The use of machine translation and AI in medical translation: Pros and cons

Ann Marie Boulanger
Traduction Proteus Inc.
Montreal, Canada

Correspondence to:
Ann Marie Boulanger
info@traductionproteus.com

Abstract
In this article, I provide a retrospective look at the emergence of translation technologies and summarise the pros and cons of the use of neural machine translation and generative AI tools in medical translation. I will examine both the advantages and the risks for the medical translator.

When I first started studying translation at the age of nineteen, if anyone had asked me what field I was considering specialising in, medical translation would not have sprung to mind. In high school, I had a horror of the sciences. I made the grade, but every second was torture. And when I was finally given a choice in my final year between physics and 20th-century history, the World Wars won out over Newton's laws. Funnily enough, biology is the only subject I recall having a fondness for. (Foreshadowing, anyone?)

First things first: a specialisation

As fate would have it, after university, I was hired by a couple who had started their own translation business: he was an experienced certified translator and she, a registered nurse. Naturally, they focused on medical translation. With a grand total of one university course in medical and pharmaceutical translation under my belt, I took a deep breath and dived in. It was sink or swim, so I paddled for my life. And a specialisation was born.

But, as with any specialisation, it did not happen overnight. It took years of researching, reading, absorbing and processing medical texts, and learning from my mistakes to reach a level that could be qualified as "proficient". The pages of my early medical translations were more red than black, but I slowly got there, through equal measures determination and curiosity on my part, and patience and guidance on the part of my employers-slash-mentors.

The steady march of technology

While at university, I did a mandatory internship at a translation agency in downtown Montreal. At the time, Google was still a twinkle in its founders' eyes. Translation requests frequently arrived by fax or courier service, and many translators dictated their texts onto micro-cassettes for the women in the typing pool. (Typing was considered a job solely for women!) And it was not uncommon for my supervisors to trudge to the medical and engineering libraries at

nearby McGill University to track down obscure terminology.

However, by the time I'd started building the foundations of my specialisation in medical translation, technology had begun its gradual creep into the field. In the translator's toolbox, textbooks were supplanted by Google, paper dictionaries were replaced by online ones, printed glossaries gave way to computerised terminology records, and paper files were converted to electronic archives.

By now, readers have probably deduced my age. Yes, I am a member of the "old guard": a translation veteran. But unlike some of my peers, I have always kept up with, and even embraced, new technology – from early computer-assisted translation (CAT) tools to neural machine translation (NMT) engines to the latest generative artificial intelligence (genAI) platforms – as a means of doing my job better and faster. I have never viewed technology as the enemy, nor as a threat to my livelihood.

They say with age comes wisdom. Perhaps. But at the very least, my 25 years as a medical translator have given me a clear and informed perspective on the main pros and cons of the use

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of said technology – CAT, NMT, and genAI tools – in the medical translation field.

Pros of machine translation in the medical field

Increased speed and productivity

There is no denying that translators who use machine translation tools have seen a boost in their productivity. However, far from the 50% gain in production capacity initially touted by some translation software makers, the increase tends to be more around 20%,[1] which is not insignificant when you consider the time saved hunched over a desk, typing, researching, reading, and self-editing.

This potential gain can be magnified, however, when CAT and NMT tools are used by experienced medical translators with an expert grasp on their subject matter. To cite an example: about a year ago I was asked to translate a 6000-word informed consent form (ICF) for subjects enrolled in a clinical trial. In the pre-technology era, this would have taken me a good three days to research and translate accurately and idiomatically. By leveraging the assets in my CAT tool (translation memories, termbases, and NMT engine), it took me half a day, roughly four hours from beginning to end.

This was mainly because the quality of the NMT output was good. (Yes, it does happen!) When NMT engines are trained on corpora built from large numbers of high-quality, human-translated and -revised texts (case in point, ICFs), the resulting machine translations can be impressively accurate and, dare I say, even idiomatic. In my case, the machine translation of the ICF stood up remarkably well to a careful bilingual revision, needing only a few tweaks to the syntax and terminology.

