



Why AI alone is not enough for medical, scientific, and technical translations

A Language Scientific report, for translation buyers and users

Automated translation has come a long way, but raw AI output isn't appropriate for critical content. It won't stand up to an audit, a quality review, a regulatory submission, or the standard of care that patients deserve. Medical, scientific, and technical translation require a workflow that protects accuracy, compliance, and patient safety. AI doesn't do that. The safer path is a controlled translation process built around subject-matter expertise, human review, and documented quality assurance.

Let's take a look at how to let AI do what it does best (accelerate the translation process), while keeping human expertise at the forefront.

Language Scientific: Your trusted partner for medical-grade accuracy in translation

Founded and managed by translators with backgrounds in medicine, science, and engineering, Language Scientific sets the standard of quality for scientific translation and localization. When you need precise global communication, you need Language Scientific's technical, regulatory, and language expertise. For more information, visit us at languagescientific.com.



When is AI the right translation solution?

AI translations have gained traction for a few reasons, namely speed and cost. First, let's look at some scenarios where you **might** want to use raw AI output that hasn't been reviewed by a human.

Raw AI output *may* be appropriate in these scenarios:

- If you just want to get the gist of a non-critical document; the translation will never be published or distributed, and a minor mistake in the translation isn't critically important. Keep in mind that the quality of AI translation varies a great deal by language, because the large language model (LLM) has a lot more data to work with in Spanish than in Amharic.
- If you're doing first-pass research or triage, to identify documents that need to be sent for human translation or review. Everything doesn't need to be your highest priority, and an AI tool can help you categorize your documents.
- If you're translating informal, non-medical communications. Maybe you're e-mailing or messaging a colleague in another country about a low-stakes topic, and the subject is nothing with legal or clinical significance. An AI tool can be a big help.

Our clients say...

"Fantastic communication, product, and delivery time. It's about as effortless for us as possible." -Tara Mythen, PhD, President and CEO, IOPI Medical

Now, let's look at some scenarios where AI-only translation falls short.

AI's shortcomings: the big picture

ChatGPT stormed onto the scene in late 2022, promising unprecedented speed and scale gains. And when it comes to translation, these gains are needed. [KFF reports](#) that 31% of immigrants with Limited English Proficiency (LEP) have faced barriers to accessing health services, and are twice as likely (28% versus 14%) as fluent English speakers to report that they are in fair or poor health.

And yet, faster and cheaper translations aren't the solution. The following table shows some of AI's disadvantages when it comes to medical translation.

Disadvantage	Risk
Potential confidentiality breaches	AI tools, especially free web-based ones, often send data to third-party servers. This risks a HIPAA violation and does not maintain patient confidentiality.
Lack of medical knowledge	AI translations may misunderstand uncommon terms like “dropperful,” or fail to distinguish between units such as micrograms and milligrams.
Lack of cultural awareness	When a language such as Spanish is spoken in multiple countries or regions, an AI tool may not know what variant of a word or phrase to use.
Inconsistency	AI translation tools are often inconsistent, for example translating “pain” in multiple ways throughout one document.



It's not hard to see the potential impacts of these issues:

- Fines and legal repercussions due to HIPAA violations
- Patients are provided with incorrect information and don't understand how to take their medications, resulting in a repeat visit or even a medical emergency
- Sensitive topics such as a life-altering diagnosis are handled clumsily, resulting in emotional stress and a loss of trust in the healthcare system

Medical translation isn't just about the words

AI translation might be a good option if it were simply a question of word replacement: English word=Spanish word. But that's not the case. Additionally, AI translations often sound very fluent when they're incomplete, ambiguous, or even completely incorrect.

Let's take the example of a translated prescription label, which some people might think of as the simplest form of medical translation. But even in English, as reported in a [Science Daily article](#), prescription labels serve pharmacies more effectively than they serve patients. Many patients literally cannot read their prescription labels, even in their own language. In a study of 85 prescription labels, the vast majority (84%) gave prominence to the pharmacy's name or logo, versus the dosing instructions, which often appeared in nine-point type, despite the [U.S. Pharmacopeial Convention's recommendation](#) to use 12-point type. The USP also reports that



many patients misinterpret dosing instructions such as “take two pills twice daily,” taking a total of two pills instead of four.

Now, add an AI-generated translation into the mix, potentially provided to the patient as a separate printout rather than on the prescription bottle itself.

Medical translation needs to convey a message, not just individual words. Even the concept of “pain” can be a good example. Many languages and cultures have different words for physical and emotional pain, and terms commonly used in U.S. English (sharp pain, stabbing pain, throbbing pain) may not translate directly. An AI tool doesn’t know this; AI-generated translations also have a tendency to confuse terms like “dreaming” (as in, while you’re asleep) and “dreaming” (as in, your hopes and dreams), or Cancer (the Zodiac sign) and cancer (the disease).

