean factor for incidental employment costs was 1.22 for the cheaper countries and 1.39 for the more expensive countries. To this we added 0.34, the difference between 1.32 (EU incidental employment cost factor) and 1.66 (midpoint between EU incidental employment cost factor and the highest true cost factor of 2.00) for our overall calculation, to obtain a total factor of 1.56 for the cheaper countries and 1.73 for the more expensive countries.

Table 4: Total costs in all EU countries, and cheaper and more expensive EU countries

EU country group	€				
	1 Mean annual salary in EMWA survey	2 Incidental employment and employee overhead factor	3 Total cost of employee	4 Mean freelance earnings	5 Difference between cost of employee and freelance earnings
Cheaper	61 505	1.56	95 948	98 175	-2227
All	61 505	1.66	102 098	98 175	3923
More expensive	61 505	1.73	106 404	98 175	8229

Note: The 27 EU countries were classified into 'cheaper' and 'more expensive' based on incidental employment costs (see Table 2).

Total cost of employee (3) is obtained by multiplying 1 by 2; mean freelance earnings (4) were calculated as €77 × 7.5 hours × 170 days; difference between the cost of employee and freelance earnings (5) is obtained by subtracting 4 from 3.

Annual cost of a salaried writer

This was calculated by taking the mean salary from the EMWA 2012 survey of €61 505 and including the incidental employment costs and employee overhead with a factor of 1.66 for the overall calculation, 1.56 for the cheaper countries, and 1.73 for the more expensive countries.

Results

Annual freelancer earnings amounted to €98 175 and the *annual cost of a salaried writer* to €102 098 for all EU countries.

Table 4 shows these results and those for the cheaper and more expensive EU countries.

Discussion

Based on reasonable estimates of the number of productive days worked per year,⁵ mean annual freelancer earnings² adjusted for this, mean annual salary,¹ incidental employment costs,⁴ and employee overhead,^{5,10-12} we show that the mean earnings of freelance medical writers and the mean cost of salaried medical writers in full-time employment in Europe are very similar. As would be expected, greater differences were seen for the same calculations for cheaper and more expensive EU countries in terms of incidental employment costs, slightly in favour of salaried staff for cheaper countries, and slightly in favour of freelancers for more expensive countries. The mean freelance earnings in this comparison were, however, not country-specific as this information was not available due to business ethics (see above).

As far as we are aware, this is the first direct comparison of the costs of salaried and freelance medical writers that has attempted to take into account the true costs of both groups. In the absence of official figures for the total costs of employment, we inevitably had to make assumptions, and our base figures for salaried and freelance medical writers were taken from mean

values calculated in published surveys among these two groups conducted in Europe by the professional organisation for medical writers in Europe, EMWA. We feel that our assumptions regarding total costs were therefore reasonable and that our approximations show that there are no appreciable differences between the costs of employing salaried staff and freelancers.

These results were very different from those reported by Marriott,³ who concluded that freelance writers cost very much more than their salaried colleagues. This was, however, based on calculations not taking due account of the number of productive days, incidental employment costs, and employee overhead. The latter two factors vary widely throughout the EU, and according to one UK estimate¹⁰ may account for as much as 100% of the employee's annual salary. Incidental employment costs alone range from 10 to 55% of the employee's salary in the EU.⁹ Unlike incidental employment costs, there are no official EU figures for employee overhead or the total cost of employment. In the absence of such figures, we had to make assumptions to arrive at a factor for the calculation of true cost. We did this by adding a reasonable estimate of employee overhead to the official EU factor for the calculation of incidental employment costs,⁹ arriving at a factor of 1.66.

Simple 'multiplication up' of the freelance hourly rate for a working year appears to result in freelancers receiving more money than salaried staff. We have shown, however, that this is too simplistic an approach. One aspect we did not include in our calculation was whether freelancers invoice clients for all the work they do. A recent study from FreeAgent, a leading online accounting system provider in the UK, shows that UK freelancers and small businesses do not charge for one-third of the time that they actually spend working for clients.¹⁴ In the context of our calculations, a more modest – and arguably more realistic – estimate for the average number of unbilled

hours of 10% would result in freelancers being appreciably cheaper than salaried staff.

Freelancers therefore not only represent value for money, but companies realise that the true cost to them of using a freelancer corresponds to the work they supply for a limited period, including the additional element of rapid availability at times of peak workload, without the obligations of incidental employment costs and hardly any employee overhead. Some organisations have done calculations that put freelancer fees into perspective^{5,13} and show that very much more has to be considered than just the annual salary of the writer and the hourly rate of the freelancer. This is reflected by the Techscribe website,⁵ which states that ‘freelancers and employees solve different problems for customers and employers’. Market value is also a factor in such considerations, and this applies to industry across the board: usually, the more urgently you are required – often the case in IT or legal services for example – the more you can charge.

To our knowledge, the earnings of salaried and freelance medical writers have not yet been systematically compared, until now. We based our calculations on official figures as far as these are available, and we made reasoned and conservative assumptions where they were not available. Not all EU countries were represented in the mean annual salary from the EMWA survey, but the major EU countries and economic areas for our business sector (UK, Germany, France, Benelux, Spain, and Scandinavia) were included. In the absence of a mean salary for all EU countries, we decided that it was reasonable to use the figure from the EMWA survey as the best available. The figures we used for incidental employment costs and employee overhead were not available specifically for medical writing. However, these are unlikely to differ greatly in a given country for different types of office employee. Employers may also have some employee overhead for freelancers (e.g. provision of a workplace for regular visits to the office), but we felt that we could not make a reasonable estimate of these costs, and that they are small and would not have significantly influenced our calculations. A country-specific analysis would be desirable, but EMWA does not calculate mean freelance hourly rates per country from its surveys for reasons of business ethics (see above). We decided not to weight the factor for employee overhead for EU countries with cheaper and more expensive incidental employment costs. This was because Denmark and the UK – where high employee overhead would be expected – were

among the countries with low incidental employment costs, so reasoned assumptions could not be made. Despite these limitations, our calculations make a useful initial contribution to comparing the costs of salaried and freelance medical writers in Europe.

Conclusion

If the number of productive days, incidental employment costs, and employee overhead are taken into account, the cost of employing a freelance medical writer in the EU is similar to that of a salaried writer in full-time employment.

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Author information

Sam Hamilton, PhD is a regulatory medical writer with 21 years of experience in clinical and medical writing roles in the pharmaceutical industry. Sam has been a freelancer for the past 9 years. Since 2007, she has enjoyed her EMWA freelance advocacy role, co-chairing the Freelance Business Forum at 14 successive EMWA conferences. Sam is Section Editor for the freelance section, Out On Our Own, and is Vice President of EMWA (term ending May 2015, leading to a 1-year presidential term).

Alistair Reeves has worked in the pharmaceutical industry for almost 40 years as a translator, writer, editor, and trainer, and for the last 12 years as a freelance trainer and editor. He is a regular contributor on language issues to *Medical Writing*, co-edits the English Grammar and Style column, is an honorary member of EMWA, and has presented more than 50 workshops as part of the EMWA Professional Development Programme.

AIDS researcher charged with fraud

A 2010 article in *PLoS Medicine* called for guest authors of ghostwritten articles to face fraud charges.¹ While it is uncertain whether that will ever happen, the summer of 2014 did see the arrest and prosecution of a US-based researcher for scientific fraud.²

Korean-born Dong-Pyou Han is alleged to have faked experiments on a new HIV vaccine at Iowa State University.³ The experiments, which seemed to show a strong antibody response to part of an HIV glycoprotein, raised hopes of a breakthrough in the fight against HIV infection. Though Han resigned from his university post in autumn 2013 and entered into a voluntary exclusion agreement barring him from receiving federal funding for 3 years, he denies the charges against him.

The case has provoked debate as to whether scientific fraudsters should face legal proceedings. It also raises other interesting questions. Should perpetrators be banned from research? Should they repay any funding awarded based on fake findings? Should their institutes be held financially liable?

The answer to some of these questions would appear to be 'Yes'. The NIH paid out a total of \$5 million based on a grant application and progress reports that partly relied on data Han is alleged to have falsified. Of this amount, Iowa State University has agreed to repay nearly \$500 000 that went towards Han's salary.⁴

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Stephen Gilliver
Center for Primary Health Care Research
Malmö, Sweden
stephen.gilliver@gmail.com

Profile

An interview with Fernando Navarro on the brand new platform 'Cosnautas'

Correspondence to:

Laura Carolina Collada Ali
OnTranslation, Italy
laura.collada@ontranslation.it
@ColladaAli

Some people may still not be aware of the big news last summer in the Spanish medical translation and writing world: Fernando Navarro's *Libro Rojo* (translated as 'Red Book', one of the most authoritative English to Spanish dictionaries of medicine) was made available online. It is part of 'Cosnautas' (<http://www.cosnautas.com>; Figure 1), a new much acclaimed platform full of resources for professionals in this field.

Some of the key features of Cosnautas are

- *Árbol de Cos* ('Tree of Cos'), a database containing links to online medical resources
- a repository of medical abbreviations in Spanish
- an English-Spanish dictionary of allergology and clinical immunology
- a dictionary of words that are difficult to translate in both directions – Spanish into English and English into Spanish (the so-called *Libro Rojo*).

We turned to *Libro Rojo* author and Cosnautas pioneer Fernando Navarro to gain insight into this new platform.

Medical Writing (MEW): Why 'Cosnautas'? What does this name stand for?

Fernando Navarro (FN): The name 'Cosnautas' contains two main ideas: (a) the Greek island of Cos, in the Aegean sea, where Hippocrates – considered today by any physician as the 'father of occidental scientific medicine' – was born twenty-five centuries ago; and (b) navigation in the Internet and the metaphor of 'cosnaut' or 'cosnautas' in Spanish. We refer to these cyberspace navigators interested in translation and writing of biomedical texts as 'internauts', searching our platform for information they need to perform difficult jobs under the best conditions.

MEW: 'Cosnautas' does not simply host one of the best dictionaries ever in this language combination, but it offers much more than that. Who are the potential users and what are the uses of the platform?

FN: Medical translators as well as writers are often confused by the amount and the diversity of information and resources that can be found on the Internet. Sometimes they are not able to distinguish between what is useful or valuable and what is worthless, that is, separate the wheat from the chaff. The idea of '*Árbol de Cos*' (www.cosnautas.com/arboldecos.html) was born with the intention of being an Internet resources browser within a wide database that contains only valuable and reliable materials, such as dictionaries, lexicographic catalogues, nomenclatures, databases, journals, and blogs. More than a thousand resources which have been tested and validated beforehand are included in this database. These are indexed according to content, topic, and language. As an example, it takes only two mouse clicks to rapidly get to the *Medical Writing* journal webpage, to EMWA's homepage, to the *Medical Abbreviations Dictionary* by Pharma Lexicon, or to the *Engelhardt Lexikon Orthopädie und Unfallchirurgie* by Springer.

The '*Diccionario de Dudas y Dificultades de Traducción del Inglés Médico*', my '*Libro Rojo*' in its third edition and first electronic version, has over 48 000 articles and 48 000 clickable references available online. This dictionary, especially designed for translators from English into Spanish, contains solutions to the most common translation doubts and problems according to rigorous criteria and clear explanations. Thus, users can gain the linguistic and terminological principles that can help them make a translation decision based on solid ground.

The *English-Spanish Dictionary of Allergology and Clinical Immunology* by Juan Manuel Igea is also much more than your usual bilingual dictionary; it is considered as *the* reference book in this therapeutic area.

My repository of Medical Abbreviations in Spanish, on the other hand, is especially designed for those who translate from Spanish into English, and it is the largest collection of specialised acronyms, symbols, and abbreviations published up to now – with over 84 300 possible meanings of more than 28 800 medical acronyms used in medical texts written in Spanish.

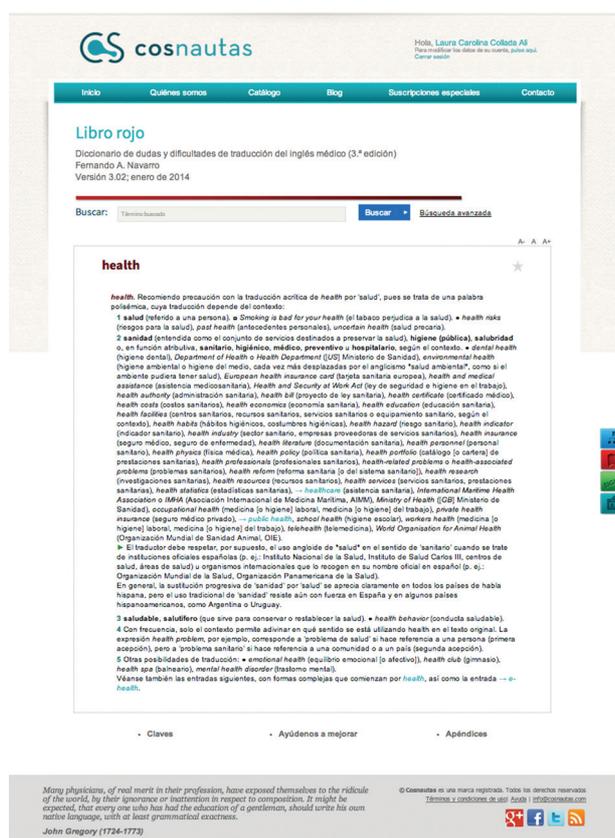


Figure 1: A screenshot from Cosnautas.

MEW: Can the project be considered as complete in its current format or are new resources being added?

