Pharmaceutical Discourse in English and Italian

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A Corpus-Based Comparative Study

By

Nicola Pelizzari

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LIST OF ABBREVIATIONS

AIFA	Agenzia Italiana del Farmaco
ASL	Average Sentence Length
BODC	British over the counter drug corpus
BPDC	British prescription drug corpus
EC	European Commission
EMA	European Medicines Agency
IODC	Italian over the counter drug corpus
IPDC	Italian prescription drug corpus
LSP	Language for specific purposes
MHRA	Medicines & Healthcare products Regulatory Agency
NASL	Normalized Average Sentence Length
NF	Normalized frequency
NSAIDs	Non-steroidal anti-inflammatory drugs
PIL	Patient information leaflet
RF	Raw frequency
RSP	Royal Pharmaceutical Society of Great Britain
SD	Standard Deviation

FOREWORD

The importance of studying the manifold aspects of pharmaceutical discourse is becoming increasingly evident as this area, with all the intricacies and complexities that it entails, broadens its boundaries to encompass innovative forms of interdisciplinary research in applied linguistics. Patient information leaflets are among the most frequently consulted written sources of medication guidance; yet achieving genuine comprehensibility remains a challenge. Their communicative role is inherently complex: as hybrid texts situated at the intersection of regulatory discourse, medical discourse, and patient-oriented health communication, they must comply with rigid institutional and legal requirements while presenting information in a form that is intelligible, usable, and pragmatically relevant to patients with varying levels of health literacy. These overlapping, and often competing, demands frequently produce documents marked by significant structural and linguistic complexity. Such texts must convey specialized knowledge with precision, adhere to standardized regulatory formulations, and provide clear, actionable guidance for patients. It is this latter, reader-focused function that forms the basis of the empirical investigation undertaken in Nicola Pelizzari's book. Through a corpus-based analysis, this study offers data-driven insights into the syntactic, lexical, and pragmatic features of patient information leaflets. It adopts a cross-linguistic perspective, examining texts produced in British and Italian contexts and comparing distinct corpora across regulatory sub-genres, including over-the-counter and prescription medicines. At a methodological level, the research demonstrates how complex texts can be systematically investigated using corpus-based approaches. Moreover, the analysis reveals how ostensibly uniform communicative aims are realized through different lexico-grammatical configurations across languages and sub-genres, highlighting the intricate interplay between regulatory conventions, medical register, and accessibility considerations. Ultimately, the findings underscore that improving patient communication is a multidimensional challenge, one that can only be effectively addressed through scientifically coordinated collaboration among experts from all relevant domains, including linguists, with the overarching goal of safeguarding the universal right to health. *Pharmaceutical Discourse in English and Italian* demonstrates the remarkable outcomes that emerge

when scientific expertise and applied linguistics converge in genuine collaboration. By adopting an English–Italian contrastive perspective, the book offers a truly international and global outlook on pharmaceutical communication. This unique resource is an invaluable reference for students, educators, and scholars across medicine and the humanities, combining rigorous analysis with an innovative approach that sets it apart in both scope and content.

Prof. Annalisa Zanola, PhD
Full Professor of English Language and Linguistics

Pharmaceutical information may be written in ink, but its value is measured in whether patients can read it, make sense of it, and use it safely. Too often, patient information leaflets are weighed down by dense syntax, specialised terminology, and a style shaped more by regulatory requirements than by patients' needs. This book steps into that gap with clarity of purpose, showing how language, its structures, choices, and assumptions, quietly shape the way patients understand their medicines and, ultimately, their health. By analysing the structure and language of patient information leaflets across two national contexts, the author reveals patterns that are easy to overlook, yet may carry significant implications for adherence, safety, and equity. The author's approach is balanced and evidence-driven, offering a precise account of where communication fails and how it can be improved. The conclusion is clear: accessible language is not a courtesy, it is a component of safe and effective care. While this work does not claim to resolve the long-standing tensions between scientific precision, legal requirements, and patient comprehension, it provides a practical guide for navigating them. It encourages regulators, clinicians, linguists, and industry actors to view patient information leaflets not as bureaucratic necessities but as public-health instruments capable of supporting informed and safer medicine use. This book is a timely reminder that better language will not solve every challenge in healthcare, yet without clear communication, many essential public-health goals, from health literacy to medication adherence and safety, remain out of reach.

