HEDGING IN MEDICAL COMMUNICATION

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Résumé : *L'article décrit les caractéristiques du discours de certains des dispositifs de modulation les plus courants (engl. 'hedges') observés dans la communication écrite en anglais médical et explore leur impact communicatif sur le discours de ce type. L'auteur a appliqué la classification des 'hedges' de Prince et al. (1982) en tant qu'éléments visant l'approximation (pour modifier le contenu propositionnel véhiculé par un énoncé) et en tant que boucliers (censés modifier la valeur de vérité de l'énoncé) pour analyser le comportement de 'hedges' dans les articles médicaux liés à la pandémie mondiale causée par le coronavirus 2019 (Covid-19). À cette fin, un corpus de 30 articles (articles de recherche, rapports de cas et éditoriaux) sélectionnés dans le New England Journal of Medicine a été analysé pour identifier les 'hedges' au moyen d'une analyse contextuelle et pour les classer selon Salager-Meyer (1994) et les Maximes de Grice (1975). La classe des 'hedges' étant vaste et présentant une grande diversité, notre analyse a retenu uniquement les éléments les plus fréquents. L'étude s'appuie sur des cadres linguistiques pour catégoriser les types de 'hedges' et pour faire un compte rendu théorique de la façon dont ils sont utilisés dans les articles médicaux comme un 'bouclier' contre les accusations d'erreur.*

Mots-clés : *communication médicale, hedges, shields, approximators, Covid-19.*

Introduction

There has been considerable theoretical research on the nature of hedging, classes of hedges, their pragmatics and discourse features, which has been conducted since the 1960s. The term 'hedge' in linguistics was introduced by Lakoff, who stated that "some of the most interesting questions are raised by the study of words whose meaning implicitly involves fuzziness-words whose job it is to make things fuzzier or less fuzzy" (1972 :195) and noticed that certain verbs and syntactic constructions can convey hedged performatives. This view was further developed in the works of Lyons (1977), Prince et al. (1982), Brown & Levinson (1987), Hosman (1989), Salager-Meyer (1994, 1995), Holmes (1995), Crismore and Vande Kopple (1997, 1999), Caffi (1999), Fraser (2010), and others. For instance, Lyons (1977) stated that hedging is a language device commonly used in spoken and written communication to indicate lack of commitment to the truth of the

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statements. Holmes (1995) noted that hedging can be used to reduce the strength or directness, mitigate face-threatening acts, and avoid imposition on the addressee. Crismore and Vande Kopple (1997) also viewed hedging as a lack of full commitment to the propositional content of an utterance. In other words, hedging mitigates to lessen the impact of an utterance due to constraints on the interaction between the speaker and the listener. Fraser (2010) considers hedging a rhetorical strategy where/in which the speaker signals a lack of full commitment either to an expression in the utterance (content mitigation) or to the intended illocutionary force of the utterance (force mitigation) by choosing a particular structure or imposing a certain prosodic form on the statement.

Brown and Levinson (1978 :145) defined hedging as a particle, word, or phrase that modifies the degree of membership of a predicate or noun phrase in a set ; this membership is partial or true only in certain respects, or that is more true and complete than perhaps might be expected. Similar phenomena as hedging appeared in other analyses in the 1980s, i.e. understatement and tentativeness (Hübler, 1983), vagueness (Channell, 1994), and indirectness (Hinkel, 1997). In the book 'Understatements and Hedges in English', Hübler (1983) shows the difference between the notions of 'hedge' and 'understatement' and affirms that understatements deal with the propositional content of the sentence, whereas hedging focuses on the speaker's attitude towards the situation. Simpson & Weiner (1989) defined hedging as a barrier, limit, defense or the act or means of protection or defense.