FN: Our objective is to provide language professionals in the field of biomedicine with useful resources to work in the best conditions possible. Thus, from the very beginning, we have given great attention to our colleagues' needs; we invited them to get in contact with Cosnautas and send us their comments, criticisms, and suggestions right from day one.

*As a result, the *Árbol de Cos* is continuously being updated (seven versions to date). In November 2013 and April 2014, we uploaded to the platform new versions of the *Medical Abbreviations in Spanish* (with a further 6300 new meanings and 3500 new English equivalents), and in January 2014 we also updated the *Libro Rojo*.*

*The idea, in any case, is not only to keep resources up to date, but also to add new ones to the platform. In March 2014, we published the first electronic version of *Allergology and Immunology*. And I am now working on the project of publishing in Cosnautas a German-Spanish dictionary of*

*medicine with 200 000 entries, as well as on an updated and expanded version of *Patientspeak: A Spanish-English Glossary of Lay Medical Malapropisms*, which was published in *The Write Stuff* five years ago.¹⁻³*

We have many different projects running simultaneously, but time is always the limiting factor. Little by little we hope to increase what Cosnautas has to offer.

MEW: What has been the main challenge in the creation of this platform?

FN: Personally, I have wide experience in the field of medical terminology and lexicographical databases, but almost no experience or knowledge about electronic publishing, business development, marketing, online payment management, dissemination through social media, etc. I would never have dared to embark on such a project if I did not have the constant support of my two partners in this venture: Laura Munoa (Madrid, Spain) and José Antonio de la Riva (Lima, Peru). With them by my side, it was as easy as a pie – indeed, I cannot remember any difficulty or problem.

As we have seen, there is a myriad of resources in the Cosnautas platform. It is of immense value for medical translators and writers, particularly if working in, from, or to Spanish. The so-called Red Book in paper form was already a resource of great value. Now available electronically, it is a milestone that divides translation into two eras – 'before' and 'after' Cosnautas!

Fernando Navarro and his Cosnautas colleagues can be contacted at info@cosnautas.com. Twitter: @navarrotradmed and @cosnautas

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Key factors a pharmaceutical company should consider while outsourcing medical writing services

Khushboo J. Nagdev, Ashish R. Agrawal

SIRO Clinpharm, Thane, India

Correspondence to:

Khushboo Nagdev
SIRO Clinpharm, DIL Premises
Ghodbunder Road
Thane (W) 400 610, India
Khushboo.nagdev@siroclinpharm.com

Abstract

Medical writing teams are crucial in the pharmaceutical industry at every stage of drug development. With growing regulatory pressure and shrinking profit margins, outsourcing these activities is considered a viable option that provides multiple advantages such as high-quality documents produced in a shorter time and at a lower cost. Correct identification of an outsourcing partner is critical for success. We propose the following eight key criteria that a sponsor company should consider when choosing a medical writing service provider: types of services offered, organisational structure of the provider, resources, quality of services, communication, client relationship, contract, and cost-effectiveness.

Keywords: Medical writing, Outsourcing, Selection, Pharmaceutical company, Clinical research organisation, Medical writing agency

With a rapid decline in research and development productivity, increasing pricing pressure, shrinking profit margins, heavy competition, and stricter regulatory requirements, the pharmaceutical industry faces a constant challenge to achieve and maintain profitable growth.¹ A viable option in this scenario for any company is to cut down on the costs and efforts required to bring a drug into the market by outsourcing clinical trials and related activities that constitute the major part of costs during the drug development process.² It is in this pursuit of acquiring valuable, trained, and experienced resources, as and when needed, that the outsourcing market for drug development research (clinical trials) reached \$36.6 billion in 2011 and is projected to grow to \$60.8 billion by 2016.³ Clinical trial operations such as medical and clinical monitoring, product safety, and project management, together with data processing, have been the predominant outsourcing areas,

but a similar upsurge in recent years has also been witnessed for other functions including biostatistics, pharmacovigilance, and, in particular, medical writing and communications.

The medical writing field encompasses a vast range of activities (Figure 1) and involves clear, unbiased, accurate, and effective communication of scientific and clinical information to address needs of different sets of audiences, which include regulators, clinicians, patients, and the scientific community.⁴ Preparing a number of high-quality medical documents for a quick regulatory submission and marketing authorisation within the time, resource, and budget constraints is a challenge to pharmaceutical companies, and it is probably the reason why medical writing has become the fourth most frequently outsourced service. According to one analysis, the market for medical writing reached about \$700 million in 2008, of which the maximum contribution was from outsourcing.⁵

Emergence of medical writing agencies and clinical research organisations

Sparked by the expansion in the amount of work to be outsourced, the number of clinical research organisations and medical writing agencies has increased exponentially in recent years. As the identification and selection of the correct partner is a key to success, an important question that has received little attention is how to choose the right one from a wide choice of service providers. Clearly what works for one service (e.g. clinical trial operations) may not necessarily work for another (e.g. medical writing), as the benchmarks for selection would be entirely different. Avoiding the prevailing tendencies of 'the bigger the better', 'always used', and 'going by the name', sponsor companies should consider other



Figure 1: Medical writing services overview.

factors while selecting an outsourcing partner for their services.

In this article, we discuss eight critical elements for selection of an outsourcing partner, which may assure best results in the long run and build a collaboration based on mutual respect, trust, transparency, and flexibility from both sides (Table 1). The following section discusses each criterion from the point of view of a sponsor.

Services

Types of services offered by an agency are an important consideration for a sponsor company; however, outsourcing needs may differ from one company to another. While some companies may seek complete assistance for development of scientific documents (regulatory or communications) at every level of drug development, others may be interested in consultancy or partial assistance for the same documents. Choosing a niche agency could be a better option for specialised services like publication planning, product branding, messaging, conceptualisation, quality control, or training. Whereas when looking to outsource entire clinical operations as well as specialised services, an agency with significant and diverse experience in handling all these activities could be the better option.

Organisation

Even if there are a number of organisations that offer the same service(s) you need, partnership with one

that shares a similar corporate vision, mission, and values can be beneficial. The outsourcing partner in this case is more likely to honour your goals, more willing to harness the intellectual capital at your disposal, and less likely to work at cross purposes. Size, turnover, and years in business are indicators of the staying power of a company, consistency of service, reliability of response times, and problem-solving capabilities. Assessing leadership of a company is essential as it directly reflects vision, decision making, and ability to plan. A service provider with a large customer base that has similar needs indicates that the provider will have the required breadth and depth of relevant experience and can provide more creative solutions. Also, a service provider with a record of delivering high-quality documents and expertise in overall study management is likely to deliver successful results with or without relevant therapeutic area experience. A service provider engaged in a continuous endeavour to 'up its game' by means of various initiatives like white papers, webinars, and presence at various conferences would be able to efficiently leverage its knowledge assets.

Resources

Sponsor companies may understandably expect to be provided with a team of highly trained medical writers who are experienced in a broad variety of therapeutic areas and document types and are sufficiently trained and skilled in preparing clear, well-

Table 1: Essential elements for successful outsourcing partner selection.

Element	Specific attributes	Writing and reviewing	Training and mentoring	Branding, planning, and strategy building	Competitive intelligence and market analysis	Audit compliance
Organisation	Size, reputation, values, vision, leadership	X	X	X	X	X
	Years in industry	X		X	X	
	Record of long-term client relationships	X		X	X	
	Experience across therapeutic areas	X	X	X	X	
	Metrics for similar projects	X		X	X	
	Initiatives: webinars, white papers, workshops, news items, infographics	X	X	X	X	
	Professional networking	X	X	X	X	
Resources	Manager/lead: qualifications, experience	X	X	X	X	
	Associates: number, qualifications, experience	X		X	X	
	Stability-attribution rate	X		X	X	
	Awards, recognition	X	X	X	X	
	Information technology, electronic tracking, infrastructure	X	X	X	X	
	Process:	X		X	X	X
	<ul style="list-style-type: none"> ● Clear and audit compliant ● Process flow ● Updated SOPs, templates, style guides, training modules 					
Quality	Outcome of previous audits	X				X
	Turnaround time of documents	X				X
	Client feedback on quality, timeline adherence, and overall satisfaction	X	X	X	X	X
	Issue log maintenance	X	X	X	X	X
	Strict adherence to applicable processes, policies, regulations, and guidelines	X		X	X	X
	Communication	Written and verbal skills	X	X	X	X
Assertiveness and passion		X	X	X	X	
Follow meeting etiquette		X	X	X	X	X
Customer focused		X	X	X	X	X
Regular follow-up		X		X	X	
Communication channels compatible with geographical barriers		X	X	X	X	
Relationship	Positive, transparent	X	X	X	X	X
	Flexible	X	X	X	X	X
	Discuss expectations	X	X	X	X	X
	Integrity and honesty	X	X	X	X	X
	Respect of cultural diversity	X	X	X	X	X
Contract	Clear, unambiguous	X	X	X	X	
	Good faith	X	X	X	X	
	Legally compliant	X	X	X	X	
	Streamlined invoicing	X	X	X	X	
Cost	Justifiable	X	X	X	X	X
	Hidden costs	X	X	X	X	X
	Cost versus time	X	X	X	X	X

structured documents that meet regulatory requirements and journal standards. However, it is better to look at the track record of the study manager and the team assigned to your study, their hands-on experience, the timelines and quality of previous documents, training, and skill sets. It is also likely that the employees initially suggested may not be included in the team that eventually conducts the project. The leaders and coordinators must set up and achieve the desirable goals, and they must have adequate staff and material resources at their disposal. A well-defined team structure with independent writers, quality controllers, and reviewers ensures quality and accuracy of deliverables.

Quality

The sponsor company should ensure that an appropriate quality assurance program is established and effectively executed by the partnering agency. All documents should go through an internal review and quality control cycle to ensure the highest quality, accuracy, and compliance with all applicable regulatory guidelines. To ensure that good practices are followed, the service provider should be able to demonstrate updated standard operating procedures, training modules, process flows, and guidance documents. The service provider should also provide relevant documents on the outcomes of previous audits and client feedback on quality, timeline adherence, and overall satisfaction.

Communication

Communication is the key for outsourcing companies to benefit fully from an outsourcing partner. An agency that is willing to discuss expectations, clarify any areas of confusion, and set realistic goals is more likely to provide focused and reliable results. Emphasis should be placed on the content and style of the communications in the business plan, partnership agreement, monitoring, and evaluation systems. Communications should be precise and provide all the information relevant for the partners. Promptness, inviting feedback, and regular follow-up will demonstrate that the outsourcing partner is eager to take up and complete the job. Efforts to establish good communication channels across linguistic, cultural, and geographical boundaries should be acknowledged.

Relationship

To achieve a sustainable competitive advantage, the relationship between the sponsor and outsourcing partner should be of equals and collaborative in nature. Outsourcing to a company is beneficial if the outsourcing partner is flexible and adapts well

to change so that they can deal effectively with the complex issues of a dynamic global economy. Another point to bear in mind is the outsourcing partner's corporate culture, which can be critical in determining whether a relationship succeeds or fails. Positivity, transparency, integrity, and honesty are imperative when it comes to establishing trust and building long-term relationships.

Cost

An agency is less likely to cause numerous changes that surpass the budget if it is realistic about the costing and provides sample cost estimates in the proposal. Going with an agency offering the lowest bid may not necessarily be the best option because it could mean that the providers did not understand the full specifications or resources needed for the project or that there may be hidden costs that will be added at a later date. Preferred agencies are experienced and provide accurate and comprehensive estimates and have additional processes for quality oversight that include the tracking of time and events against the money spent.

Contract

Preparing a contract that is unambiguous and provides a clear understanding of the expectations and commitments should be given preference. An accurate, detailed, legally compiled, and comprehensive proposal provided with a fair and accurate cost assessment aids in the decision-making process.

Conclusions

Outsourcing medical writing services to a team of competent and dedicated medical writers with relevant expertise to work on the clinical and regulatory documents has become a popular business strategy in pharmaceutical companies in recent years. Several types of services may be outsourced and used only when the workflow demands. Outsourcing decisions have traditionally been driven by cost factors, but factors other than cost also require frequent and urgent consideration. If due diligence is applied, the eight criteria outlined in the present article will aid in choosing the right service provider for an effective and long-term partnership.

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Author information

Dr. Khushboo Nagdev, Ph.D., has over 5 years of research experience and is a medical writer at SIRO Clinpharm.

Dr. Ashish Agrawal, Ph.D. (Pharmaceutical Medicine) is head of the Publications and Medical Communications group at SIRO Clinpharm. He has over 15 years of varied experience in medical writing, pharmacovigilance, and preclinical and clinical research in the pharmaceutical industry, clinical research organisations, and business process outsourcing.

Working with authors to develop high-quality, ethical clinical manuscripts: Guidance for the professional medical writer

Amanda Hindle^{1,2}, Stacey C. Tobin^{1,3}, Jeffrey Robens¹, Daniel McGowan¹

¹Edanz Group Ltd, Fukuoka, Japan

²Independent Medical Communications Consultant, London, UK

³The Tobin Touch, Arlington Heights, Illinois, USA

Correspondence to:

Daniel McGowan
Edanz Group Ltd, Edanz Bldg.
2-12-13 Minato
Chuo-ku Fukuoka 810-0075
Japan
dmcgowan@edanzgroup.com

Abstract

One measure of career success for clinical researchers is reporting their findings in a peer-reviewed journal. Writing a clinical manuscript that has impact and relevance to their intended audience is crucial for publication success. However, clinicians and scientists whose native language is not English may find it challenging to effectively communicate the clinical relevance of their research and they may seek help from a professional medical writer. In this article, we focus on what makes a high-quality clinical manuscript and some of the ethical issues that must be considered. Professional medical writers will benefit from understanding and applying these concepts as they assist authors in preparing a well-structured, ethically sound, and highly readable manuscript that clearly expresses the clinical relevance of their findings. Using these approaches, medical writers and their clients can be confident that the final manuscript meets the quality expectations and ethical standards of international English-language journals.