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PREFACE

Pharmaceutical discourse constitutes a critical area of applied linguistic inquiry, given the high-stakes nature of medical communication and its impact on public understanding of health information. As patient autonomy and health literacy become central pillars of public health policy, the texts intended to inform patients - chief among them, patient information leaflets (PILs) - warrant rigorous linguistic examination.

This book was conceived in response to a fundamental question: Are PILs fulfilling their communicative function - helping patients understand essential information about their health and treatments? The research emerged from a dual motivation: an academic interest in institutional discourse and a professional concern with the practical implications of language in healthcare contexts. By analysing PILs from the United Kingdom and Italy, the study explores the linguistic features that support or hinder patient comprehension. Departing from conventional readability assessments, this work adopts a corpus-assisted approach to examine structural and lexical patterns - such as modality, passive constructions, and specialised terminology - that may pose interpretative challenges to non-expert readers. Through both quantitative and qualitative analyses, it seeks to elucidate how these linguistic choices intersect with accessibility, regulation, and medical accuracy.

The aim is not to criticise regulatory bodies or pharmaceutical companies, but to address the unresolved tension between regulatory conformity and patient-centred communication - two requirements that are often presented as oppositional, yet must be reconciled. This book highlights the discrepancy between the formal objectives of PILs and the actual accessibility of their content for lay readers. What unfolds is a detailed portrait of PILs as hybrid documents: at once technical and public-facing, shaped by institutional norms, legal obligations, and the pressing demand for clarity. The findings advocate for a more integrated model of development - one that brings together linguists, health professionals, and policymakers to create documents that inform without overwhelming, and guide without excluding. This book is directed at researchers in applied linguistics, discourse analysis, and health communication, as well as stakeholders involved in regulatory and communicative aspects of pharmaceutical practice. It is my hope that the insights offered here may support the

advancement of more transparent, equitable, and linguistically responsible healthcare communication.

INTRODUCTION

Patient information leaflets (PILs) are essential tools for healthcare communication, designed with the aim to provide patients with critical information about medication use, potential side effects, and contraindications. Despite their importance, PILs have long been criticized for their linguistic complexity and limited accessibility, which can hinder comprehension for lay audiences (e.g., Di Pace, 2019; Fage-Butler, 2013; Miglietta, 2014; Raynor et al., 2007, 2008). This work presents a corpus-based study of British and Italian PILs, focusing on the frequencies and uses of linguistic features that the literature has identified as contributing to comprehension difficulties. By systematically analyzing these features, this study aims to shed light on how they are employed in each linguistic context and the extent to which they align with or deviate from established guidelines for clarity and accessibility (EC, 2012; MHRA, 2014).

The association between linguistic features and comprehension challenges has been extensively documented in health communication research. Features such as passive voice, modality, lexical density and specialised terminology have been linked to increased textual complexity, creating barriers to understanding for readers with varying levels of literacy and health literacy (e.g. Clerehan & Buchbinder, 2006; Evans & Orăsan, 2019; Pander Maat & Lentz, 2010; Raynor et al., 2007; Sless, 2014). These challenges are particularly significant in PILs, which must balance regulatory requirements for precision and completeness with the need to be accessible to non-specialist audiences. This work investigates the prevalence and functional roles of these linguistic features, utilizing corpus linguistics methods to offer a comprehensive quantitative and qualitative analysis of their usage in British and Italian PILs.

The comparative focus on British and Italian PILs is informed by the distinct linguistic and regulatory frameworks that govern these documents in the two countries, as well as their implications for patient comprehension, and the existing lack of quantitative findings in both contexts. In the UK, health communication has increasingly emphasized plain language and patient empowerment, guided by regulations that prioritize accessibility and the minimization of technical jargon (Raynor et al., 2011). This approach aligns with broader initiatives to enhance health literacy and support informed decision-making among patients (Askehave & Zethsen, 2008). In

contrast, Italian PILs reflect the linguistic traditions of Italian scientific writing, characterized by a formal, syntactically rich style that often includes dense sentence structures and extensive use of technical terminology (Giannoni, 2008; Miglietta, 2014). These features, while meeting regulatory requirements for precision and thoroughness, may pose additional challenges for readers, particularly those with limited health literacy or familiarity with specialized language. These differences provide an opportunity to examine how varying linguistic contexts may shape the design of PILs, potentially influencing their readability. This study is guided by the following research questions:

1. What is the frequency of grammatical features, identified in the literature as contributing to textual complexity (sentence length, modality, passive voice, conditionals, and negation), in the British and Italian PILs in the corpora?
2. What is the frequency of specialized medical terminology in the British and Italian PILs in the corpora, and to what extent is this terminology accompanied by lay explanations or glosses?
3. What cross-linguistic differences in the frequency of grammatical features and specialized terminology can be observed between the British and Italian PILs in the corpora?
4. What differences in the frequency of grammatical features and specialized terminology can be observed between prescription-only and over-the-counter PILs in the corpora?