2. Method

A self-made corpus of 30 articles drawn from a leading medical journal, The New England Journal of Medicine, was analyzed in terms of hedging. The choice of this particular journal was made because it embodies some of the best in medical research, has relatively brief articles, and is a useful source for analyzing medical discourse. The articles were divided into three distinct classes found under various names in the majority of medical journals : research papers (RP), case reports (CR), and editorials (Ed.). Ten of each of these classes were selected arbitrarily ; the only feature all the articles have in common is the topic of Covid-19. Accordingly, the analysis has focused on the five categories of hedges (Prince et al., 1982 ; Salager-Meyer, 1994) : shields, approximators, expressions that convey the author's personal doubt and direct involvement, emotionally-charged intensifiers, and compound hedges. After reading the articles through, the hedges were identified and recorded by means of contextual analysis and classified according to the five categories (i.e. modal verbs expressing possibility, adjectives and adverbs expressing probability, epistemic verbs, approximators of quantity, degree, frequency and time, introductory phrases etc.).

3. Forms of Hedging

Classifications of hedges are numerous and often display noticeable differences because the underlying principles of research on hedging are divergent or the classes of hedges subjected to analysis may vary considerably. As a result, there are several categories of language forms of hedging that previous researchers have considered and proposed. For example, Lakoff (1972) focused on propositional hedging, Fraser (1975) considered performative verb hedging, and Brown and Levinson (1987) investigated the speech act aspect of hedges describing them in terms of politeness strategies. Prince at al. (1982) introduced a multidimensional approach, stating that hedges can be divided into two major classes, *approximators* and *shields,* distinction which has often been criticized as being purely

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theoretical. Moreover, Salager-Meyer (1995) includes intensifiers (i.e. '*extremely difficult*', '*unexpectedly*', '*surprisingly*,' '*of particular importance*' etc.) in the class of hedges and analyses the frequency of their occurrence and distribution in different genres. Her findings suggest that case reports and research papers contain fewer hedges than editorials, and in reviews the use of the passive voice is one of the most common hedging devices.

According to Salager-Meyer's classification (1994 :154), the following hedging language forms are described and exemplified :

I. Approximators (of degree, quantity, frequency and time) express coyness and are used when exact figures are unavailable or irrelevant to modify the original meaning of an utterance to some degree. *Approximators* can be further subdivided into *adaptors* and *rounders*. *Adaptors* (i.e. '*often*', '*generally*', '*occasionally*', '*somewhat*', '*kind of*', '*sort of*', '*some*' '*a little bit*'), contribute to the interpretation of an utterance and refer to the vague words which can change the degree of truth value of the utterance, making it more specific. *Rounders* (i.e. '*almost*', '*about', 'nearly', 'approximately', 'around', 'something between' etc.*) refer to the vague words which can limit the range of the original utterance.

Adaptors such as '*somewhat*', '*kind of*', '*sort of*', '*a little bit*' have not been found in the corpus subjected to analysis. The reason could be because modifications of the propositional content with the purpose of making it vague in medical papers can produce an undesirable effect of being perceived as less confident or knowledgeable. The most frequent *rounders* found in the corpus are those relating to frequency ('*generally*', '*often*', '*nearly*' and '*approximately*'), which indicate that the cases described are close, but not similar to the prototypic situation, as shown in the examples below :

(1) "Diagnostic testing to identify persons currently infected with SARS-CoV-2 **usually** involves the detection of SARS-CoV-2 nucleic acid..." (CR)

(2) "Contamination of inanimate surfaces has been proposed to play a role in transmission, but its contribution is **uncertain**..." (CR)

(3) "Antigen tests are **generally** less sensitive than reverse-transcriptase..." (CR)

(4) "Their use in diagnosis is **generally** reserved for people who are suspected to have Covid-19 but have negative PCR testing …" (CR)

(5) "Patients with severe Covid-19 **often** become hypotensive…" (CR)

(6) "Patients with Covid-19 **often** present with volume depletion…" (CR)

(7) "Training, site initiation visits, and monitoring visits **often** were performed remotely. Research staff were **often** assigned other clinical duties…" (RP)