Keywords: Clinical relevance, Manuscript structure, Medical writing

Introduction

A critical aspect of a career in medicine involves sharing clinical experiences and research findings with the broader medical community. From single-patient case reports to large multi-centre clinical trials, reporting clinical research findings in peer-reviewed journals is an important way to

disseminate new medical knowledge and improve clinical practice both regionally and internationally.

For clinical researchers with little experience in academic publishing, or whose native language is not English, the task of communicating their data clearly and effectively can be daunting. Many seek out professional medical writers to assist them in the preparation of manuscripts for submission to peer-reviewed journals. Consequently, the role of a medical writer is to not only assist with language issues but also advise authors on the best way to present their results.

Thus, to achieve the goal of publication, the clinical researcher (the author of the planned article) and the medical writer must work as a team, and it is important that both parties understand what journal editors are looking for when they evaluate submitted manuscripts. Because the goal of a journal editor is to increase the status of their journal in their field, they are interested in high-quality research that is novel and has high clinical relevance. They are looking for manuscripts that will be interesting to their readers and highly cited. They also want manuscripts that are written in clear and concise English. This does not simply mean good spelling and grammar but rather that the manuscript clearly and effectively communicates the ideas and findings of the authors. Finally, all journals must follow a set of publication policies and ethical standards to ensure that the research they publish is of the highest quality. In this paper, we expand on each of these topics to provide professional medical writers with advice on how to help researchers prepare high-quality clinical

manuscripts for publication in English-language journals.

Elements of a good clinical manuscript

Clinical significance

Although there are journals that will accept articles simply based on well-executed research, other journals (especially those with a higher impact factor) will place a greater emphasis on the significance of the findings presented. Thus, authors should perform an honest and objective evaluation of the significance of their research findings when choosing a journal. But what does this ‘significance’ actually encompass? Broadly, it is an indication of the importance of an article’s findings and can be divided into three components: novelty, relevance, and appeal.

Writers should ensure that the novelty of the presented findings is clearly communicated, particularly if they represent a conceptual advance in the field. Because authors will often overestimate the novelty of their results, medical writers need to be aware of the general state of the field of an author’s work and have a keen eye for results that might have wide-reaching implications. Identifying novel aspects of the presented findings, such as new mechanisms of disease or improved safety of a new medicine, will help the writer to focus the manuscript on the most important results and interpretations of their data. Even if the findings

represent only a small or incremental advance in the field, the focus of the manuscript might be a discussion on how the results will help improve current practice or suggest subsequent steps in a research path.

With respect to the relevance of research findings, it is important to consider whether the results have implications for only a restricted geographical location or ethnic group, or whether there are potential implications for broader areas and populations. Authors may want to emphasise regional findings locally to maximise immediate practical use of their findings; however, the broader the relevance of the findings, the greater the significance and impact worldwide. Medical writers need to consider the authors’ goals and target audience when approaching how to discuss the relevance of results in a manuscript, and tailor the discussion accordingly.

It is important to remember that journal editors want to publish research that will be widely read and highly cited. Research that has a high level of popular appeal will likely achieve greater numbers of citations simply because more people will be made aware of the publication. Therefore, it is important for medical writers to work with authors to identify important research questions raised by their work and emphasise the potential clinical applications of the research in the manuscript.

While all three components of significance – novelty, relevance, and appeal – are clearly inter-related, each should be considered independently and emphasised in the manuscript to ensure that

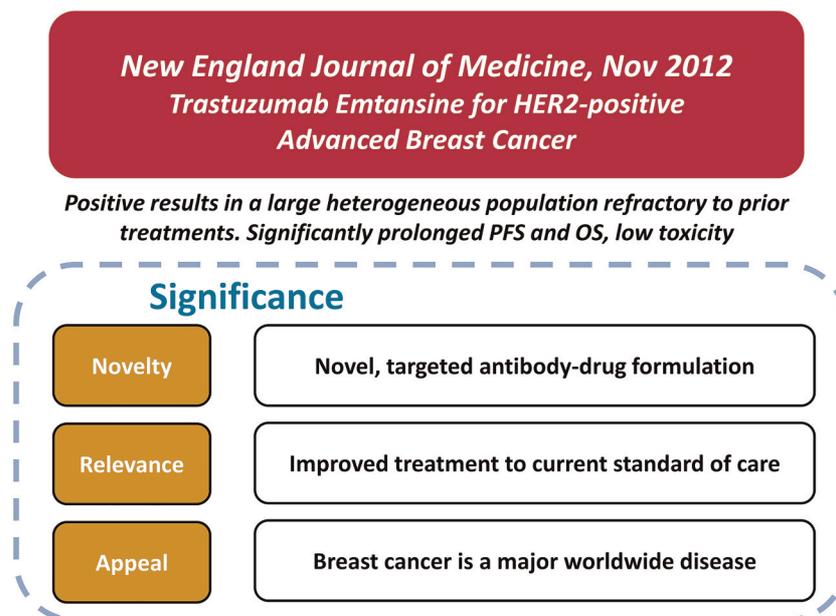


Figure 1: Novelty, relevance, and appeal in a good-quality oncology manuscript. The selected article¹ was among the journal’s ‘most viewed’ in the month of publication. The reason for this, we believe, is that it contained all of the components of significance (novelty, relevance, and appeal) and these were clearly communicated in the manuscript text. PFS, progression-free survival; OS, overall survival.

Table 1: Qualities of a good medical oncology paper

Feature	Example
Accurate, objective reporting of methodology and results	Enough information in methods to replicate; clear rationale; calculation of statistical power; limited interpretation of results in the Results section
Concise illustrations and descriptions	Figures showing key outcomes such as progression-free survival, overall survival, and response rates; table listing adverse events
Insightful and objective discussion	Findings put in context of what is known; limited speculation, but statements are supported by evidence
Full disclosure and registered trial	Registry and registration number provided
Full ethical compliance	Details of institutional review board approval and informed consent provided
Multiple, complementary, well-controlled experiments	Combination of imaging, pathology, and clinical work-up to tell a more convincing story
Mechanistic findings to complement clinical findings	Cellular/biochemical-level findings to support descriptions of clinical effects
Clear description of clinical implications and how the findings might influence clinical practice	What the results mean for patients and how clinical decisions might be improved on the basis of the presented findings

the significance of the article is clearly communicated. Figure 1 illustrates how this was done in a highly viewed article in a top-tier journal.¹ As well as presenting findings that are clearly of great significance, the article outlined in Figure 1 contains many of the important qualities that editors and readers look for in a medical oncology paper (Table 1). Indeed, regardless of the research topic or target journal, medical writers working on clinical manuscripts should aim to include all of the items listed in the table somewhere within the manuscript and emphasise the importance of these inclusions to authors. Combining these elements together will produce a high-quality clinical manuscript containing information that influences clinical practice based on the most appropriate methods for the research question.^{2,3}

Clear writing

Good science alone, however, is not enough to make a good manuscript. Effective writing is also needed to clearly communicate a researcher's ideas and findings. If these are not expressed clearly, even experts in the field may not understand what was done and why, thereby limiting the clinical applicability of the findings.

The key goal for any kind of writing, including medical writing in clinical research papers, is readability. This refers to the logical presentation of ideas and organisation of material in places where readers expect to find it. It is crucial to remember that the manuscript is written for the reader; the purpose of a manuscript is to share research findings with others, not simply create a personal record of the author's work.

Without realising it, readers expect certain information to appear in certain places within a text. By considering these reader expectations, the readability of a manuscript can be greatly enhanced,

making it as easy as possible for readers to find the information they are looking for. Gopen and Swan proposed a methodological approach for constructing ideas within a manuscript that would provide the reader with important clues and cues to properly interpret an author's meaning.⁴ The key concepts they outlined included logically connecting ideas together by using topic sentences and referencing back to previous ideas, emphasising shorter sentences, and keeping subjects and verbs close together. They also encouraged good use of elements known as the topic position (beginning) and stress position (end) of a sentence to introduce the reader to the next concept and emphasise the important message, respectively.

However, a well-constructed paragraph can still have poor readability if the language being used is not taken into consideration. Many authors and writers think that complicated language makes their writing appear more sophisticated. Unfortunately, use of unnecessarily long words and technical jargon can actually make the work harder to understand and may introduce ambiguity. Because many of their readers may not be native English speakers, editors want articles with good accessibility and clarity. Therefore, to maximise the accessibility of the research findings and ideas, it is important to use simple, unambiguous language and short sentences that can be easily understood.

Manuscript structure and flow

While clear writing to effectively communicate ideas and results is important, so is logical presentation of the ideas. The sections and order of a research paper allow readers to logically move from an overview of the research (Abstract), to the rationale for the study (Introduction), the experiments conducted (Methods), the findings obtained (Results), and finally, the significance of the findings and their

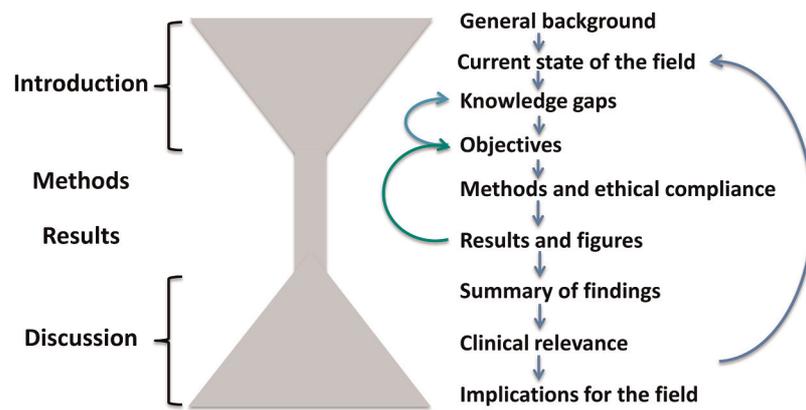


Figure 2: Manuscript structure and flow. Logically presenting research findings and showing how they fit into the context of current knowledge leads to a highly readable and well-organised clinical manuscript. This figure illustrates how to arrange ideas from a broad Introduction (upper triangle) down to the specifics of the paper's Objectives and Methods (narrow centre), and finally back to the broader clinical relevance of the research findings in the Discussion (bottom triangle), producing an hourglass-type shape. To the left, the corresponding sections of the manuscript are noted. Curved arrows indicate the important areas where ideas should be linked back to each other to create flow and strengthen the logical presentation of the research.

implications for the field (Discussion). Figure 2 illustrates this basic structure of a manuscript and how these sections relate to one another.

The Introduction should concisely present the topic being investigated and the related problem currently being faced by clinicians (Figure 2) to put the study into context. Authors need to be made aware of the importance of setting the scene for their study, as discussing previous work, both supportive and opposing, will help identify the research gap that led them to conduct the work. For example, if the research being reported evaluated the efficacy of a treatment for triple-negative breast cancer (TNBC) liver metastasis, the Introduction would briefly describe TNBC, the incidence of metastasis, and the efficacy of current treatments. It would then highlight the important problem in the field that the author's research attempted to address; in this example, perhaps the limited treatment options for TNBC that has metastasised to the liver. The clinical significance of a manuscript will not be effectively communicated to readers without a properly structured Introduction, and this is an area of the manuscript where medical writers can provide considerable guidance to authors on how to best highlight the importance and rationale of their work.

Moving to the Results, one challenge for medical writers working with authors to develop a manuscript can arise from the level of detail an author wants to include. Some authors may be reluctant to include data that weaken their results, while others may want to incorporate all of their data, even those that are not relevant to the specific focus of the manuscript. Medical writers must

therefore be able to help authors structure their manuscript in such a way that all of the necessary data (i.e. data that a peer reviewer would expect to see) are included. Thus, it is helpful to think like a peer reviewer during the outlining stages of manuscript development and ask the sorts of questions that a reviewer would ask *before* the final content has been decided.

Once it has been decided exactly which results will be included, it is important to present them in a logical manner. If the manuscript is reporting results from a randomised clinical trial (RCT), inclusion of a flowchart illustrating the flow of patients through the trial, such as that provided by CONSORT (Consolidated Standards of Reporting Trials),⁵ is helpful for making an informed analysis of the treatment course. This flowchart can also serve as a helpful resource, aiding good communication between author and writer. For case reports, the patient background, medical history, and other key details for understanding the choice of treatment should be discussed. Keeping the aims of the study and the manuscript in mind, medical writers can help guide authors on what information will be essential to their narrative while also providing the objectivity necessary to present an honest description of the findings. Guidance on the statistics (e.g. *P* values, confidence intervals, and odds ratios) that would support their argument is also something that writers may need to provide.

One of the biggest challenges for many authors is writing a good Discussion. Readers will often look ahead to the Discussion to obtain a summary of the findings, their relevance for the field, and their

clinical implications; thus, the Discussion should be both concise and objective. Many authors are reluctant to discuss the limitations of their work in the Discussion for fear that they imply weaknesses in their results. However, in this situation, it is useful to ask the questions that a peer reviewer would, to identify possible weaknesses in the study. Acknowledging these in the Discussion can preempt questions from peer reviewers by providing reasons why certain better approaches were not possible, potentially saving time and effort in the post-submission stages. Conversely, authors may wish to emphasise a conclusion that is somewhat speculative or overemphasises the significance of their results. Medical writers need to ensure that they discuss with authors the overall relevance and implications of the results and make sure the conclusion presented is based on the initial objectives stated in the Introduction, thus tying the entire manuscript together from beginning to end (Figure 2).