To address these questions, a corpus-based methodology (Tognini-Bonelli, 2001) is employed, analyzing four corpora of PILs (British and Italian over-the-counter and prescription PILs). Quantitative analyses focus on the frequencies of selected linguistic features, such as modality markers, passive constructions, and specialised vocabulary, while qualitative analyses examine their functional and contextual uses. The integration of these methods provides a structured framework for identifying patterns and drawing informed conclusions about the linguistic features of PILs in the two contexts.

The structure of this book is as follows:

Chapter 1 introduces the language of medicine, tracing its historical evolution from classical origins in Greek and Latin to its modern iteration dominated by English. It examines the specialized features of medical language, including its lexicon, metaphors, syntax, and impersonal

structures, contextualizing their relevance to health communication (Jóskowska & Grabarczyk, 2013; Maglie, 2009; Scarpa, 2008).

Chapter 2 explores PILs as a genre, addressing their diachronic evolution and the regulatory frameworks governing their production in the UK and Italy. It highlights the dual function of PILs as tools for patient education and legal compliance, underscoring their role in the broader context of health communication (Askehave & Zethsen, 2003; Raynor et al., 2007, 2011).

Chapter 3 focuses on the concept of readability and comprehensibility, discussing key concepts in health communication and literacy. It evaluates the application of readability formulas, emphasizing the importance of plain language principles and the challenges posed by complex syntactic and lexical features (Castello, 2008; Maat & Lentz, 2010; Raynor & Dickinson, 2009).

Chapter 4 outlines the methodological framework, describing the corpus-based approach employed to analyze British and Italian PILs. It details the criteria for corpus design and analysis.

Chapters 5 and 6 present the findings from the British and Italian PIL corpora, respectively. These chapters classify and discuss key syntactic, grammatical and lexical features, such as sentence length, modality, passive voice, specialized terminology, and lay explanations, highlighting cross-linguistic differences and their implications for patient accessibility (Fage-Butler, 2013; Gotti, 2003).

Chapter 7 synthesizes the findings in a comparative discussion, considering the regulatory, linguistic, and cultural factors that influence the design and efficacy of these documents, offering critical insights into their role in patient communication (Giannoni, 2008; Pander Maat & Lentz, 2010).

Chapter 8 proposes best practice guidelines for improving PILs, addressing issues of linguistic clarity, structural coherence, and user engagement. It emphasizes the importance of plain language, visual aids, and iterative user testing to enhance the comprehensibility and utility of PILs across diverse patient populations. This chapter advocates for interdisciplinary collaboration and patient involvement to ensure that PILs meet both regulatory standards and the informational needs of end-users (Mansoor & Dowse, 2003; Pander Maat & Lentz, 2010).

CHAPTER ONE

THE LANGUAGE OF MEDICINE

Introduction

The recognition of medical linguistics (Sadegh-Zadeh, 2015) as a distinct sub-discipline within the field of linguistics has been gradual, despite its considerable potential to inform and enrich our understanding of language in a crucial domain. Medical linguistics warrants recognition as a well-established discipline, particularly because of the pivotal role language plays in the field of medicine. The intersection of medicine and linguistics presents unique challenges and opportunities, not only for healthcare professionals but also for linguists, in navigating and deciphering the specialized language used in medical contexts. Historically, the documentation of human ailments and their remedies is as ancient as the earliest records of human civilization, rivalling only religious texts in their antiquity and significance. This underscores the perennial importance attached to the twin sufferings of body and soul, and highlights the pivotal role of medical texts in the evolution of written language. Classical scholars have diligently analyzed the content and linguistic structures of the earliest medical records, providing a foundation for understanding the genesis of medical terminology.

However, there remains a gap in the scholarship concerning the subsequent evolution of this specialized vocabulary. Over the centuries, as medical science has advanced, the medical lexicon has expanded correspondingly to accommodate newly discovered concepts and phenomena. This evolution reflects the dynamic and adaptive nature of medical language. Despite the adoption of English as the modern lingua franca of the medical community, a role historically occupied by Latin, medical discourse occurs across a multitude of languages, each influencing and contributing to the development of medical terminology. This chapter aims to provide a comprehensive overview of the characteristics of medical language, tracing its historical development and examining the processes through which new medical terms are coined.