(8) "The majority of patients with severe Covid-19 have lymphopenia and **some** have thromboembolic complications…" (CR)

(9) "The specificity of most SARS-CoV-2 PCR assays is **nearly** 100% as long as no cross-contamination occurs during specimen processing." (CR)

(10) "However, some patients [...] will subsequently have precipitous clinical deterioration that occurs **approximately** 1 week after symptom onset." (CR)

(11) "Severe illness usually begins **approximately** 1 week after the onset of symptoms." (CR)

(12) "In case series, **approximately** 5% of patients with severe Covid-19 have received renal-replacement therapy." (CR)

(13) "...**approximately** 800 patients in need of respiratory or blood-pressure support or both…" (Ed.)

According to Wardhaugh's (2010) research, hedges are typical of colloquial spontaneous speech, that is they can hardly be found in scientific papers. Nevertheless, the

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analysis carried our on the self-made corpus shows that *rounders* are used in medical articles to hedge sentences that contain statistics belonging to the issued discussed. Hence, *approximators* are used in written medical communication when the state of knowledge does not allow the writers to be more precise, being the hedging category which most closely reflects the 'institutionalized' language of science (Salager-Meyer, 1994 :154).

II. Shields, unlike *approximators*, do not affect the truth value of the propositional content and indicate the degree of the writer's commitment to the whole proposition. *Shields* are further divided into two types : *plausibility shields* and *attribution shields*. *Plausibility shields* (i.e. '*I think*', '*probably*', '*as far as I can tell*' etc) convey the speaker's uncertainty or doubt about what is being said, whereas *attribution shields* (i.e. *'according to', 'presumably', 'at least', 'to somebody's knowledge'* etc.) are expressions indicating the writer's attitude or opinion indirectly by quoting a third party's opinion. They often note the source of information :

- modal verbs expressing possibility, such as '*may*', '*might*', '*could*', '*can*' :

(14) "Symptoms **may include** fever, cough, sore throat, malaise..." (CR)
(15) "...but because these conditions **may be associated** with worse outcomes after infection with other respiratory pathogens..." (CR)
(16) "Testing of lower respiratory tract specimens **may have higher sensitivity** than testing of nasopharyngeal swabs." (CR)
(17) "Because antibody levels **may decrease** over time and the correlates of immunity are not yet known,…" (CR)
(18) "Laboratory findings in hospitalized patients **may include** lymphopenia and elevated levels…" (CR)
(19) "and **may have caused harm**, among patients who did not receive supplemental oxygen…" (CN)
(20) "Data from patients with Covid-19 who were enrolled in a large expanded-access program[...]suggested that mortality **might be** lower..." (CR)
(21) "...was generated from patients who **might have been eligible** to be randomly assigned to those interventions…" (RP)
(22) "...questions were raised regarding whether [...] — which **may** increase ACE2 levels — **might** affect the course of Covid-19." (CR)
(23) "...biomarkers of viral replication and of inflammation or immune activation that **can** reliably **predict** the clinical course..." (Ed.)
(24) "...PEEP **can improve** respiratory-system compliance and allow for a reduction in the Fio2. However, PEEP **can reduce** venous return to the heart and cause hemodynamic instability. Moreover, excessive PEEP **can lead to** alveolar overdistention and reduce respiratory-system compliance." (CR)
(25) "The diagnosis of Covid-19 **can be established** on the basis of a suggestive clinical history…" (CR)
(26) "Although the vaccine **can be stored** for up to 5 days at standard refrigerator temperatures once ready for use." (RP)
(27) "...this dose **could be repeated** 12 to 24 hours later at the discretion of the treating clinician if clinical improvement was judged insufficient." (RP)
(28) "Patients **could undergo** further randomization[...],and those with Covid-19 **could be** randomly **assigned** to receive no additional treatment." (Ed.)