Finally, medical writers should ensure that articles comply with the target journal's instructions for authors, which can vary considerably. Ideally, the target journal is decided during the outlining stages and the drafts are developed with these instructions in mind; however, this is not always possible. Even if a draft has been developed with journal requirements in mind, instructions may be revised and updated. Thus, medical writers should perform final checks for compliance with journal instructions prior to submission. It is also a good idea at this stage to thoroughly check the consistency of the presented data among figures, tables, and text, and to cross-check the values against the source data provided because errors may have been introduced during multiple rounds of revision. Writers should ensure that the final documents are submission-ready and completely free of errors.

Ethical considerations

In addition to the structural components of a manuscript, adherence to research and publication ethics is crucial to publication success. To ensure that the author is preparing a high-quality clinical research manuscript in accordance with the most up-to-date ethical guidelines, there are three primary resources

worth keeping on hand: the International Committee of Medical Journal Editors (ICMJE) industry-standard guidelines for publication ethics;⁶ the Good Publication Practices (or GPP2) document,⁷ which provides recommendations for authors working on company-sponsored research; and the Committee on Publication Ethics (or COPE) forum,⁸ which provides resources and case examples for ethical publication issues. Many authors may be unaware of the ethical issues surrounding authorship, sponsorship, and potential conflicts of interest in publishing their research in medical journals, or the recent controversies regarding ghostwriting and guest authoring of sponsored clinical study findings. Therefore, medical writers have a responsibility to inform authors on these ethical issues, and to adopt a strong ethical stance in the face of resistance from either party.

Authorship and acknowledgement

The ICMJE recommendations include four criteria for authorship of a medical journal article (Table 2).⁶ ICMJE recommendations state that 'all individuals who meet the first criterion should have the opportunity to participate in the review, drafting, and final approval of the manuscript'. Thus, those individuals who qualify for authorship under criterion 1 cannot be omitted from an author list simply because they were denied the opportunity to meet criteria 2 and 3. In addition, many medical writers may not yet be familiar with criterion 4, which was introduced in a 2013 revision. Criterion 4 makes all authors accountable for the work as a whole (not only their own contributions). As such, authorship on a paper indicates more than just credit for the work, but also responsibility for its integrity. This means that any disagreements among authors with respect to the data or the opinions presented in the manuscript must be resolved before submission. It also means that all authors have a responsibility to resolve any post-publication queries regarding the accuracy or integrity of the work. Medical writers need to clearly communicate this responsibility to the authors on the articles they prepare.

Professional medical writers who help authors prepare articles for publication in the peer-reviewed

Table 2: ICMJE criteria for authorship⁶

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

literature usually do not meet the ICMJE criteria, and are thus appropriately absent from the author list. However, the ICMJE does recommend that medical writers who contribute to the preparation of a manuscript should be acknowledged, usually in the Acknowledgements section of the article. Many peer-reviewed medical journals have adopted the ICMJE criteria and incorporated them into their publication policies. It is therefore essential that medical writers discuss with authors the importance of understanding and following the ICMJE recommendations and other ethical guidelines for publication of medical research, not only to maintain transparency and protect against accusations of ghostwriting but also to ensure compliance with journal policies.

Following GPP2

The International Society of Medical Publication Professionals (ISMPP) developed GPP2, a set of practices to help authors, research sponsors, and medical writers meet the ethical publication standards set forth by various groups, including the ICMJE.⁷ The ISMPP acknowledges that publication of medical research is a team effort, involving researchers, statisticians, and medical writers, and states that all parties must be aware of the ethical standards for publishing research findings in the medical literature. GPP2 recommends that a written publication plan should be developed that outlines the responsibilities of the sponsors, authors, and other contributors, and describes the processes in place to ensure compliance with all ethical guidelines.

To ensure that ICMJE authorship criteria are met, GPP2 recommends that the authors of a paper and any professional medical writers work in close collaboration, with at least the lead author reviewing each step of the writing process, from development of the outline to preparation of various working drafts and approval of the final paper (Figure 3). Achieving this requires clear lines of communication and tools for maintaining version control, which can be as simple as agreeing on a file naming system that incorporates dates and initials or the use of cloud computing or secure file transfer systems to share files and maintain a centralised archive of drafts.

CONSORT and STROBE

Many journals ask clinical authors to submit a checklist from CONSORT⁵ or STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)⁹ upon submission of their manuscript. CONSORT is used for reporting results from RCTs, while STROBE is used for observational studies. These checklists cover the essential points needed by journal editors and readers to properly assess the study results and ethical compliance throughout the course of the study. Even if a journal does not require submission of a CONSORT or STROBE checklist, both are highly useful resources during manuscript preparation and can help writers anticipate questions that reviewers might ask. How patients were chosen to participate in the study and what consideration was given to participants who might be particularly susceptible to harm are issues of concern regardless of the type of study. Therefore, working in

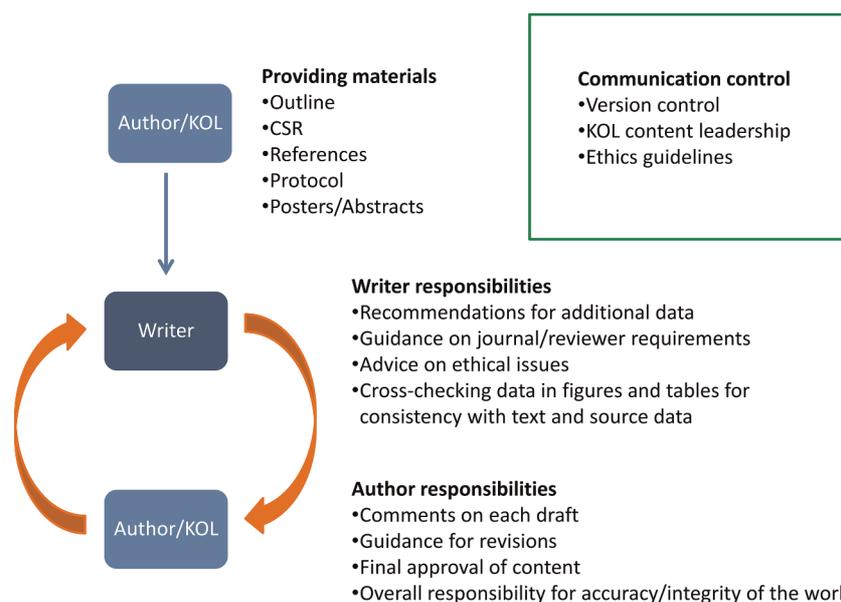


Figure 3: Recommended procedure for medical writers working together with the researchers who will be authors on developed articles, and the responsibilities of each party. CSR, clinical study report; KOL, key opinion leader.

accordance with these checklists will demonstrate that the author has followed good clinical practice for working with human subjects.

Clinical trial registration

For authors involved in clinical trials, trial registration is required as a condition of publication in many journals. The ICMJE defines a clinical trial as ‘any research project that prospectively assigns human subjects to intervention and comparison groups to study the cause-and-effect relationship between a medical intervention and a health outcome’, which is supported by the World Health Organization as the world standard.^{10,11} Trial registration has become the standard practice in clinical research as it allows open sharing of potentially critical data with researchers, clinicians, and patients, and helps reduce the issue of selective reporting. The implementation of registration requirements means that all Phase 2 and 3 trials that started enrolling patients on or after 1 July 2005, and all Phase 1 studies started on or after 1 July 2008, should be prospectively registered before publication.^{10,12}

Clinical trial registration needs to be done in a public database such as Clinicaltrials.gov (<http://clinicaltrials.gov/>). Most medical journals follow the ICMJE guidelines, and are thus very strict about only accepting trials for publication that have been prospectively registered.¹³ However, many still accept retrospective registration in certain cases. Therefore, if an author’s trial is not registered at the time of manuscript preparation, it is worth enquiring whether the target journal will accept retrospective registration and whether a rationale for the delay is required.¹⁴

Plagiarism

Finally, with the strong increase in recent years in the numbers of rejections and retractions for plagiarism,¹⁵ close analysis of the use of references and the author’s previously published work is a necessary part of manuscript preparation. Copying any previously published material – even if it is the author’s own work or was done unintentionally – is considered unethical, and with more journals using plagiarism detection software such as iThenticate (CrossCheck), it is more likely that plagiarism will be noticed and the paper rejected by the journal. Medical writers have a responsibility to identify potential plagiarism in the manuscript resulting from additions made by one or more of the authors. Medical writers should help authors determine the best approach for including previously published information, whether by citation,

paraphrasing, or obtaining permissions to reprint display items, to ensure the authors’ ideas are retained without violating any ethical standards.

Conclusion

The primary goal of manuscript publication in the peer-reviewed medical literature is to share clinical research findings with an international audience. To do so effectively, authors and the professional medical writers who work with them need to be aware of the structural and content requirements for their manuscript, as well as the ethical guidelines underlying how research is done and how it is shared. Active involvement and awareness of the publishing process by medical writers will ensure that authors end up with a well-written and ethically sound manuscript that has a greater chance of acceptance.

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Author information

Amanda Hindle graduated from Simon Fraser University in 2003 with a degree in Ecology, specialising in aquatic and environmental toxicology. She gained experience as a medical writer and editor with the Therapeutic Products Directorate at Health Canada, then as a Production Editor with the journal *Development* in Cambridge, UK. At the time of writing the original manuscript, she was based in Edanz's Fukuoka, Japan office in the role of Medical Communications Project Manager. Amanda is presently working as an independent medical communications consultant based in Canada.

Stacey Tobin has a BS Biology, Oglethorpe University, MS Molecular Physiology, Vanderbilt University, and PhD Neurobiology and Physiology, Northwestern University. She has 13 years of experience in writing, editing, formatting, and submitting peer-reviewed journal articles, invited reviews, editorials, and textbooks. She runs her own medical writing business, The Tobin Touch, and began working as a medical writer and editor with the Edanz Group in 2010.

Jeffrey Robens has a BSc (Cum laude) Psychology, Arizona State University and PhD Pharmacology, University of Pennsylvania. He joined the Edanz Group as a Senior Editor in 2012 and is based in the Fukuoka, Japan office. In his current role as Senior Research Consultant and Education Group Leader at Edanz, he gives lectures worldwide on how to write academic manuscripts and get them published in international journals.

Daniel McGowan has a BSc Biochemistry and Zoology, University of Auckland, MSc (1st Hons) Biology and Molecular Genetics, University of Auckland, and PhD Molecular Neuroscience, University of Auckland. After a decade of academic research he moved into publishing as an Associate Editor at *Nature Reviews Neuroscience*, and then worked as a freelance medical writer and editor. He has been the Edanz Group Science Director and Head of Medical Writing since 2008.



EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

The articles included in this section are a selection from the EMA's news and press release archive for March–June 2014.

More information on the work of the EMA can be found on its website: <http://www.ema.europa.eu>.

EMA reorganisation: changes to handling of certain evaluation procedures for human medicines to be introduced from 1 April 2014

Handling of all other evaluation procedures to remain unchanged until further announcement later this year
March 26, 2014 – The reorganisation of the European Medicines Agency (EMA) is now entering its next chapter. Starting from 1 April 2014, the Agency will begin revised operations for the following evaluation procedures for human medicines:

- Type IA and IB variations;
- Type II variations;
- Periodic Safety Update Reports (PSURs);
- Administrative procedures such as transfers, 61(3) notifications, and corrigenda.

The main change for applicants to these procedures will be a change in their EMA contact persons. Applicants will be informed directly by product and procedure if and when their contact person will change. Nothing will change before the applicant has been notified.

The changes will be implemented for new applications for the above-mentioned evaluation procedures submitted as of 1 April 2014. For ongoing applications, the Agency has put in place a controlled transition plan, which foresees proactive and direct communication with applicants if and when changes occur.

The handling of all other evaluation procedures, including initial evaluation applications, will

remain unchanged for the time being. Their roll-out is planned for later in the year.

The upcoming changes to the handling of evaluation procedures follow the structural reorganisation of the Agency from September 2013. They are the results of an intense period of analysis and consequent redesign of operating processes, introducing a new operating model for how medicines are managed through their entire lifecycle at the Agency, focusing on scientific and procedure management.

The new operating model is designed to strengthen the support provided by EMA staff in terms of regulatory science and overall procedural management to its scientific committees throughout the lifecycle of a medicine. This will support the committees in focusing on their core expertise, the scientific assessment of medicines and delivery of high-quality opinions, while it also ensures consistency and streamlining of handling of applications, leading ultimately to more efficient and consistent scientific assessment procedures. This is also part of the EMA's effort to streamline internal processes for increased efficiency so that increases in workload can be absorbed by the existing resources.

As part of this new operating model, the Agency is revising the existing product team lead concept and replacing it with two new roles:

- A Procedure Manager to oversee all aspects of the management of specific procedures. Procedure Managers ensure regulatory consistency at the EMA and are responsible for managing the regulatory process surrounding each application. Procedure Managers provide guidance on regulatory procedural matters and serve as the primary contact point for applicants and experts from the national competent authorities in respect to their specific procedure.
- An EMA Product Lead or EPL to maintain oversight of a medicine as it moves through the different stages of its lifecycle. EPLs are responsible for the overall knowledge about a medicine and the wider context of a therapeutic area. They provide regulatory science input and facilitate discussions within and between the EMA's scientific committees when needed.