Diachronic overview of medical language

The scientific methods that characterize modern Western medicine are traceable to Classic and Hellenistic Greece, when the Greek physician Hippocrates first attributed illness to physical causes (Jones, 1945). He was the first to regard disease as a natural rather than a supernatural phenomenon, encouraging doctors to look at the physical causes of illness and to use objective observation and critical deductive reasoning to deal with illnesses. This is because, before him, sicknesses were believed to be caused by some supernatural forces. Hippocrates believed that the causes of disease could be understood only through empirical study (i.e., through prognosis and clinical observation). For more than 2000 years, Hippocrates' ethical code, known as the Hippocratic Oath, guided the practice of Western medicine (the Hippocratic corpus). The oldest written sources of Western medicine are the Hippocratic writings from the 5th and 4th centuries B.C., which cover all aspects of medicine at that time and contain numerous medical terms. The importance of Hippocrates' thought derives from the fact that he distinguished medical practice from priestly ministrations and pioneered the belief that poor health should be examined through logical reasoning and actual observation. Hippocrates and his successors produced a large body of medical texts in Greek and many of the anatomic, pathologic and therapeutic terms found in those texts remain in use to date – some of them with little or no change in meaning (Jóskowska, 2013). During the Classical Era, Greek medical writing was the most important medium for medical scholars to communicate their ideas. Mainly as a result of the high level of medical schools which existed for a long time after the decline of the Macedonian Empire, Greek became the language of doctors in ancient Rome from the beginning to the fall of the Roman Empire.

Roman rulers, in an effort to strengthen the power and prestige of the Empire, focused their attention on military, governmental, and engineering problems. When in Rome in 293 B.C. there was an outbreak of a plague, the Romans called doctors from Greece to help (Junas et al. 1985). At the time, the Romans had little confidence in the doctor's job and, to some extent, they underestimated it. The public faith in medicine began to develop only after the arrival of doctors, such as Soranos, Galenos and Rufus. At that time, a Roman aristocrat from Narbonensis, by the name of Aulus Cornelius Celsus, wrote *De Medicina*, which was an encyclopaedic overview of medical knowledge based on Greek sources. He is sometimes called *Cicero medicorum* (the Cicero of doctors) on account of his elegant Latin. One of the difficulties Celsus faced was that most Greek medical terms had no Latin equivalents. The way he adopted to solve this issue is of considerable

interest from a linguistic point of view. First, he imported a few Greek terms directly, even preserving their Greek grammatical endings. He included, for example, the Greek words *pyloros* (now pylorus) and *eileos* (now ileus), written with Greek letters in his Latin text. Secondly, he Latinized Greek words, writing them with Latin letters and replacing Greek endings with Latin ones, for example, *stomachus* and *brachium*. Thirdly, and most importantly, he retained the vivid imagery of the Greek anatomical terminology by translating Greek terms into Latin, such as *dentes canini* from Greek *kynodontes* (dog teeth) and *caecum* from Greek to *typhlon* (the blind). Thus, we can still enjoy the old Greek tradition of likening the shape of anatomical structures to, for instance, musical instruments (e.g. tuba = trumpet, tibia = flute), armour (thorax = breastplate, galea = helmet), tools (fibula = needle, falx = sickle), plants (uvea = grape, glans = acorn) and animals (helix = snail, concha = mussel, musculus = mouse). Some of these words are the original Greek ones, while others are Latin equivalents introduced by Celsus and his successors (Wulff, 2004).

By the time Greece was absorbed by the Roman Empire, the centres of learning moved from Greece to Egypt. This shift had political, social and religious underpinnings and ramifications. Judaism, Christianity and Islam share the same religious origin (monotheism founded around the eighteenth century B.C. and attributed to the patriarch Abraham) and Hellenistic-Roman culture, within which Judaism has lived since at least the 4th century B.C. and Islam has flourished since the seventh century A.D (that is, since it conquered Byzantine Syria and Egypt on the one hand, and Sasanian Persia on the other). In turn, Hellenism was well known in Sasanian Persia at the time, and was where the pagan scholars of the School of Athens, exiled by the emperor Justinian who wanted to prevent them from "polluting" pagan culture with their Platonic and Aristotelian follies, had found refuge around 530 AD (Maire, 2014). The Persian scholar, Ibn Sina (Latinized as Avicenna) testified that, in the tenth century, the Persian city of Isfahan, where he worked, possessed a library of Greek books. In one of his most important books, *the* Canon of Medicine, Avicenna collected all teachings of the Greek physician Hippocrates and the Roman physician Galen. The Canon was further developed into a systems approach to health by Arab and Persian physicians. Just like Hippocrates, Avicenna's medical writings aimed to rid medicine of superstition and base it on empirical observation, objectivity and rationalism (Johnston-Saint, 1930). From there, the knowledge of Plato and Aristotle, together with geographical, medical, physical, chemical, astronomical and physiological-medical knowledge drawn from Indian and Chinese cultures, in those fields far more advanced than the Greek, made the rounds of the Muslim world, to which, at the time,