- semi-auxiliaries such as '*to appear*', '*to seem*' etc. :

(29) "The use of these droplet and contact precautions for the routine care of patients with Covid-19 **appears to be effective**…" (CR)

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(30) "Remdesivir[...]**appears to have its most favorable effect** in hospitalized patients with Covid-19 who have modest pulmonary disease." (CR)

(31) "...the benefit **appeared** greatest in patients who were receiving supplemental oxygen but were not intubated." (CR)

- probability adverbs such as '*probably*', '*likely*' and their derivative adjectives :

(32) SARS-CoV-2 is primarily spread from person to person through respiratory particles, **probably** of varying sizes... (CR)

(33) These findings, […] provide clarity to an area of therapeutic controversy and **probably** will result in many lives saved. (Ed.)

(34) This effect **probably** correlates to a time in the infection when viral replication is driving the pathogenic process. (Ed.)

(35) "The social determinants of health **probably** have a strong influence on the risk of severe disease." (CR)

(36) "The use of non-invasive positive-pressure ventilation should **probably** be restricted to patients with Covid-19 who…" (CR)

(37) "...the pathophysiology of the renal failure is currently unclear but is **probably** multi- factorial." (CR)

(38) "A well-established public health care system **probably** played a large role in the data availability." (Ed.)

(39) Despite the decreases in death and complications that are **likely** to result from appropriate treatment of patients with dexamethasone... (Ed.)

(40) "...this finding is **probably** robust and **may be** helpful in guiding clinical care." (Ed.)

(41) "Because SARS-CoV-2 replication is greatest just before[...] symptom onset, antiviral medications [...] are **likely** to be most effective when used early." (CR)

(42) "People with chronic health conditions […] are more **likely** to become critically ill from Covid-19." (CR)

(43) "...it is clear that treatment with an antiviral drug alone is not **likely** to be sufficient for all patients." (RP)

(44) "Younger vaccine recipients were more likely to use antipyretic or pain medication…" (RP)

(45) "...remdesivir is **likely** to be most effective in early Covid-19[...], whereas dexamethasone is **likely** to be most effective later in the disease course." (Ed.)

- epistemic verbs, which relate to the probability of a proposition or a hypothesis being true, such as '*to suggest*', '*to recommend*', '*to indicate*', '*to show*', '*to refer to*', '*to hypothesize*', '*to postulate*', '*to make suppositions*' etc., as exemplified below :

(46) "Subgroup analysis [...] **indicated that** those receiving glucocorticoids had a survival advantage, which **suggests** a treatment interaction with..." (Ed.)

(47) "...**indicating that** Covid-19 **may have** a more protracted course than previously anticipated." (RP)

(48) "...studies that detect viable virus and contact-tracing assessments **suggest that** the duration of infectivity is much shorter..." (CR)

(49) "However, the interaction tests **suggest** greater benefit (with respect to recovery and mortality) in lower ordinal score categories." (RP)

(50) "...these findings **suggest that** treatment with remdesivir **may not** only **reduce** the disease burden but **may** also **decrease** the use of…" (RP)

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(51) "The median recovery time for patients in category 7 could not be estimated, which **suggests that** the follow-up time **may have been too short** to evaluate that subgroup." (RP)

(52) "... its occurrence **is suggestive of** worsening disease." (CR)

(53) "...the data also **suggested that** mortality **might** be lower when…" (CR)

(54) "Patient collection at home with shipment to a laboratory **has been shown** to be safe and effective …" (CR)

(55) "There are no approved treatments for Covid-19 but some medications **have been shown** to be beneficial." (CR)

(56) "...but subsequent randomized trials **did not show** a benefit." (CR)

(57) "Data[...]involving more than 1000 patients with severe Covid-19 **showed that** the antiviral agent remdesivir reduced time to clinical recovery ;" (CR)

(58) "The RECOVERY trial **showed that**, [...], hydroxychloroquine did not decrease mortality among hospitalized patients." (CR)

(59) "Small randomized trials of convalescent plasma obtained from people who have recovered from Covid-19 **have not shown** a clear benefit." (CR)