A Procedure Manager will be appointed at the start of a new application procedure and will be the primary contact for applicants during the course of the evaluation. For queries that may come up before submission of an application, the EMA is establishing a dedicated service, which applicants can contact by email. This service will become operational from 1 April 2014 for all pre-submission queries related to the post-authorisation procedures mentioned above, and will be expanded in scope over time.

All procedural changes will be incorporated in the EMA post-authorisation procedural advice for users of the centralised procedure. Following the update, which will be made shortly, the post-authorisation procedural advice will provide more detailed information for applicants, including on how to use the pre-submission queries service for each of the evaluation procedures.

The new processes will be rolled out gradually and the Agency will continue to provide updates.

European Medicines Agency releases best practice guidance on parallel scientific advice with health-technology-assessment bodies

Guidance to facilitate early dialogue between regulators, health-technology-assessment bodies, and medicines developers

May 8, 2014 – The European Medicines Agency (EMA) has published today for public consultation best practice guidance for pilot parallel scientific advice procedures involving the EMA and health-technology-assessment (HTA) bodies.

The document is a key outcome of the EMA-HTA workshop on parallel scientific advice, which took place in November 2013 and brought together over 280 representatives from, among others, the European Commission, European regulators, HTA bodies, the European Network for Health Technology Assessment (EUnetHTA), the pharmaceutical industry, payers, patients, and healthcare professionals. The report of the workshop is also published today.

“I believe that this guidance can be a major tool for medicines development, which will help new medicines with a positive benefit-risk balance and expected added value to reach patients in a faster and more transparent way,” said Tomas Salmonson, Chair of the Agency’s Committee for Medicinal Products for Human Use (CHMP), at the November workshop.

The draft guidance sets out the different phases of the process for EMA-HTA parallel scientific advice

and highlights ideal timelines and actions for all parties, including HTA bodies, the EMA and applicants undertaking a parallel advice procedure.

The document has been drafted in collaboration with HTA bodies based on the experience gained so far with the EMA-HTA parallel scientific advice pilot project and on the input provided by stakeholders during the November workshop.

Stakeholders are invited to provide comments on the proposed process by 14 July 2014, using the online form accessible via the draft guidance document.

The EMA established a pilot project for parallel scientific advice with HTA bodies in 2010, to allow medicines developers to receive simultaneous feedback at an early stage from both regulators and HTA bodies on their development plans for new medicines. The aim of this early dialogue is to facilitate agreement upon a development plan that generates data that both the EMA and HTA bodies can use to determine a medicine’s benefit-risk balance and value, respectively. This strong interaction is critical to enable innovation to reach patients, and ultimately for the benefit of public health.

The EMA is also associated with the Shaping European Early Dialogues for health technologies (SEED) consortium, which is financed by the European Commission to explore a number of scenarios for conducting early dialogues.

The outcome of the EMA-HTA parallel scientific advice pilot, which is still running, the public consultation on the draft process, as well as the results from the SEED project, will be taken into consideration to best meet the objective of the early dialogue for health-technologies exercise at the EU level.

European Medicines Agency welcomes publication of the Clinical Trials Regulation

May 27, 2014 – The European Medicines Agency (EMA) welcomes the publication of the Clinical Trials Regulation in the Official Journal of the European Union (EU). This legislation will open up a new era for the conduct of clinical trials in the EU, ensuring that Europe remains an attractive centre for clinical research. This will foster European competitiveness and innovative capacity, and facilitate swifter development of new medicines for patients. In addition to simplifying clinical trial approvals, the Regulation foresees transparency on the conduct of trials in the European Economic Area, from the point of their authorisation to the publication of the results of those clinical trials.

While authorisation and oversight of clinical trials remains the competence of Member States, the new

legislation mandates the Agency to prepare the IT platforms to support sponsors and experts in the Member States in carrying out their roles in relation to the authorisation of trials, their supervision, safety reporting, and compliance activities, as well as to enable public access to information on clinical trials.

EMA policy on publication and access to clinical trial data

The new Regulation provides for the first time a direct legal basis for the release of clinical trial results. This is directly in line with the Agency's commitment to increased transparency of these data, through its draft policy on proactive publication and access to clinical trial data. This policy, currently in the process of being finalised, will provide a bridge until the new legislation comes into force, which can be no earlier than mid-2016.

In drafting its policy, the Agency has carried out a broad public consultation, taking stock of the diverse views that were expressed. In the current absence of a specific legal framework for the proactive release of clinical trial data as soon as the authorisation procedure on a new medicine has been finalised, the challenge in this exercise was to find a balance between the often competing views that would allow the Agency to move forward with its policy.

The Agency recently completed a last round of targeted stakeholder consultations and the final policy is to be presented to the EMA's Management Board in June 2014. The Agency believes its policy finds an acceptable balance between all those competing interests. Once implemented, this policy will give all stakeholders the opportunity to learn from this first step while preparing for the Regulation to come into force.

The Webscout

Section Editor:

Karin Eichele
info@mediwiz.de



Does writing make you healthier?

I approached the theme of this issue by simply entering the term 'health writing' into a Google search. I expected to receive a bundle of pages dealing with writing for health magazines, wellness, and sports. And indeed, I got some of those, together with websites of freelancers calling themselves 'health writers'. I also stumbled across interesting medical writing resources, one of which I'd like to share with you:

<http://www.healthwriterhub.com/>

This is an online community for health and medical writers. It offers a lot of content on topics like becoming a successful health writer, starting a career in health writing, and freelancing.

All this stuff I received from the Google search seemed quite helpful and attracted my attention to a great extent. But what then hit me when I looked through the search results was an article from the Huffington Post titled '6 unexpected ways writing can transform your health':

http://www.huffingtonpost.com/2013/11/12/writing-health-benefits-journal_n_4242456.html.

It was about how writing by hand can help you learn things more easily, how writing about your emotions may speed healing and can change your perception of and attitude to your life. I thought this was an excellent reinterpretation of the theme of this issue – health writing in the sense of what writing can do for your health. This perfectly fitted my recently developed interest in psychology. So I went further on with this search.

James Pennebaker is one of the leading scientists in the area of words and psychology. This is his webpage:

<http://homepage.psy.utexas.edu/HomePage/Faculty/Pennebaker/Home2000/JWPhome.htm>.

I came across his name very often during my search. In the scientific literature, the term 'expressive writing' means writing about traumatic or stressful events. It is supposed to help coping with mental and physical injuries. A review article

<http://apt.rcpsych.org/content/11/5/338.full>

summarises evidence on this topic. For some medical conditions, such as post-traumatic stress disorder, chronic pain, or sleep disorders, you can easily imagine that expressing your emotions might help you to adapt to your condition and to change the way you feel. I would not expect it to positively influence lung function in asthma or immune responses in HIV infections. But according to the article, it does. This is amazing. The article also evaluates some of the hypotheses on the underlying mechanisms. Expressive writing is thought to increase cognitive processing and can be used as a therapeutic tool.

But what about writing about your innermost thoughts and sharing them on social media? This might be a bad idea you might think? Well, there obviously is a lot of concern about it. But some research shows that it might be beneficial. Online expressive writing can be helpful; it can even create a feeling of support. In one study

http://construct.haifa.ac.il/~azy/Boniel-Nissim&Barak_2013.pdf

participants blogged about their distress, and they benefitted from it. And when the blog was open for responses, their benefit was even greater. Although this should not lead you to frankly putting your innermost thoughts on every social media channel imaginable. But maybe 'journaling' – keeping a diary and writing about your thoughts and emotions

<http://stress.about.com/od/generaltechniques/p/profilejournal.htm>

– is something you will now consider? You might want to use it to gain self-knowledge or to analyse problems and find suitable solutions more easily.

Did this Webscout section help you or do you have any questions or suggestions? Please feel free to get in touch and share your thoughts.

Karin Eichele

Mediwiz – medical writing and support services
info@mediwiz.de

English Grammar and Style

Points of view



Better those than that

Anu Alahari, a freelancer working in Caen, France, asks:

'Could you please take a few minutes of your time to give your opinion on a simple language issue. Which of the following phrases is grammatically most correct? And which one

would you use in medical writing?

The time-weighted average leukocyte counts:

1. *were higher in group X than group Y.*
2. *were higher in group X than in group Y.*
3. *were higher in group X than that in group Y.*
4. *were higher in group X than those in group Y.'*

Now, it is a tall order to decide which is grammatically 'most correct'.

It is easy to exclude sentence [3] as grammatically incorrect, because *that* refers back to a plural noun, *counts*, in the subject of the sentence. This means that [4] is fine, because instead of *that* we have *those* referring back to the *counts*. But does *those* actually have to be there? Why not just use [2]? Or even just [1], because it is unlikely that any reader is going to misunderstand the import of this sentence, whether you use [1], [2] or [4]. Even though *in* is not repeated before group Y in [1], this seems acceptable because *group X* immediately precedes *group Y* in the same adverbial phrase, and the prepositional effect of *in* is easily transferred to group Y when reading. We do this a lot in short adverbial phrases, particularly when speaking.

Let's see what happens if we change the word order (excluding [3]):

The time-weighted average leukocyte counts:

5. *in group X were higher than group Y.*
6. *in group X were higher than in group Y.*
7. *in group X were higher than those in group Y.*

Section Editors:

Wendy Kingdom
info@wendykingdom.com

Alistair Reeves
a.reeves@ascribe.de

Interposing the verb between *group X* and *group Y* in [5] make it unacceptable to leave out the *in* as in [1]. With [5], the reader has the feeling that something is missing. This is because the prepositional effect of *in* is not transferred in the reader's mind because we have two separate adverbials split by the verb, and the reader has to contend with the verb before reading about group Y. So with this word order, we should choose [6] or [7].

There are prescriptivists out there who would insist that [4] and [7] are the 'most correct' way of expressing this type of information, because they both include *those*, which means that it is absolutely clear that we are talking about the time-weighted average leukocyte counts in both groups X and Y. [2] and [6] would be good enough for me because the maxim I always apply is 'Can this sentence be misunderstood?' and for me, [2] and [6] cannot be misunderstood.

Every situation has to be assessed individually by the author or editor, however, and there may well be instances where the additional 'security' of adding in *those* is useful for comprehension or reader comfort. And this certainly applies to the following examples:

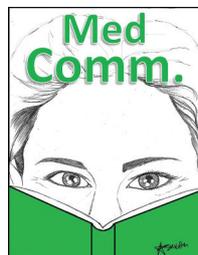
The group X time-weighted average leukocyte counts:

8. *were higher than group Y.*
9. *were higher than in group Y.*
10. *were higher than those in group Y.*

[8] can be discounted for the same reasons as [5]. The two groups are too far apart in [9] for this to be a comfortable option, although it is just about all right. So we are left with [10] where *those* definitely contributes to reader comfort and comprehension. However, I expect that most of us would only opt for [9] or [10] because of word-count constraints as they are certainly the least elegant.

So, my rank order of choices is [2], [6], [4], [7], [10].

Alistair Reeves
a.reeves@ascribe.de



Dear all,

Imagine the scene... You'd like a new car. You'd like a top-of-the-range new car. And you'd like it for a decent price. So you have a look around, and pretty soon, you have a bundle of car brochures in your hand with a variety of models and prices. Do you then email Audi, Porsche, Fiat, and Volvo (for example) and say 'OK guys, I have some money to buy a car, so let's have an auction to see who can reduce their prices the most and that's the car I'll buy'?

Well, you could try, but I'm guessing that you'd be able to hear the resounding laughter even through your computer screen. And the reason is simple – you're comparing apples with oranges and expecting

them to compete against each other on price alone. Sounds ridiculous? Unfortunately not, and it's a scary trend that is taking grip in medical writing.

This issue's article by Julia and Douglas from Trilogy outlines beautifully the science and history behind the emergence of these 'reverse auctions', and explains their positive use, and also the dangers for medical writers – both freelancers and companies alike.

If you have never taken part in one of these auctions, their article will give you a great insight into what they are like, and could send a chill through your bones.

You have been warned...

Bestest,
Lisa

Reverse auctions: the perfect folly for sourcing clinical research services

Reverse auctions, also known as e-auctions, are auctions in which companies who wish to buy a product have competing suppliers bid against each other to drive their prices down for that product. Reverse auctions are not a new tool in the procurement toolbox. They have been around since the 1990s and there has been much research into how they work and when they can truly aid companies in selecting the right supplier for the products or services they are seeking.^{1,2} When used in the right scenario, they can be quite effective. Unfortunately, however, a trend has developed in the pharmaceutical industry for using this tool to procure services of strategic clinical research providers, which fulfils none of the criteria for appropriate use of reverse auctions. The following outlines the many reasons for why reverse auctions are just not the right option for these types of services.

A fairly clear description of the types of goods and services that are best suited for using reverse auctions has arisen out of the research that has been done around the use of this tool in procurement.¹⁻⁵ What we know is that reverse auctions

work well when the product or service being purchased is simple, well-defined, non-strategic in nature for the buyer, and will require little collaboration between the buyer and the supplier.^{1,4,5} There should be several suppliers offering that service and they should have the capacity and skill set to do it well.² There should be little variance among supplier capabilities, to ensure that the suppliers participating in the auction are comparable. It must also be possible to precisely specify the scope of the service sought, with a thorough and unambiguous description of all the requirements. Indeed, one article states that 'specifiability' is the most important criterion in determining if a reverse auction is appropriate.⁶

If we consider many of the different types of services in clinical research that are being subjected to the practice of reverse auctions currently, it seems a poor match with the definition above. Let's take medical writing as an example. The writing of a clinical study protocol or a study report or a summary in Module 2.7 of a submission dossier is a complex intellectual activity. It involves several stakeholders interacting in a collaborative way. The documents are part of the company's strategic clinical development programme. From our experience, there is large variance in the quality of the

documents produced by different providers for a host of reasons. But most importantly, it is extremely difficult for the pharmaceutical companies to provide a thorough and unambiguous description of the requirements, mainly because these documents are often moving targets, which change over the course of the project. This is the nature of the beast in this case, and is a necessary part of crafting and developing these documents. Trying to pretend in advance that the work can be contained to a minimal effort lacks adequate insight into what it takes to produce a well-written, team-authored, strategic document. Given this direct polarity to the criteria defined above for when to apply reverse auctions, it makes one stop and think about why the industry is trying to use the tool in these situations. So let's look at some of the arguments for using reverse auctions for sourcing clinical research services.