Language Scientific meets you where you are

We use industry-leading methodology to review and certify all types of translations: fully manual, AI-assisted, or AI-generated, ensuring that your data remains statistically relevant and regulatory-compliant.

Regulatory and compliance risks

Regulatory authorities, including the U.S. Food and Drug Administration, and the European Medicines Agency, mandate that translations must be accurate, clear, and culturally appropriate. This means that automated translations without human oversight are generally prohibited or rejected.

The [U.S. Department of Health and Human Services](#) states that “...machine translation...for critical documents...must be reviewed by a qualified human translator to ensure accuracy, when accuracy is essential, when the source documents or materials contain complex, nonliteral, or technical language, or when the underlying text is critical to the rights, benefits, or meaningful access” of LEP individuals. Free, public AI engines are also non-compliant with HIPAA and other medical privacy laws. In short, unreviewed AI translations, particularly if generated by a free, online AI tool, are simply too risky.

Another issue is the lack of context that LLMs are working with, when dealing with complex texts. In its [guidance on safe and responsible use of LLMs](#), the European Medicines Agency notes that, “LLMs may not have been exposed to information that answers a scientific or regulatory question, due to the novelty of many tasks performed by regulators (e.g. those concerning new active substances).”



On the Language Scientific blog, [we recently reported](#) on the use of AI for specific regulatory purposes, including the European Union's new In Vitro Diagnostic Medical Devices Regulation (IVDR). AI tools can help, they can hurt, and subject-matter experts are still key to a safe and compliant finished product.

FAQs on AI for medical, scientific, and technical translation, and what a safer workflow looks like

Q: Can AI be used for medical, scientific, and technical translation?

A: Yes, AI can be used for some types of translation. But AI alone is not enough. You need an expert assessment of whether you need AI-leveraged, AI-assisted, or human-only translation. This depends on the languages you are translating from and into, the purpose of the translation, the complexity of the document, and the risk level of the document.

Q: Is AI translation accurate for medical, scientific, and technical documents?

A: AI translation has come a long way, but these documents often include highly technical vocabulary, and even novel terms for new drugs and devices. Most large language models (LLMs) are trained on general material, not specialized medical content.

Q: What are the risks of using AI for medical, scientific, and technical translation?

A: The main is an error slipping through in a high-risk document. For low-risk documents, a minor translation error may not be a big deal. But in clinical trial protocols, patient intake questionnaires, medical instrument manuals, and patient-reported outcome documents, an unreviewed AI translation is too risky.

Q: Do AI-translated medical, scientific, and technical documents still need human review?

A: Most AI-translated medical, scientific, and technical documents do need to be reviewed by an expert human. AI-translated documents can contain errors, and regulatory authorities like the U.S. Food and Drug Administration and the European Medicines Agency caution against, or even prohibit the use of unreviewed AI translations in regulatory submissions.

Q: How does Language Scientific use AI safely?

A: Safe use of AI in medical, scientific, and technical translations means keeping human experts at the controls. We know that clients want to benefit from AI's speed, scale, and scope advantages, while minimizing risk and keeping patients safe. This is possible, but it demands an AI risk evaluation from us.



It's an exciting time in the world of clinical trials, drug development, and medical device innovation. A [recent article by the American Hospital Association](#) states, "Patient recruitment cycles that used to span months are shrinking to days; study builds that took days now take minutes." At the same time, it's unwise to ignore the risks. [As discussed on the Language Scientific blog](#), public AI engines don't comply with confidentiality, security, and accountability risks in the medical world. **Language Scientific is committed to leveraging AI's speed and scale gains, while keeping patient safety and regulatory compliance at the forefront.**



HOW LANGUAGE SCIENTIFIC CAN HELP

Language Scientific offers comprehensive solutions to address the language translation challenges posed by IVDR and recent tariff realities. With expertise in medical and technical translations, the company ensures that all documentation meets the stringent requirements of IVDR.

Key services include:



Multilingual Translation

Accurate translations of labeling, IFUs, and other mandatory documents into all required EU languages.



Phone Interpreting

Real-time support for healthcare, legal, and business industries to facilitate communication and compliance.



Regulatory Expertise

Guidance on navigating IVDR requirements and tariff implications to streamline compliance efforts.

By enlisting Language Scientific as your translation services provider for IVDR compliance, stakeholders can proactively address the challenges of IVDR and tariffs, ensuring patient safety, regulatory compliance, and market success.

[Contact Language Scientific](#) to learn more.

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