(60) "However, large observational studies **have not shown** an association with increased risk…" (CR)

(61) "The American College of Radiology **recommends** against the use of computed tomography [...] to diagnose Covid-19…" (CR)

(62) "Current guidelines **recommend that** hydroxychloroquine not be used outside clinical trials for the treatment of patients with Covid-19." (CR)

(63) "Guidelines **recommend** remdesivir for the treatment of hospitalized patients with severe Covid-19... (CR)

(64) "...and thus **it is not recommended** for the treatment of mild or moderate Covid-19." (CR)

(65) "The CDC and WHO **recommend** the use of enhanced protection for aerosol-generating procedures…" (CR)

(66) "Current guidelines **recommend that** clinicians wear gowns, gloves, N95 masks, and eye protection at the least…" (CR)

The most widely used shields in the corpus analyzed are modal verbs that express possibility such as '*may*', '*might*', and '*can*', epistemic verbs such as '*to suggest*', '*to recommend*', '*to show*', and '*to indicate*', and probability adverbs such as '*probably*', '*likely*'. The examples used above show the writer's tentativeness to commit to absolute statements about his results. That is, observed facts are strongly expressed and are not subjected to 'perhaps', 'maybe', explanations and interpretations of data are subjected to some measure of doubt. (see Salager-Meyer, 1994 :162). Plausibility shields such as '*I think*', '*I suppose*', '*I assume*' have not been found in the corpus, which seems natural because writers avoid expressing their own thoughts and opinions in scientific paper.

III. Expressions such as '*I believe*', '*I consider*', '*to our knowledge*', '*in my view*' etc., that convey the writer's personal doubt and direct involvement :

(67) "...but **consider** data to be insufficient to recommend for or against the routine use of this drug for moderate disease." (CR)

(68) "...but **considers** face masks to be acceptable where there are supply shortages." (CR)

(69) "We **believe that** these other studies support our findings regarding the efficacy of remdesivir." (RP).

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IV. Intensifiers charged with emotions, that are used to emphasize the writer's reactions, such as *'extremely difficult'*, '*of particular importance*', '*surprisingly*' etc. Only two examples could be found in the study corpus :

(70) "Safe and effective prophylactic vaccines are urgently needed to contain the pandemic, which has had **devastating** medical, economic, and social consequences." (RP)

(71) "In the era of Covid-19, the need for answers has generated **enormous pressures** across the research enterprise,…" (Ed.)

V. Compound hedges, which include strings of hedges such as '*it could be suggested that*', '*it would seem likely that*', '*it may suggest that*', '*this probably indicates that*' etc., were most frequently used in case reports, as exemplified below :

(72) Antibody testing after 2 weeks also **may be considered** when there is a clinical or epidemiologic reason for detecting past infection." (CR)

(73) "An environmental and epidemiologic study of a small cluster of cases **suggested the possibility** of fecal aerosol-associated airborne transmission after toilet flushing, but this is **likely** to be rare." (CR)

(74) "Contamination of inanimate surfaces has been proposed to play a role in transmission, but its contribution[..] **may** be **relatively** small. (CR)

By utilizing compound hedges (a juxtaposition of several hedges), the writer can indicate the degree of certainty with which he presents his findings, showing the reader how strongly he wants to align himself with the claims by avoiding absolutes and leaving room for disagreement. Thus, we can state that research results in scientific articles are indicative rather than definitive (Salager-Meyer, 1994 :163).

4. Functions of Hedges

There is no consensus among linguists concerning the purposes of hedging as its controversial character has brought about a great variety of views regarding their functional aspects. For instance, Lakoff (1972) mentions two reasons why hedges are used in the first place : to express uncertainty or to tone down the discourse to be more polite. Prince et al. (1982) believe that the main function of hedges is to convey information in an unobtrusive and unostentatious way. Crystal (1987) explains the use of hedges by the speaker's intention not to be precise, avoid further questions and his unwillingness to tell the truth. According to Salager-Meyer (1995), explicit expression of facts, opinions, information or claims might not seem very appropriate in many situations. Besides, hedging allows authors to present information and report research results to the audience in a more precise way : "Hedging may present the strongest claim a careful researcher can make." (Salager-Meyer, 1994 : 151).