Some argue that a reverse auction helps buyers get an overview of rates in order to better rank competing companies and to create a baseline for pricing based on averages.⁷ We would argue that buyers already know the baseline once they receive the original cost proposals. Unless suppliers are routinely offering inflated bids, the suppliers already have a cross-section of the market rates at the starting point. There is no need to have them perform the exercise of then reducing their bids based on no further information or change in specification other than some other supplier is more desperate to get the work than they are. In fact, buyers should wonder if forcing suppliers to participate in reverse auctions will not make them artificially inflate bids so that they have room to come down during the bidding process, to make it look like they are good sports and playing along.

Part of the rationale arguing for reverse auctions is that traditional price negotiations use up a lot of time. It can be difficult to get the real decision makers together for the haggling and as a result, negotiations often take several weeks as both parties make suggestions and then go away to think about it and produce counter suggestions. The idea and allure of a reverse auction is that the whole process only takes a few hours.⁸ Such a time saving would certainly make sense, if the reduction in price that occurs during a reverse auction were indeed the result of a true negotiation. But it is not. There is neither an exchange of ideas to better elucidate the scope nor the achieving of compromises arising from discussions on why and how the price could come down. If I am negotiating with a partner, I don't just sit in the room, look at them for a while, and then think spontaneously, 'Oh, OK, I'll drop my price 10%'. I talk to them to

understand what price they are aiming for. If that price is lower than my current estimate for the work to be done, I try to find out more about their needs for the project and why their price expectation is lower than mine. I also try to determine where I might be able to reduce my workload through increased efficiencies or shifting priorities in order to achieve a reduced price while still giving them what they need most from me and without risking a loss of quality. We discuss the scope and conditions of the project, how they picture it running and how we think it could be done. I will explain to the buyer my rationale for the resources I have proposed and not only will they come away with a better understanding of what our price is built on, they will also have an opportunity to actively input on which resources they will get in the package they purchase. Importantly, the negotiation will also provide an opportunity for both sides to assess those moving-target aspects of a project that cannot easily be described in a specification.

Together, both sides will construct a package that everyone feels is appropriate and effective for the project at hand. All of this is in fact the definition of negotiation: the reaching of agreement through discussion and compromise. The use of reverse auctions is thus not a negotiation. It is an audacious request for suppliers to reduce their prices without any good reason other than the fear that if they do not, they may not get the job. It also somehow implies the pricing the suppliers have provided is not a realistic reflection of the inherent value of the service to be provided (since if it were, obviously they could not afford to reduce it or they would be working at a loss). Since a reverse auction is not a negotiation in any shape or form, it therefore cannot actually reduce the time needed for negotiation because that is a separate activity.

Of course, the key argument for reverse auctions is the overall reduction in cost that will be obtained for the services purchased. However, some have raised the question of whether companies are really looking at the full equation.⁹ The reverse auction process is also associated with a cost. Not only must the software be purchased and developed and maintained for the buyer's needs, but additional management time must be invested into the process. Is the cost of this really less than what is being shaved off from the price for the services? This becomes particularly relevant if you factor in the risk that suppliers may undercut their desired price to get the bid, knowing well that they will find a way to recoup those costs through change orders during the course of the project – at a point when the buyer may not be in a position to reinitiate the

procurement process to switch suppliers. So the savings are on paper in the beginning only, but if the entire project lifecycle is put into the equation, the added cost of the reverse auction may rarely be compensated for by a true reduction in cost for the services.

Let's be honest. Squeezing suppliers on price means they will squeeze on the service. It's a simple zero sum equation and expecting anything different is naïve. Suppliers of medical writing services have small cost/profit ratios. If you want them to charge you less they have to provide less service in some form. If they don't they will go out of business. Less service need not mean that what is provided is deficient as such, but due to aspects being overseen as a result of not having conducted any negotiations, it may later on prove insufficient in the broader context of the clinical programme as a whole, and may involve additional expense later on. How can that be in anyone's interest and how can it be a means to ensure a buyer is getting the appropriate volume and level of expertise for the service they are purchasing?

Is it really an ideal solution to select a strategic partner for this type of complex intellectual activity the same way you purchase a kilogram of sodium chloride? If we stay with the example of medical writing, one needs to consider that medical writers will produce the documents that will ultimately carry the full burden of explaining to the authorities whether or not your new product has a suitable and beneficial risk-benefit profile. Medical writers will also assist the buyer's teams to effectively communicate why it is worth awarding marketing approval, securing the buyer's stream of future income. While sodium chloride might be the same from any supplier as long as it meets a certain composition and quality, medical writing services are not all created equal, if for no other reason than that there is a large human element involved in providing the services and the way people work is inherently variable. It can be very difficult to assess if a provider has the ability to craft a well-structured document that communicates clear messages or if their writers have the skills to corral their clinical teams to provide comments on time and have meaningful, effective review processes. Certainly, it is simplistic to think that all clinical documents are equally good. That is why clinical teams prefer to build on a long-term relationship based upon experience and track record rather than price alone. Yet, that is precisely what reverse auctions presume: tell the suppliers to bid on a medium complexity document (often poorly defined due to the inherent complexities of the scope specification)

and price will tease them apart. Where is the assessment of skill and experience in this equation?

We have sat and watched other medical writing companies in a reverse auction drop their prices until their price had reduced to a fraction of the price we bid. Now, it is important to understand that while we participate in reverse auctions in theory, because they are becoming more frequent parts of RFI (request for information) processes, on principle we never reduce our bids from the opening bid. The price we come in with is the price we derived based on our realistic assessment of the scope indicated by the client, based on our many years of experience with similar types of projects. We believe the prices we prepare are accurate, and this has been corroborated by over 12 years of experience demonstrating that on average, our bids and our costs are within 5% of each other. So unless we are given further information that would lead us to believe our bid is no longer appropriate, we see no logical reason to reduce it during a reverse auction. But you have to wonder what learning a buyer gets out of an auction in which one company ends with a price that is substantially lower than that of another company's price for what is supposed to be the identical product. Such a massive discrepancy can only be because either the supplier companies have a completely different understanding of the scope of the project (due to poor specifications), or they have a completely different understanding of what is needed for the same scope (due to different levels of experience). In either case, these bids are not comparable. And it would be folly to think that the low bidder is likely to provide the same degree of service as the high bidder.

Which leads us to ask what exactly the reverse auction brings to the table in terms of useful information to distinguish between companies supplying complex, strategic services in the field of clinical research. The buyers we have talked to emphasise that the reverse auction only provides one part of the equation. Beyond price, there is information on the suppliers' experience and expertise, and the buyers will use that information to distinguish between the suppliers. If that is the case, having just established that the pricing information obtained from the reverse auction is not helpful when comparing complex services that are difficult to define, and that it does not reduce or even replace the task of negotiating the price with the suppliers, then we can only wonder why supplier companies are being made to perform an activity that is ineffective and time-consuming at best and demeaning at worst. How about if buyers simply compare the

starting bids provided, combine this knowledge with the information they have obtained based on experience and expertise, short-list two or three companies, and then have a true and meaningful negotiation with those to select the best fit for the buyer's needs? Now that would be a process that everyone could benefit from, which would truly save time (by removing the time needed to prepare for and perform the reverse auctions) and money (by removing the cost of the software, management, and maintenance of the reverse auction systems) (Box 1).

Box 1: Products and services for which reverse auctions are appropriate

- Goods with low complexity that are easily understood by both buyers and suppliers
- Bulk items and goods that are manufactured based upon an agreed upon standard
- Items that are non-strategic in nature
- Purchases that feature little collaboration
- Goods with little variance among supplier capabilities
- Goods for which there is a sufficient number of suppliers with the capacity to deliver or provide the service

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Julia Forjanic Klapproth

julia@trilogywriting.com

Douglas Fiebig

douglas@trilogywriting.com

In the Bookstores

Section Editors:

Alison McIntosh
aagmedicalwriting@btinternet.com

Stephen Gilliver
stephengilliver@gmail.com



Health Communication: From Theory to Practice

by Renata Schiavo;
Jossey-Bass, 2013.

ISBN: 978-1-118-12219-8 (paperback).
57.50 GBP. 656 pages.

An excellent textbook loaded with theory and case studies for practice, but more useful alongside a health communication course

If you are a practicing writer or speaker working on serious topics – like communicating health to the public – with much responsibility and preparation from your side, this is the book for you. This is not a book to read just once, but one to keep as a reference and to re-read several times.

The book is divided into four parts. Part I introduces health communication in three chapters. Chapter 1 deals with various definitions of health and health communication, and what health communication is and is not about. Chapter 2 is nothing but theory on health communication, with a list and description of various communication models. The prime aim of this chapter is to show how interdisciplinary health communication is, and should be. Chapter 3 revolves around the cultural influences that play important roles in deciding what to communicate, and how. This chapter provokes the reader with a lot of philosophical questions as to whether the listed principles can be put into practice in the field effectively.

Part II of the book is all about health communication approaches – how to communicate a particular health issue to the public, based on the theory. Chapter 4 deals with the psychological aspects of health communication. For example, how a health communicator, such as a member of a non-governmental organisation (NGO), could counsel patients using technology or other means of communication. Chapter 5 deals with communication channels – the mass media and the modern (social/visual) media. How to make use of a web page, a blog, or mobile interactive features such as apps is covered.

Chapter 6 details the tips and tricks to mobilise the public towards a significant change in healthcare or hygiene practice in a community. In this chapter, the author gives a lot of ‘advice’ as to how a healthcare provider can reach their audience, be credible, and be a fulcrum for a social change. Chapter 7 is all about professional medical communication. This is an umbrella chapter that deals with strategic communication within and between communities of physicians, nurses, therapists, social workers, and, importantly, patients. The chapter, besides dealing with principles, also lists the tools for effective professional communication.

Chapter 8 is for communication partners who operate between communities in the health communication chain, acting as connecting links in health communication and relaying information between communities. Chapter 9 is one of the pivotal chapters, as it highlights the issues around public advocacy of any factor that affects the public in relation to healthcare. Since old and new media play major roles in conveying policy changes to the public, public advocates of healthcare must handle misunderstandings by the public carefully, just like a tightrope walker. Effective advocacy is what successfully takes messages to homes. With some examples, the chapter stitches theory to practice.

Part III is about planning and executing a communication intervention. Chapter 10, for instance, explains why planning is important, and how to plan effective communication. With details of the key elements of planning, the chapter describes how to conceive and convey a message to reach the public correctly. This is one chapter that a *MEW* reader might find particularly engaging, since medical writing is about ‘pharma for the public’, albeit only through regulatory bodies (indirect communication). Planning effectively to communicate the clinical aspects of a drug to regulatory bodies will benefit physicians, public health workers, and ultimately the public. Hence, a *MEW* reader might silently bookmark this chapter for re-reading.

Chapter 11 details the methods for researching and recognising suitable times and situations to communicate, for instance, creating awareness

campaigns during an epidemic. Situation analysis is the backbone of the chapter, and the research methods described could be handy for public healthcare practitioners and communicators. Chapter 12 is on 'how to do' the communication – the objectives and strategies. Chapter 13 is on designing the materials to implement a health communication topic in practice, and how to implement the communication programme itself. The chapter also deals with how to heed problems during communication, by establishing issue management and monitoring teams. Chapter 14 deals with trends, strategies, and practices in evaluating a health communication programme, in addition to the writing of evaluation reports.

Chapters 15 and 16 give the reader case studies from the field from the USA and Europe, respectively, showcasing how communicators have worked in different health areas such as mental health and chronic diseases. After a heavy meal of theory, this dessert will keep the reader's mind lingering on the whole feast.

Renata Schiavo, the author of the book, is a health communication specialist. She is also the founding president and CEO of the Health Equity Initiative,

a non-profit organisation that is dedicated to enlightening patients with health information, and to helping them get fair access to healthcare systems. Her book is targeted to whoever contributes in one way or another to public health, from NGO workers, healthcare policy makers, and doctors to the media.

This is a book in which a communication academic informs, on behalf of the public, on what, when, how, and at what level to communicate. If it is not a boon for medical writers, it is certainly a good reference. But what the book asks the reader for is a good attention span or repeated reading to get them through the theory it outlines – of which there is almost too much – before it concludes with case studies from the field. The large amount of theory means you would need either a health communication course or dedicated study using other references from a library or the Internet if you are to utilise this book to its fullest. Otherwise it is a wonderful textbook that has a plethora of cues to ponder and work on.