Standardisation and consistency

When it comes to terminology, tech tools have become indispensable to medical translators as a means of ensuring the standardised and consistent use of accurate, appropriate, and up-to-date medical terms in their translations.

Take the recent pandemic. In the early stages of the global crisis, the terminology surrounding coronavirus disease 2019 (COVID-19) seemed to change as quickly as the virus itself mutated. For example, almost overnight "physical dist-

ancing" replaced the more stigmatising and isolating "social distancing" as the preferred term for denoting the act of maintaining space between individuals. Medical translators in the thick of it needed to maintain meticulous termbases to stay ahead (or at least on top) of the rapidly evolving COVID-19 jargon.

The name of the disease itself also presented standardisation challenges, and strict terminology management was needed to make sure the same variant – whether "COVID," "Covid," or "COVID-19," with the preferred appellation often depending on the end client – was used consistently throughout any given text.

Recent AI tools such as ChatGPT have also risen to the fore as powerful terminology aids for medical translators. For example, they can extract keywords from a text and arrange them in a two-column table. The translator can then prompt the AI tool to insert a translation for each term in the blank column. Once carefully revised, this list can be imported to a termbase for an instant terminology boost, adding dozens or even hundreds of terms that may have taken the translator months or years to compile manually.

Multilingual support

In recent years, and especially since the pandemic, the sheer amount of information generated and disseminated internationally has exploded beyond all imaginable proportions, both in general and in the medical field. Machine translation has proven indispensable for processing these massive volumes of data, making medical texts available in multiple languages, in very short timeframes, for users around the world. Of course, this is not only a boon for the scientific community, which can quickly share its findings on a global scale, but it's also extremely valuable for patients, who can access faster than ever before the latest information about their medical conditions in their own language.

Doctors are also increasingly using AI translation technology to communicate information to patients who speak another language. Taking "translation" one step further, American company Vital recently launched its AI-powered Doctor-to-Patient Translator, "(an) innovative new (tool that) translates complex doctor's notes, radiologist reads, discharge summaries, test results and more into a 5th-grade reading level."[2] And Google is working on an AI model that can decipher doctors' difficult-to-read handwriting, with a focus on notes and prescriptions.[3]

Cons of machine translation in the medical field

Overconfidence

Like the now-(in)famous lawyer who humiliated himself in court by citing fake cases made up by ChatGPT,[4] medical translators who take machine translations and AI output at face value do so at their own risk. That's because merely googling – looking up the keywords or phrases generated by NMT and AI tools – is not a foolproof method of detecting errors in machine translations. As any experienced translator (medical or otherwise) knows, virtually anything can be found on Google if you look hard enough. But that doesn't make the findings correct or accurate in the given context.

The machine translation platforms operated by Big Tech companies (Google, Microsoft, etc.) are also improving at an astonishing rate. "Year after year, their BLEU scores – which measure how similar machine-translated text is to a bunch of high quality human translations – get consistently better," according to science journalist Sofia Quaglia.[5] (BLEU stands for Bilingual Evaluation Understudy.) Unlike a decade ago when machine-translated medical texts were "clunky", today's outputs sound convincingly *medical-y*, for lack of a better word.

Less experienced medical translators, who have yet to solidify their language transfer skills and/or master their specialisation, are especially vulnerable to the false sense of security created by the *medical-y* translations generated by machines. As Quaglia points out, "the errors that lead to consequential mistakes (…) tend to be random, subjective, and different for each platform and each language."[5] In other words, sneaky. When revising machine translation output, even veteran medical translators must guard against slipping into "cruise control," that lackadaisical gear where a translation sounds good, ergo it must be accurate. In short, never trust a machine translation, no matter how *medical-y* it sounds. Do your due diligence and confirm the output using credible sources.

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Pressure to reduce rates

Eavesdrop on any group of translators, and you'll quickly pick up on the perceived clear-and-present danger for the industry right now: the decreasing and even plummeting translation rates brought on by the widespread use of NMT and genAI tools. Under immense pressure from their end clients, translation agencies have made a seismic shift over the past few years to machine translation postediting (MTPE),[6] placing freelancers who previously translated "from scratch" between the proverbial rock and hard place: accept MTPE work at a fraction of their usual rate or watch the well run dry.