In addition, Brown & Levinson (1987) consider hedges in terms of positive and negative politeness, where positive strategies serve to mitigate the effect utterances may produce on the recipient, especially if the rank of imposition the utterance conveys is high. Indeed, hedges are linguistic devices which contribute to precision, politeness and attenuate the negative imposition. Positive politeness can minimize the threat to the recipient's positive face to make them feel valued, whereas negative politeness is considered redressive action addressed to the recipient's negative face, that is his want to be unimpinged upon. Negative politeness can be regarded as the heart of respect behavior, whereas positive politeness may be seen the core of familiar and joking behavior (1987

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:129). Negative politeness, specific and focused, makes minimal assumptions about the recipient's wants.

Accordingly, the paper has also analyzed negative politeness strategies used in written medical communication which urges the writer to hedge assumptions related to avoiding presumptions about the reader (his viewpoint, opinions ; what is interesting and relevant to him or worthy of his attention). To hedge these assumptions, that is to avoid commitment to them, is a fundamental method of solving interactional threats. Thus, performative hedges on illocutionary force are the most important linguistic devices for satisfying the writer's want. Such hedges can be analyzed as adverbs on performative verbs that reflect the illocutionary force of the sentence. In addition, written medical communication is a source of strong background assumptions about informativeness, truthfulness, relevance, and clarity, which should be softened for reasons of saving face. Hence, hedges on Grice's Maxims have also been discussed as they play a significant role in softening the language at the discourse level.

Hedges addressed to Grice's Maxims. As regards Grice's Maxims (Grice, 1975), they are an intuitive characterization of conversational principles that would constitute guidelines for achieving maximally efficient communication, which can be achieved by using a set of hedges oriented to Grice's cooperative maxims. These hedges emphasize that the cooperative conditions are met or have not been met, or they may even question whether they have been met. Such hedges as those discussed below are used to redress all kinds of face-threatening acts. For instance, *Quality hedges* may suggest that the writer is not taking full responsibility for the truth of his utterance. On the other hand, *Quantity hedges* can be utilized to redress complaints or requests. Also, *Relevance hedges* (i.e. '*by the way', 'this may not be relevant, 'I might mention at this point', 'anyway'* etc.) are useful ways of redressing offers or suggestions, while *Manner hedges* (i.e. *'in a nutshell', 'more clearly', 'to put it more simply', 'to be absolutely clear'* etc.) can be used to redress all kinds of face-threatening acts, such as insults (Brown & Levinson, 1987 :171).

In terms of *Relevance hedges* and *Manner hedges,* no instances were registered in the study corpus. As regards *Quality hedges (shields, approximators),* they are used with high frequency in written medical communication and have straightforward politeness applications as they can weaken the writer's commitment and may redress advice or criticisms, for example :

> (75) "We **believe that** these other studies support our findings regarding the efficacy of remdesivir." (RP)
>
> (76) "Later in the disease, a hyper-inflammatory state and coagulopathy **are thought to lead to** clinical com- plications ;" (CR)

As *Quality hedges*, there are also hedge uses of tense modals and auxiliaries that are used to express degrees of probability in increasing doubt in this way :

> (77) "All inflammation **may not be** the same : patients with severe disease at initial presentation **may have** a different pathogenesis than those in whom inflammatory disease develops later, which **suggests** that the timing of treatment **may be** crucial in understanding responses. **Perhaps** the greatest variable, however, **may be** the periods of time over which the trials were conducted. The baseline therapy of Covid-19 has changed and mortality **appears to have fallen** since the beginning of the epidemic." (Ed.)