Reviewed by Vijay Shankar Balakrishnan
vijay.b.shankar@gmail.com

Out On Our Own

Section Editors:

Sam Hamilton
sam@samhamiltonmwservices.co.uk

Kathryn White
Kathryn@cathean.co.uk



Editorial

Making the leap to become a freelancer is daunting enough, but once established how do we ensure our business has staying power? Thank you to our experienced freelancers who share their top tips for longevity. Never let it be said that

OOOO is one-sided – our newbie contribution comes from Tania Kotsokechagia who reports on her first ever EMWA conference. Our new 'Day in the Life' series begins with an interesting insight into the lives of fellow medical writers, Wendy Kingdom from the UK and Ingrid Edsman from Sweden. As freelancers, our organisational skills are certainly tested with the busy and varied lives we lead! Legal matters can be a daunting aspect for any business owner but cannot be ignored, so we are grateful to Tim Bradburn from the Professional Contractors Group (PCG) for his helpful commentary on the legalities of managing a business.

We include Gina Dungworth's entertaining piece describing the diverse range of blogs she writes alongside her day job authoring healthcare documents. This is with sincere apologies as this should have featured in March's edition of OOOO but due to an oversight on our part it is included this time. Tool box introduces the electronic note-taking software, Evernote®, while Freelance Foraging takes on a nautical theme.

After a tremendously successful new-look Freelance Business Forum (FBF) in Budapest in May 2014, we look forward to welcoming you to the FBF on Thursday 6 November 2014 at 17.15 in Florence. Experienced freelancers will again be on hand to share tips and answer your questions in the same relaxed networking atmosphere that we all so enjoyed in Budapest. Make a date in your diary and we'll see you there!

Kathryn White

Kathryn@cathean.co.uk

Sam Hamilton

sam@samhamiltonmwservices.co.uk

The secrets of longevity

Top tips for freelance durability

As we freelancers know, running our own business is an enjoyable challenge. It is certainly not for the faint-hearted, and we all strive to maintain a thriving business. So how do we ensure that we stay in business for the long term? We asked several of our most experienced freelancers to share their tips for longevity. A big thank you to Kari Skinningsrud, Ingrid Edsman, Sam Hamilton, Gillian Pritchard, Debbie Jordan, and Wendy Kingdom, who contribute over 60 years of cumulative wisdom as freelancers.

1. Tackle that triple constraint – time, cost, quality – wisely, by offering a range of services narrow enough to maintain an acceptable quality, speed of delivery, and competitive pricing, yet broad enough to

remain flexible while keeping the work sufficiently varied to keep it interesting.

2. Freelancing encompasses the roles of medical writer, company director, and a manager of marketing, sales, accounting, human resources, and information technology. Therefore, to minimise the administrative burden of running a business, establish a company infrastructure early on to include a computer environment (hardware, software, back-ups), document templates (proposals, invoices, time sheets), marketing tools (logo-type, business cards, website), accounting method, bank accounts, office space, and equipment. Investing in this infrastructure will free up time for more medical writing, which should in turn increase your income and your longevity as a freelancer.

3. Enjoy the kind of work you are involved with and then it won't feel like work at all. As a freelancer it is also important that you enjoy the business management aspects of being self-employed as this takes up a significant amount of time.
4. Always remember that your job is to help your clients. Provide what the client wants by sticking to the brief. Know exactly what the scope of the work is – review your facts early on and clarify any anomalies – and then ensure you provide exactly what is needed. If you don't provide what they need then they may be disappointed and may not come back to you for repeat business or recommend you to others.
5. If you think what a client is requesting is wrong, or there is a more appropriate solution for their needs, then of course you can advise them and make alternative recommendations, but in the end you need to give them the service they requested in order to fulfil your contractual obligations with them (barring anything that is against GCP or codes of conduct of course).
6. Tip 4 also applies to timelines – if the client wants it done by a set date and you have agreed to it then you need to stick to it, even if it means working late or working at the weekend. Therefore, whenever possible, ensure timelines are achievable and realistic before they are agreed.
7. Sometimes you have to say 'yes' to new work from a longstanding client even though you are already busy because if you turn work away enough times, sooner or later they will become someone else's longstanding client.
8. Remember that we work in a small, ever-circulating pool of professionals. No matter how challenging a team member/client is to work with, always behave professionally and courteously.
9. Build strong freelancer-client relationships. When colleagues move on to pastures new, they will remember you, your work, and your attitude. If you tick all their 'good' boxes, they will be more likely to contact you with new opportunities. As they say, 'what goes around comes around'.
10. And finally, don't try to become a freelancer too soon. Of course, 'too soon' is not an exact science and will vary according to the individual and what experience they've already gained. Don't forget that one company's processes may be very different from another's so having a wide range of experience is often beneficial for you and your clients.

Kathryn White
Kathryn@cathean.co.uk

The new girl's EMWA conference

This is my first year as a freelance medical writer and, as I have come to realise, a year of many firsts: my first new client, my first sleepless night worrying, my first invoice... The list is long. It is also the year of my first EMWA conference and a whole host of associated 'firsts'.

Considering attendance

Back in February 2014, when I started considering attending the EMWA conference, I realised that after years of going to conferences worldwide, not once had I paid for my registration or had any idea of associated costs, something that now had immediate relevancy for my decision-making process. I was in need of some advice and an insider's point of view, so I spoke with an established EMWA member whose enthusiasm and encouragement drove my decision, and convinced, I registered and signed up for three workshops as well!

The weeks before the conference were so busy I didn't have much time to ponder, and was just looking forward to a break and some sleep! Having been to Budapest twice before, I was excited to be returning, although not expecting to see much of it based on my previous conference experience. I had only arranged to meet in person one other attendee I had met previously via email, so I was on my own but feeling fine about it.

The beginning

After registering, I took a seat for the opening presentations and started talking to another delegate who could tell it was my first conference from the colour of my lanyard; yes, first-time attendees were colour-coded and stood out. Brilliant! A great conversational starter and a great way of making you realise you weren't the only first-timer. The

opening presentations were interesting, light and funny, which is exactly what I would have wanted. I thought 'This programme was put together by like-minded people!'

Then came the welcome reception, and I can only repeat what was in my mind the whole time I was there 'What a friendly bunch!'. I find it easy talking to new people and making conversation on all kinds of topics but I can also tell when it's hard work and when it's not. This was definitely the latter. I was in a room full of people with varied and often very different professional backgrounds to mine but I felt we were all connected via EMWA. We were, in a broad sense, colleagues and to me having colleagues is probably the one thing about permanent employment that I didn't know how much I loved until I lost it.

Workshops and symposium

The next day brought my first workshop and the realisation that due to the busy period leading up to the conference I didn't notice that the pre-workshop assignment had a deadline that I had already missed. So, I spent two hours the night before preparing, knowing I would not receive credit. It didn't bother me – I was still going to learn.

All the workshops I attended were great. I found my attention was completely held (perhaps I am becoming more focused on my work now I'm doing it all for myself), I had many questions answered and I came away with materials that I will be using in my work from now on.

On Thursday there was the full-day symposium and with me still learning how to say to my clients a firm 'No, I'm at a conference' I took care of some urgent client requests in the morning, joined the symposium just before the lunch break and got the morning's debrief from other attendees over lunch.

The theme of the symposium was transparency of clinical trial data and how it affected our sector, from the perspective of the industry, the regulators and finally the patient. All presentations and presenters were captivating, and the last one on the patient perspective by David Gilbert made me feel especially empowered, as though I can change things in the future, giving a voice to patients about their treatments in ways I previously didn't think were possible. This was so much more than a usual conference presentation.

Afterthoughts

After four full days of learning, networking, and socialising, the conference came to an end and my feelings were a mix of enthusiasm, excitement for the future, and something akin to pride. I realised that this was not only my first EMWA conference, but the first conference I attended representing myself. The first time that being with potential colleagues and clients would directly reflect on just me and not on the company I work for. I am a strong believer of an opinion that was also expressed in one of the freelancer workshops, that essentially people buy people, that you know which clients you like working with and the same goes for them. Being at a conference representing yourself is a start, a first step, in promoting your own brand without really trying.

Needless to say, I would recommend attending the EMWA conference to those considering it. I would also advise completing your pre-workshop assignments if you want credits and saying a firm 'I am at the EMWA conference' to your clients so you get more sleep time than I did!

Tania Kotsokechagia
tania@lexiscomms.co.uk

A day in the life of a freelancer

Wendy Kingdom, Monday 13 January 2014

9.00 am: Mondays usually get off to a slow start because of emails accumulated over the weekend. Today is no exception. My email account deposits 27 new emails into my inbox: 16 trying to sell me something, 7 personal ones (including school governors) and 4 to do with work (including EMWA emails about post-workshop assignments). Quick check of the SPAM box – all correctly identified as junk. Window cleaners have arrived! This would not be much of a distraction except that the dog (Rosie) barks at them, loudly and frequently.

10 am: Still dealing with e-mails. One of my long-standing clients wants my updated CV signed and dated. So I have to check, tweak, print, sign, and scan it before I send it back. This takes a surprisingly long time to do. I also send my updated CV to a potential client. The associated e-mail took a while to compose. Time to make a cup of green tea. I have a lot of hot drinks during the day. It's a good way of getting away from the computer screen, if only for a couple of minutes.

11 am: Coffee and yet more e-mails. I have accounts for three clients that have web-based

login procedures, one of which requires four steps after which I am likely to find that I have no new mail. However, I do have new mail so have to deal with that too. Side-tracked by a tweet from EMWA to a blog post on why drugs are expensive.

12 noon: Finally get started on chargeable work. One of the emails provides an answer I was waiting for to a question on a protocol. I finalise the draft protocol (11th draft and aiming for a record) and send it off.

1 pm: Time for a break and to take Rosie out for a walk. It was a beautiful, sunny morning until about a quarter of an hour ago. Now it's raining and it looks as though the rain has settled in for the day.

2 pm: Back in the warm and dry, with lunch at my side and a soggy dog at my feet. Quick check of e-mails and a couple of quick responses. This is now my 'time management' slot in the day for reviewing a few more post-workshop assignments from the EMWA Autumn conference. Reviewing each post-workshop assignment individually is rather time-consuming but the workshop participants appreciate the feedback so I think it's worth

it. In reality, I find that the same comments apply to several assignments so I can copy over a few of my comments and just tweak them a bit. Today I review only four assignments because I've had so many interruptions and really need to get on with something else. Still, that's four closer to finishing them all.

3 to 5.30 pm: Get back to working on the methods section of a study report that isn't due until the end of next month. No deadlines pressing at the moment so I have the rare luxury of getting ahead with this one. This is not a project that I like to dip in and out of because it involves a lot of different files simultaneously – five Word files and one pdf.

5.30 to 6.30 pm: Multitasking between cooking dinner and doing a bit more work – probably about half an hour's work within the hour. Then time to pack up, eat and go out to choir practice. Hope to get more chargeable work done tomorrow.

Wendy Kingdom
info@wendykingdom.com

A day in the life of a freelancer

Ingrid Edsman, Tuesday, 11 February 2014

1 am: Back home in Stockholm after a full day in London. Attended an interesting seminar about the clinical overview and clinical summary. Time to go to bed.

7 am: Rrrrrriinnnggg. Snooze for another half hour. Breakfast, check emails and then off to work. Work = client's office or home office. Today it's client's office.

9 am: Arrive at the office after a brisk walk. Two meetings scheduled before noon, both about the summary document I'm presently writing. At the first meeting, we go through comments on the draft that has been out for review with the writing team. The agreed document content will probably be changed, which means rewriting already finished sections. Not what I had expected, but the reasons given are convincing, and the work is manageable with input of extra hours.

10 am: Next meeting, a teleconference, is about data interpretation. The results will go into the summary document. With only anticipated findings in the data, the relevant sections can be completed. A quick coffee and then back to the meeting room. We go on with discussing analysis of exploratory data. A few additional tables and figures are required, and the output specification is updated accordingly.

12 noon: Lunch at a nearby cafeteria. It's good to get some fresh air and have a meal with colleagues. I really appreciate the social side of working at clients' offices.

1 to 6 pm: Back at the office for more work on the summary. I start planning how to rewrite the document, but I won't start until there is a final decision – hopefully within a couple of days. Instead I busy myself with preparing in-text and appendix tables, which involves a lot of formatting and takes an unexpectedly long time. Breaks for coffee and walks to the printer during the afternoon. When I go home, I've done a day of full-time billable work.

7 pm: Arrive home and dinner is ready. I'm lucky to have a husband who is an excellent chef!

8 pm: Finalise a proposal for an article, check emails and catch up on accounting. Download pre-workshop assignments for the EMWA workshops in Budapest. I think the conferences are great for networking and for the learning experience.

9.30 pm: Private time.

11.30 pm: Good night! Tomorrow will be a writing day at the home office.

Ingrid Edsman
ingrid.edsman@edmedica.se

Your own limited company: When it makes sense and how to do it

In the last issue of Out On Our Own we looked at the some of the legal structures that freelance medical writers around Europe use to run their businesses.

Many freelancers are happy to remain 'self-employed', in other words, an unincorporated business such as a sole trader or autonomous worker. However, there can be sound business reasons to go one step further by adopting a corporate form – the limited company.

In some countries the advantages of doing so are greater than in others.

Let's examine this in more detail.

Why do freelancers 'go limited'?

1. *It creates a line in the sand*

Forming a limited company is an excellent way to create a division between 'you' and 'your business'. As a sole trader, you can create that division in your mind, but with a limited company, the division becomes a legal one. The company is a separate legal entity, almost as if it were another person. It has rights and responsibilities and can own property or equipment.

Many freelancers feel that the corporate form conveys a more professional image to clients. It also helps to protect your personal assets, because liability is limited to the company's assets. So if your company couldn't pay its debts, the creditors wouldn't be able to take your home.

However, do bear in mind that this 'limited liability' only works as long as you haven't committed fraud or acted negligently – there are cases in which the authorities have been known to 'pierce the corporate veil' and go after company owners who have deliberately flouted the rules.