Spain and Sicily also belonged. As a result, the texts were duly translated into Arabic. Scholars from the Arab world also made original contributions to medical literature, and a few Arabic terms (e.g. *mesareeq* - mesentery) found their way into Western medicine.

After the demise of the Roman Empire in the fifth century, most works of the Greek physicians remained unknown in Western Europe until the eleventh and thirteenth centuries. At the time, Western society began to rediscover ancient Greek scientific texts following the discovery of repositories of learning in Spain during the Crusades, which were then translated from Arabic into Latin (Berghammer, 2006). Although the translation of texts had been made from their Arabic versions, Arabic had contributed relatively little to Western medical terminology. Therefore, it can be argued that Arabic only represented a bridge that provided access to the Hellenic system of science [1].

Later on, after the Ottoman conquest of Constantinople in the fifteenth century, Greek scholars migrated to Italy, bringing with them their ancient works, including those of medicine. During the Renaissance, when Greek was no longer so widely understood, Greek texts were directly translated into Latin, which absorbed Greek and Arabic medical terminology through transliteration or overlay with Latin prefixes and suffixes (Berghammer, 2006: 40). Between 1000-1800 AD, Latin served as a universal language for scholarly communication and, being the language of the Roman Empire, which included most of Europe, part of Asia and Africa, Latin assumed the role of lingua franca of medicine. Latin remained the language of communication in Europe long after the fall of the Roman Empire. It was used in two forms: spoken, also called Vulgar Latin, which gradually evolved into many Romance languages, and written or literary Latin, which was used as the language of educated people in schools, offices and churches. Medieval Latin differed from Classical Latin because Medieval Latin was not the language of any ethnic group. In this respect, it was a dead language. In the Middle Ages, Latin was a means of communication for all educated people in Europe. All scientific texts were written in Latin. In this period, universities were established in Western Europe, and medicine was one of the arts (sciences) that could be studied there under master physicians. The period after 1500 A.D. is called the era of new Latin. This

[1] A basic change in European medicine occurred following the translation into Latin of Arabic scientific treatises. Through their Latin versions, three of the early Arabic medical encyclopedias soon came to dominate European medical theory. Two of them were massive attempts at synthesizing all available medical knowledge, and the first Arabic medical treatise to be translated into Latin was the comprehensive medical compendium *Pantegni* (Loudon, 1997: 15).

lasted till the first half of the nineteenth century. The replacement of Latin was a consequence of significant progress in the development of medicine, and Latin as the language of the old world became too limited to express all the newly acquired knowledge in medicine and natural sciences. In the second half of the nineteenth century, medical literature written in languages other than Latin started to prevail. Until the Early Modern Era, the language of medicine consisted largely of Latin terms, which remains the official language of anatomic terminology and taxonomic nomenclature to date (Dirckx, 2005: 9). However, because of the increasing need to communicate with non-university-trained physicians, students and patients, Latin as the language of medicine was almost entirely replaced by local languages – even though all of them retained the Greco-Latin terminological core (Berghammer, 2006: 40). Undoubtedly, throughout history, the dominant language in medical discourse has shifted in response to advances in knowledge and the need for broader communication, as exemplified by the prevalence of English in medical literature today.

From the second half of the twentieth century, English emerged as the shared medium of the medical community, which necessitated the importation of English terms into many other national languages. This may be seen as a direct consequence of the leadership of the United States in many (scientific) fields. The advantages of a common, shared language for scientific research are obvious. However, the predominance of English gives English native speakers a competitive edge over those who first have to acquire the necessary linguistic skills in order to be able to read English materials and communicate their ideas and findings in a foreign language.

Nowadays, in the language of medicine, there can be observed a trend showing a shift from a Latin and Greek influence on medical terminology to an English influence on the creation of modern international medical terms (Dobrić, 2013). It is because modern medicine has surpassed the boundaries of the Greco-Latin terms and because new medical terms are now composed partly or wholly of words borrowed from everyday English, doctors from non-English-speaking countries now have the choice between importing these English terms directly and translating them into their own language, e.g. bypass operation, screening, scanning (Wulff, 2004).