Many agencies apply MTPE across the board, regardless of client, subject matter, or level of difficulty of the text, believing it to be a cost-saving magic bullet. Unfortunately, medical and life sciences texts are no exception to this dangerous phenomenon. However, this has only served to alienate top-tier medical translators, who are increasingly seeking out direct clients willing to pay premium rates for accurate, high-quality human translations. Unsurprisingly, much of this less lucrative MTPE medical work falls to less experienced, less qualified translators, to potentially deleterious consequences.

The MTPE tsunami has also given rise to a new *bête noire* for medical (and indeed, all) translators, namely requests from direct clients to revise texts translated internally using an NMT engine. A typical email will read: "We used DeepL to translate this handbook for patients preparing for open-heart surgery. Could you revise it for us quickly? What is your rate for this?" Subtext: *This will be quicker and easier than translating the text from scratch, therefore we expect a discount*. This unprecedented situation forces medical translators into the uncomfortable position of then having to explain to clients that medical translation is a niche, high-stakes specialisation that deserves to be remunerated accordingly.

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What's more, the time spent by medical translators educating clients about this reality (in the form of lengthy emails, phone calls, and/or video calls) is almost never billed.

Lack of context understanding

While NMT has progressed by leaps and bounds, it's certainly not infallible, especially for specialised fields like medicine, which is characterised by complex concepts, constantly evolving terminology, and frequent neologisms. It can be tripped up by false friends, for example, rendering the French word "*intoxication*" as "intoxication" (a state of inebriation) in English, whereas the generally accepted meaning in French is "poisoning." It also struggles with the abbreviations and acronyms peppered throughout medical texts, not to mention the incomplete sentences and shorthand notations typical of progress notes. And despite Google's best efforts, doctors' handwriting is a hopeless cause! Best-case scenario, the medical translator finds themselves making heavy edits to a machine-translated text. Worst-case scenario, they throw up their hands in despair and retranslate it completely – and hope they are paid fairly for their trouble.

Confidentiality concerns

Finally, confidentiality is a major concern when it comes to using public NMT and AI interfaces to translate medical texts. Medical translators must be cognisant of the fact that free, non-subscription-based tools (Google Translate, DeepL Translate, Microsoft Bing, ChatGPT, etc.) are not secure. In fact, in their policies, these platforms openly state that any information entered may be communicated, published, reproduced, shared, and used to train their engine, or to develop future technologies or products.[7] In his article "Machine Translation and Confidentiality," Jonathan Thames even warns translators to "maybe think twice before popping that paragraph into Google Translate (…)! Better to be safe than sorry and protect your and your client's data."[7] Conversely, confidentiality is assured when using a paid, subscription-based NMT engine such as DeepL Pro.

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Conclusion

Just as medical students begin their education with gross anatomy class, medical translators must first master the basics of grammar, syntax, style, and language transfer – not to mention hone their specialisation – before incorporating technology into their process. That said, keeping tech tools out of the equation is much more difficult now than it was two-and-a-half decades ago.

So, short of translating in a cave with rock and chisel (or the late-90s equivalent of blank word processor screen and no internet connection), medical translators must instead view machine translation and AI as nothing more than aids, tools in a toolbox, as opposed to solutions designed to do the work *for* them. As with any technology, however, they must be used responsibly. An NMT engine or an AI tool will do the heavy lifting, but a *human* translator will always be needed to provide the final layer of validation on any text. In fact, in the high-stakes world of medical translation, their intervention could mean the difference between life and death.

Disclaimers

The opinions expressed in this article are the author's own and not necessarily shared by EMWA.

Disclosures and conflicts of interest

The author declares no conflicts of interest.

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Author information

Ann Marie Boulanger is a certified translator (OTTIAQ) who specialises in medical translation. She is also an accomplished translator of adult and children's literature. She teaches Introduction to Language Technologies at McGill University and is cofounder of LION Translation Academy, which offers business, technology, and language training workshops for translators.