Furthermore, the company shouldn't be your only line of defence – ultimately, you need your company to stay afloat so that you can make a living, and you have a duty to ensure it remains solvent. As a medical writer you might think that your company is unlikely to incur debt, but you could still encounter unforeseen situations, such as a law suit, a client going bankrupt, or perhaps even the tax authorities disputing your company's tax return and applying penalties.

Therefore it is advisable to assess potential risks and protect the company with the appropriate insurances.¹ Professional indemnity insurance is one example – this is particularly advisable if you provide expert input or advice. Some medical writers whose work is 'signed off' by the client choose not to have professional indemnity insurance because the client effectively takes responsibility for the content. However, if you do choose to forgo insurance, it is important to check that the wording in your contract provides your company with the acceptable level of indemnity.

2. *In some countries it can be more cost effective to have a company*

Companies are subject to more rules, regulations, and paperwork than unincorporated businesses. Inevitably this means that you incur additional costs to run the company, such as accountancy fees to prepare your annual accounts.

However, it also allows you more control over how and when you pay yourself. In some countries this can mean that a limited company is the most tax efficient route available. If you are based in the UK, for example, the tax treatment on dividends enables you to make legitimate savings by combining salary with dividends. There is no minimum capital required to start the company and set-up fees are low – you can be up and running in 24 hours. These factors offset the administrative costs and the savings can help you build a financial buffer to weather the ups and downs of running your own business.

In the UK it is also more cost-effective to have your own company if you work via a recruitment agency, a business model adopted by some freelance medical writers who provide their services to one company for a fixed term. This is because the agency is allowed to pay your company's invoice in full, which gives you the control over how you take the money out via salary and dividends. This is not the case for sole traders – UK agencies are legally obliged to pay unincorporated businesses via 'pay as you earn' (PAYE),² meaning that all the tax would be deducted at source, as if you were an employee. So you would end up paying the higher rate of tax

that employees pay, without actually receiving any of the rights or benefits that employees get. In Ireland, the low rate of corporation tax can also make 'going limited' an attractive option. In Germany on the other hand it is generally more cost-effective for a medical writer to apply for 'liberal profession' status than to set up a company. As a liberal professional your bureaucratic obligations are considerably reduced and you are not subject to the trade tax (Gewerbesteuer).³

In other countries, the picture is mixed and the decision may depend on your projected revenues. In many countries you need to inject a minimum amount of working capital into the company bank account in order to set up the company. There can also be additional costs, such as notary fees, and varying rates of tax on dividends. Often these can nullify the cost advantages of having a company.

For example, in Spain, having a company is unlikely to lead to savings until your business profits exceed 90 000 euros. France offers a simplified regime for 'auto-entrepreneurs' whose turnover does not exceed 32 900 euros. This can be a more attractive alternative to setting up a French company or société, as it allows you to benefit from a favourable rate of tax and spares you a great deal of paperwork.⁴

3. Sometimes, you don't have a choice

If you work in the UK, you might come across prospective clients who refuse to work with sole traders. This is due to the 'employment status' rules in the UK, through which the tax authorities can reclassify a relationship that they think is more akin to employer/employee than client/freelancer. As a sole trader, if your employment status were to be challenged by the authorities, your client would be liable for any additional taxes due. As a limited company, your client is protected because your company would shoulder the liability – this is known as being 'IR35 caught'.⁵

Your role as a company director

When you set up your company you become the director and shareholder of that company. Some freelancers also split the shares 50/50 with their spouse or partner.

As a company director you are legally responsible for making sure the company is run properly, according to the law and in the interests of the

shareholders. The latter shouldn't be too hard if you are the only shareholder!

Your responsibilities include ensuring all the relevant paperwork is submitted, taxes paid, and that you keep the appropriate records for your business. In the UK there are a number of forms to be filed throughout the year, such as the corporation tax return, VAT returns, Companies House return, and real-time payroll reports.

Don't forget the contract

Remember how we said that your company is a separate legal entity, almost like another person?

That concept extends to the contractual relationship between your client and your business. Whenever you take on a substantial piece of work, you should draw up a contract between the client and your company, not between the client and you personally.

In the UK, the contract should be a *contract for services* and not an employment contract. A contract for services makes it absolutely clear that this is a business-to-business relationship. As long as the real-life situation reflects what it says in the contract, the tax authorities should have no cause to challenge your employment status or deem you to be 'IR35 caught'. In medical writing, it is usual for the draft text of a contract for medical writing services to be generated by the client company's legal department, and finalised with your input as the medical writing services provider. It makes sense to have the draft reviewed by a qualified professional to ensure that the clauses address any considerations relating to IR35.⁶

If generating your own contract, ensure the text you use has been professionally drafted by a lawyer. Members of PCG, the UK association representing independent professionals, can download a professionally drafted contract from the website, www.pcg.org.uk.

You can also find more detailed guidance on setting up and running a UK limited company in PCG's Guide to Freelancing available at www.pcg.org.uk/guide.

Finally, please note that individual circumstances vary and laws can change from one year to the next. It is therefore important to work with qualified professional advisers such as an accountancy firm or tax lawyer to guide you on the current requirements relating to the country, or countries, where you work.

Michelle Storm Lane

PCG, London, UK

michelle.lane@pcg.org.uk

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1. For more guidance on insurance please visit www.pcg.org.uk/advice/recommended-freelance-insurance.
2. Pay as you earn (PAYE) is the system used by the UK tax authorities (Her Majesty's Revenue and Customs [HMRC]) for collecting income tax from the pay of employees, including company directors, as they earn it. For more information please visit www.pcg.org.uk/advice/personal-taxation-directors.
3. Please see the following article (in German) for an explanation of the German trade tax, with illustrative examples: www.gruendungszuschuss.de/unternehmerwissen/geld-steuern/news/blog/neuordnung-der-gewerbesteuer-an-jeder-schraubgedreht.html.
4. For more information visit www.federation-autoentrepreneur.fr.
5. IR35 is a tax law which allows the UK tax authorities (HMRC) to treat fees paid to a limited company as if they were an individual's salary. For more information visit www.pcg.org.uk/policy/IR35.
6. For a list of UK specialists providing contract review services, please visit www.pcg.org.uk/supplier-directory and select 'Contract Review'.

Further reading in this issue of MEW

Reeves' and Hamilton's feature article 'Cost comparison of salaried and freelance medical writers working in Europe' is the first and only known

comprehensive systematic and reasoned cost comparison, building on the 2012 surveys of earnings of these two groups of medical writers. Happy reading!

Out of hours: A blogging vet

Describe the type of writing you do 'out of hours'

As my fiction-writing alter-ego, Stevie Carroll, I contribute to various group blogs related to reading and writing different genres of fiction, often as the lone Brit amongst North American bloggers. My regular slots are a monthly column for *Women and Words* (<http://lesbianauthors.wordpress.com/>), and once- or twice-weekly book reviews for *The Good, The Bad, & The Unread* (<http://goodbadandunread.com/>) depending on how rapidly I can read the new releases they send me and whether I've read any other new releases that I want to share with the blog's followers. I also plan to contribute to a new feature on the blog of publishers *Candlemark and Gleam* (who published my short story collection last year) where authors rave about recent reads and favourite beverages.

Do you have a favourite topic or preferred writing style?

For *Women and Words*, I focus on UK-based happenings over the past month: either a writing event I've attended or a historic location I've visited that is associated with at least one remarkable woman. I want readers to consider following in my footsteps, so I concentrate on what I found most interesting, and illustrate the posts with photographs I've taken, as well as including links to where people can find out more about my topic.

The Good, The Bad, & The Unread tends to focus on romance novels and women's fiction, although my review selections include Young Adult and Middle

Grade books as well as lesbian, gay, bisexual and trans* ('trans*' is a term many people prefer to use to denote transgender and transsexual people as well as all other people with gender non-conforming identities – see http://vaden.stanford.edu/health_library/transgendertermglossary.html) fiction. My reviews are aimed at explaining why I liked or disliked a particular book, picking out any outstanding examples supporting either viewpoint, as well as ruthlessly pointing out the glaring errors North American writers can make about British history and social customs.

Describe a recent assignment or assignments

What was the topic?

One of my recent reviews, for which I awarded an 'A', was for *The Road to Her* by KE Payne (post at <http://goodbadandunread.com/2013/08/21/review-the-road-to-her-by-ke-payne/>). This was a book I'd spotted on the publisher's list of upcoming releases, and I was able to get an advance copy.

What did the assignment involve?

Getting a free book in return for writing a review, which puts a degree of obligation on bloggers to actually finish the book, although we have a grading system that includes DNF ('Did Not Finish') for books that we really couldn't manage to read all the way through. This book was a real pleasure, which meant that I had to force myself to slow down my reading and concentrate on why I liked the story so much and what particular aspects of the author's writing style made it such an easy read.

Describe how this type of writing helps you with your technical work

Blogging for pleasure has definitely helped me hone my style of communication when writing technical content for online publication. In addition to the blog posts for regular clients, I write weekly posts on my website (<http://jasmine-writing.com/>). With blogging, a lot of emphasis is placed on producing a good 'teaser' paragraph at the beginning to encourage readers to click on the 'Read More' tag, as well as on a good summarising final paragraph.

Some of the rules of blogging can be used when creating static webpage content: when I was writing copy for a new website recently, I invested time into making sure the first paragraph of each page made people want to read down to the end.

How do aspects of your technical work help with your writing 'out of hours'?

Reading abstracts to decide which papers to request and read in full, should help me decide which

novels to request for review from author or publisher summaries. However, just as some abstracts fail to accurately reflect the content of a paper, many summaries fail to explain what the book is really about!

With technical writing, I was taught to ensure that each paragraph flows from the previous one, and this rule is vital with online publication, especially with blogging, where readers may skim read many blogs over their morning coffee or evening glass of wine. The style and content must be pitched in a way that ensures they return regularly to read your content in preference to that of similar blogs.

Gina Dungworth

gina.dungworth@vetsurgeon.org

Tool box

Evernote®

Write notes anytime, anywhere

As freelancers and writers, many of us are probably guilty of amassing half-used, dog-eared notebooks around our homes, offices, cars – and bits of paper on which we write down those wonderful ideas when they arise – or that (whoops – missed!) appointment.

If this sounds familiar, then Evernote® may be a helpful tool for you to consider. It is a basic word processor that acts as an electronic note-taking tool thus enabling you to write and save notes on your computer (PC or Mac), phone, and tablet. Your notes can also be synchronised across your electronic devices. Not only that but you can add relevant attachments, images and videos, or drag and drop items such as pdfs, and audiofiles. The web-clipper extension can be added to enable you to save information from any websites too – so any articles of interest or products are stored – which is much less fiddly than trying to paperclip or glue relevant magazine cuttings into a notebook. A reminder function can be helpful for time-critical information thus ensuring you don't miss that appointment. Furthermore, you can use Evernote to store contacts separately to your email account which is a great back-up.

Notes can be organised by storing them in Notebooks and information stored within can be tagged to aid searching.

Evernote, like Dropbox featured before,¹ is a cloud-based application which means that the information is stored online, in a designated space in the internet, rather than on your computer's hard drive.² This gives data portability, so, in theory, you can access information stored within your Evernote account anywhere. It also means that notebooks and their contents can be shared with other people who don't need to have Evernote installed if they have 'read-only' permission. However, as for anything stored online, security is paramount and Evernote has experienced a well-publicised breach of security, with some salutary lessons learned.³

The useful basic Evernote application is free to download and allows up to 2 Gb per month to be stored (which is equivalent to 3 hours of video so you are unlikely to reach this limit). Evernote Premium is available for a monthly subscription.

As a relative newcomer to Evernote, but an avid notetaker, I can see the advantages of this tool. You can use Evernote just like a traditional notebook, whenever and wherever inspiration may strike and without the need to then manually transfer handwritten notes onto your computer. I don't think an electronic note taker will ever replace that

thrill of handwriting in ink on a crisp blank page of a new notebook, especially if the notebook is of a particular fine quality, but it is certainly a time-saving note-taking device worthy of consideration. For top tips on how to use Evernote, go to: <http://readwrite.com/2012/02/21/10-tips-for-using-evernote-eff#awesm=~oA6AV6n2jqoB4z>

Disclaimer

The information contained within this article represents the opinion of the author based on limited experience of EverNote. The information should not be used as the only resource for choosing an online note producing service and readers are recommended to seek advice and other information available. The

author has no affiliation to EverNote.com and does not recommend this product above any others.

Kathryn White
Kathryn@cathean.co.uk

References

1. White K. The Toolbox. Document storage in the cloud. *Medical Writing* 2014;23(2):online.
2. The cloud is a metaphor for the Internet, and storing information in the 'cloud' means storing and accessing data and programs over the Internet instead of your computer's hard drive.
3. Schwartz MJ. Evernote Breach: 7 Security Lessons. *Information Week* 2013. Available from: <http://www.informationweek.com/attacks/evernote-breach-7-security-lessons/d/d-id/1108909>.

Freelance foraging



Germans love to complain about English cuisine. This restaurant and café near Hamburg, Germany tries to reinvent a famous English delicacy in their

lunch menu ('daily from 11:00') - guaranteed to be more substantial than what you get in the British Isles! Thank you to Raquel Billiones for this one.

Erratum

The Webscout Karin Eichele

<http://dx.doi.org/10.1179/2047480614Z.000000000198>

We would like to acknowledge an error in the above section in Vol. 23 No. 2. The correction has been made to the online version of the article. The author affiliation should have been listed as:

Mediwiz – medical writing and support services
eichele@mediwiz.de