Today, all the most influential medical journals are written in English, and English has become the language of choice at international conferences. The era of the national medical languages followed, such as medical English (i.e. everyday English with the admixture of medical terms), medical French, medical German, medical Italian and many others. A few of these, especially French, German and English, replaced Latin as vehicles for international communication, but most of the others were only used

nationally. The national medical languages had much in common since most of the medical terms were derived from medical Latin, but there were systematic differences that still persist to date. For instance, in Germanic languages such as German, Dutch and those originating from Scandinavia, anatomical terms and disease names are often imported directly with their correct Latin endings: *nervus musculocutaneus* and *ulcus ventriculi*, whereas the same terms in Romance languages are usually 'naturalised' according to the norms of a given language: *le nerf musculo-cutané* and *ulcère gastrique* in French; *il nervo musculocutaneo* and *ulcera gastrica* in Italian. English is a Germanic language, but half of its vocabulary is of Romance origin, and medical English tends to follow the Romance pattern except in placing the adjective before the noun: the musculocutaneous nerve and gastric ulcer. Modern Greek is noteworthy in allowing only Greek terms, including many of those that Celsus translated into Latin two millennia ago. The musculocutaneous nerve, for instance, is *to myodermatiko neuro*. However, the distinction described here between Germanic and Romance patterns is no more than a tendency with numerous exceptions. English-speaking doctors also accept direct loans with Latin endings e.g. medulla oblongata and diabetes mellitus, while German doctors may naturalize the Latin terms e.g. *Coronararterien* for *arteriae coronariae* or translate them into German e.g. *Magengeschwür* instead of *ulcus ventriculi* (Wulff, 2004). The national medical languages did not confine themselves to importing terms already found in medical Latin. Medical scientists continued to develop new concepts that had to be named. The classically schooled predecessors coined a multitude of new terms, most of which were composed of Greek rather than Latin roots, since Latin does not permit the formation of composite words to the same extent as Greek. They introduced, for instance, the terms *nephrectomy, ophthalmoscopy* and *erythrocyte*, which in medical Latin would have been preferred to the rather more cumbersome *excisio renis, inspectio oculorum* and *cellula rubra*. This huge Neoclassical word stock with Greek roots, which is still being used to date, also presents other characteristics of linguistic interest such as the special meaning attached to certain suffixes of a Greek origin (e.g. *-itis* and *-oma*) and the fact that some prefixes and suffixes are more productive than others. Greek *hyper-*, for instance, is more productive than Latin *super-*, although originally they had exactly the same meaning. Therefore, we say *hypertension*, which is a Greek-Latin hybrid, rather than *supertension*, which would have been the correct Latin term.

Once again, medical doctors have chosen a single language for international communication. Whereas in former times new medical terms were derived from Classical Greek or Latin roots, now they are often, partly

or wholly, composed of words borrowed from everyday English - e.g. bypass operation, clearance, base excess, screening, scanning - and doctors from non-English-speaking countries now have the choice between importing these English terms directly or translating them into their own language. The term 'bypass', for instance, is accepted in German, Dutch, Italian, Romanian and other Scandinavian languages, whereas the French, who do not favour anglicisms, translated it to *pontage*. The Poles use *pomostowanie*, which has the same meaning as *pontage* (*most* being a bridge), and the Russians use *shuntirovanie*, which is just another anglicism, derived from the English 'shunt'. The naturalization of the English words is also quite common in some languages: in Danish, the verbs *at screene* and *at skanne* (to screen and to scan) are used. English acronyms such as AIDS (Acquired Immune Deficiency Syndrome), CT (Computed Tomography), MRI (Magnetic Resonance Imaging and PCR (Polymerase ChainR) present the difficulty that usually the initials no longer fit when the English term is translated, but as a rule, such discrepancies are simply ignored. AIDS, for instance, is widely accepted and has almost become a noun in its own right, though in French and Spanish it is SIDA and in Russian SPID, reflecting the order of the equivalent words in these languages (Ohanyan, 2011).