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(78) "The pragmatic, international design of REMAP-CAP means that our results are **probably** generalizable to the critically ill patient population with Covid-19, although the standard of care **may vary** in other ICUs and over time, and other populations **may include** different high-risk patients." (RP)

(79) Patients may be infectious 1 to 3 days before symptom onset, and up to 40 to 50% of cases **may be attributable** to transmission from asymptomatic or presymptomatic people." (CR)

(80) "Patients **may have** detectable SARS-CoV-2 RNA on polymerase-chain-reaction (PCR) test for weeks to months…" (CR)

(81) "Under laboratory conditions, SARS-CoV-2 **may persist** on cardboard, plastic, and stainless steel for days" (CR)

(82)"... in this stage, anti-inflammatory medications, immunomodulators, anticoagulants, or a combination of these treatments **may be more effectiv**e than antiviral agents." (CR)

(83) "Severe Covid-19 **may** also **lead to** acute cardiac, kidney, and liver injury, [...] These organ failures **may be associated with** clinical and laboratory signs of inflammation…" (CR)

(84) "Healthy persons of any age **may become** critically ill with Covid-19."

(85) "A higher plateau pressure without the development of ventilator-induced lung injury **may be possible** in patients with central obesity or noncompliant chest walls." (CR)

(86) "...the data also suggested that mortality **might be lower** when plasma is given within 3 days after diagnosis…" (CR)

(87) "Given his dyspnea and risk factors for severe illness, we **would refer** him for SARS-CoV-2 PCR testing of a nasopharyngeal swab,[...] He should be assessed for hypoxemia, which, if present, **would prompt** admission and specific therapies. We **would continue** his treatment with an ARB and inhaled glucocorticoids. In accordance with current guidelines, we **would advise that** he remain isolated for 10 days after symptom onset…" (CR)

(88) "Chloroquine and hydroxychloroquine have in vitro activity against SARS-CoV-2, **perhaps** by blocking endosomal transport." (CR)

(89) "**Perhaps** the greatest variable, however, may be the periods of time over which the trials were con- ducted." (Ed.)

(90) "These findings, while limited to patients with Covid-19, [...] **probably** will result in many lives saved." (Ed.)

(91) "This effect **probably** correlates to a time in the infection when viral replication is driving the pathogenic process." (CR)

Quantity hedges include expressions such as *'basically', 'approximately', 'relatively', 'some'* etc. indicate that not as much or not as precise information is provided as might be expected :

(92) "Among patients who are symptomatic, the median incubation period is **approximately** 4 to 5 days…" (CR)

(93) "Adverse event data through **approximately** 14 weeks after the second dose are included in this report." (RP)

(94) "Severe fatigue was observed in **approximately** 4% of BNT162b2 recipients, which is higher than that observed in recipients of some vaccines recommended for older adults." (RP)

(95) "**Some** patients remain in the hospital, so long-term outcomes **may differ** from the short-term outcomes presented here." (RP)

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5. Conclusion

The paper provided insight into the use of hedges in written medical communication to raise awareness of the functions of hedges used in medical articles discussing topics about the global pandemic of Covid-19. The study has emphasized that hedging can be achieved in a wide diversity of forms and has given numerous examples of how hedging can be used as a productive linguistic device in medical discourse. According to the analysis carried out, over 90% of the total number of hedging devices used in research papers, case reports, and editorials fall into two categories, those of *shields* (mostly modal verbs indicating possibility) and approximators (mostly rounders). Thus, the study shows that modal verbs of possibility are used in medical discourse to soften the language and attune the degree of certainty on the writer's part. Approximators are used as language devices when exact figures are either unavailable or irrelevant, without the intent of reflecting uncertainty. Hedges are also utilized in medical papers as a 'shield' against accusation of error so that one can notice that the writer is not claiming to have the final word on the subject. All in all, the paper has identified common types of hedging used in medical articles on Covid-19 and explored its structural types and pragmatic functions to show that hedging, a key politeness strategy, is pervasive in medical communication.

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