The historical evolution of medical language, from its Greco-Roman roots to its globalized modern form, underscores the adaptability of medical discourse to scientific and cultural shifts. As Latin gave way to vernacular languages during the Renaissance, and later to English as the global lingua franca of medicine, each linguistic transition reflected broader patterns of knowledge exchange and communication needs (Dirckx, 2005; Wulff, 2004). Among the Romance languages, Italian represents a compelling case for examining the integration of English into a lexicon steeped in classical tradition. Its historical connection to Latin offers a unique lens to explore how global influences reshape local medical communication. Additionally, the Italian context mirrors similar patterns in other Romance languages, such as French and Spanish, while exhibiting distinctive features in the adoption and adaptation of English terminology (Pulcini, 2002; Görlach, 2001). Italian is central to this study's comparative focus, and the following section examines the influence of English on Italian medical language, exploring how linguistic borrowing and adaptation shape professional, academic, and public healthcare discourse.

English influence on the Italian medical language

English has shown signs of being a productive and effective mediator language, contributing to the diffusion of not only native English words and

the creation of foreignisms in the borrowing languages, but also lexical items of other provenance, such as terms of native peoples from the former colonies of the British Empire (Görlach, 2001), neologisms with Latin and Greek roots and morphology, and internationalisms. The role of English as a mediator language, and as a fertile source of new loanwords, can be attributed not only to its global dominance but also to the structure of its vocabulary and the linguistic policies that promote its adaptability. For many centuries, English has been significantly influenced by external languages, particularly French and Latin. This linguistic openness has resulted in a Germanic language that incorporates a vast number of words from non-Germanic origins. By the fourteenth century, approximately 60 per cent of English's total vocabulary had roots in Latin or French. Today, around 80 per cent of the entries in an English dictionary are borrowed, primarily from Latin, with over 60 per cent of all English words having Greek or Latin roots. In the vocabulary of the sciences and technology, this proportion increases to over 90 per cent, reflecting the historical role of these classical languages in academic and scientific development. About 10 per cent of the Latin vocabulary has found its way directly into English without an intermediary (when there is an intermediary, it is usually French) (Durkin, 2014).

For a time, the whole Latin lexicon became potentially English and many words were coined on the basis of Latin precedent. Words of Greek origin have generally entered English in one of three ways: 1) indirectly by way of Latin, 2) borrowed directly from Greek writers, or 3) especially in the case of scientific terms, formed in modern times by combining Greek elements in new ways (Green, 2020). The direct influence of Classical languages began with the Renaissance and has continued ever since.

Even today, Latin and Greek roots are the chief sources for English words in science and technology. The portion of Romance elements in English is especially important to consider when discussing the influence of English on other Romance languages, such as Italian. The roots of a large part of the Italian vocabulary can be traced back to Latin. English and Italian have been in contact at least since the thirteenth century; however, the cultural and linguistic exchange was not as fruitful as with other languages for both nations until the eighteenth century (Pulcini, 2002), especially after the Second World War. The eighteenth century was significant in that it was when the first true Anglicisms embedded in Italian started to appear. The primary process that can expand the vocabulary of a language is borrowing. Rather than just describing imported vocabulary items, the term may be more widely used to describe the adoption of linguistic structures of one language into another. According to Einar Haugen (1972), borrowing is the

attempted reproduction in one language of patterns previously found in another. The adjective attempted is important to stress in order to understand that perfect reproduction is rarely realized primarily due to conflicting phonological and graphological systems of the two languages involved in borrowing, which we will see manifest in the comparison between the English and the Italian systems.

The process of borrowing in linguistic evolution, particularly in specialized fields like medicine, is not merely a transfer of vocabulary but often includes the adaptation of structures and frameworks from one language into another. English, as the dominant language of science and medicine, has played a central role in this phenomenon, influencing languages worldwide, including Italian. The Italian medical discourse, shaped by its historical ties to Latin and the need to align with global standards, demonstrates how English acts as both a source of new terminology and a model for linguistic adaptation in professional and clinical communication (Pulcini, 2002). This influence is particularly evident in the adoption of English loanwords across various medical domains, from general terms to highly specialized expressions, as outlined below. Italian medical discourse includes several types of loans from English (Serianni, 2005):

1. general loan words which are everyday expressions that can also be found outside medical discourse and can be substituted by Italian words, such as *'disturbo borderline di personalità (ai limiti della norma)' 'Check up' (controllo) 'La compliance del paziente' (Aderenza terapeutica);*
2. Loan words which refer to surgery, introduced in recent times but generally used, such as 'bypass *gastrico'* (*deviazione*);
3. Loans that refer to diagnosis, such as 'screening' (*controllo*)', 'TAC total body' (*Tomografia computerizzata dell'intero corpo; Total body CAT*)' .
4. Loan words which refer to pathologies, some of which are well consolidated in their use, such as 'stroke' (ictus)'; 'breast unit (*unità di senologia*)'.
5. Loans that belong to the biochemical field, such as 'proteina spike (*peplomero, o spinula*)'

Clearly, the use of linguistic borrowings can vary considerably depending on the communicative context. To this end, three levels of healthcare communication can be put forward, each corresponding to the three organisational levels in which narration can be applied: doctor-patient

communication, communication between healthcare professionals, and communication within the healthcare system.

The doctor-patient relational level is the most circumscribed, which is contextualized in the doctor's room or outpatient clinic. It is in these rooms that the treatment relationship is initiated, anamneses are collected, diagnoses are communicated, therapies are explained, and even long-term therapeutic plans are established. Check-up, follow-up, therapeutic output, transitional care, screening, and device are all commonly used expressions. Moreover, some places and departments in the hospital that are now directly called in everyday English: day hospital, day surgery, trauma centre, breast unit, hospice. Going into the specifics of some areas of care, then technicalities and Englishisms merge. In female fertility preservation, for example, one could speak about embryo transfer, cryotransfer, and pick-up. In cardiology, we have bypass, stroller, stent, heart risk score, etc.

Communication between health professionals in Italy is heavily influenced by terms derived from English-language scientific research, reflecting the global dominance of English in academic and professional contexts. Expressions such as paper, abstract, submission, impact factor, survival, biomarkers, range, survey, clinical trial, case study, and proceedings are widely used, demonstrating how the international scientific community's linguistic practices shape local discourse. The most validated and authoritative sources of updates and in-depth studies are in English, necessitating proficiency in the language to engage with the global medical community effectively. To disseminate and elevate Italian clinical research on the global stage, translating it into scientific English has become essential. This linguistic influence is evident in the high rejection rates of Italian-authored articles submitted to international journals. These rejections often stem not from a lack of content quality but from language barriers and challenges in conforming to the conventions of scientific English (Gallon, 2017). Beyond academic publishing, English's influence extends to clinical practice, where terms like burnout, borderline, compliance, target therapy, ageing, and burden of disease are commonly used within healthcare teams, reflecting the pervasive integration of English into professional medical communication.

The influence of English is even more pronounced in the organization and management of healthcare facilities, where medical discourse intersects with corporate language. Terms like data manager, risk manager, decision-maker, turnover, briefing, budget, business plan, performance, spending review, vision, mission, timeline, clinical governance, FAQ (Frequently Asked Questions), stakeholder, call centre, feedback, customer satisfaction, privacy, patient journey, checklist, flow chart, empowerment, and e-health

exemplify how Englishisms from the corporate world have permeated healthcare management language. This influence is not limited to terminology but also extends to public communication initiatives. For example, on 22nd September 2016, the Italian Ministry of Health launched a national awareness campaign on fertility preservation using the English title Fertility Day (Ministero della Salute, 2016). Similarly, expressions like doctor shopping—used to describe patients seeking multiple opinions from various specialists—have no direct Italian equivalent, further illustrating how English shapes both professional and everyday healthcare communication in Italy.

The language and genres of medical texts

Languages for specific purposes (LSPs) are those varieties of language used in certain areas of social and professional life (e.g. language of physics, medicine, economics, law) featured by specific lexis, distinctive morphosyntactic and textual features.

> In general, a sectorial language is the mode of expression (words, expressions, technical terms, etc.) characteristic of a specialised field, particularly (but not only) of a technical or scientific nature. In this sense, the sectorial language has affinities with professional jargon and trade jargon, of which it represents an evolution, even if it differs from them in terms of greater precision and in some cases precision and in some cases (think of the language of mathematics or physics) for the explicit formalisation (Rovere, 2010)

These languages manifest a vertical articulation: at the higher levels we find the theoretical sectorial language, used in connection with the formal register (e.g. in scientific treatises or research articles), and at lower levels the applied or practical sectorial language (e.g. found in instruction manuals) associated with the informal register, as in the case of technical conversations (Rovere, 2010). LSP texts normally meet criteria such as appropriateness, economy, precision, and emotional neutrality.

To this end, medical language plays an important role in medicine, and medical discourse in the broadest sense (discourse in and about healing, curing, or therapy; expressions of suffering; and relevant language ideologies) has profound anthropological significance. As modes of social action, writing and speaking help constitute medical institutions, curative practices, and relations of authority in and beyond particular healing encounters. In medical language, we can find two characteristics that are seldom found simultaneously in other sectorial languages: a great wealth of