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Quality evaluation of French guidelines in primary care infectious disease: An AGREE II assessment

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Abstract

Rationale: Antibiotic prescription, its nature and its duration are a very common decision-making situation in primary care practice. Clinical practice guidelines (CPGs) are regularly emitted by various organisations on this topic.

Aims and objectives: Our goal is to run a quality appraisal of the current French guidelines, for the most common primary care infectious pathologies.

Method: We collected all primary care CPGs that are currently prevailing in France through a systematic review of the french website Antibioclic®. For each of these guidelines, a quality assessment was run by 3 independent reviewers, by means of the Appraisal of Guidelines for REsearch & Evaluation II instrument. The main outcome was a 'reliability score', defined as the sum of the scores in domains 'rigour of development' and 'editorial independence'. To be considered 'reliable', the CPG had to reach a 60% threshold in these two domains. Secondary outcomes were as follows: global quality score of CPGs, number and ratio of CPGs for which a systematic review has been conducted during its conception.

Results: Over the 43 CPGs that have been assessed, none reached the 60%-threshold as to the reliability score. Only one CPG (2.33%) gets an over-60% quality assessment in the domain of rigour of development (D3), whereas three CPGs (6.98%) reach this threshold in the domain of editorial independence (D6). One CPG (2.33%) met the quality threshold of 60% as to overall assessment. Rigour of development and editorial independence are the domains that obtained the lowest average score, respectively, 11% and 21%. Overall assessment received an average score of 29%. A systematic review of the literature was mentioned for 10 CPGs (23.26%).

Conclusion: There is a lack of quality in the development process of the current French guidelines in primary care infectiology. This process should be reconsidered, with higher insistence as to its quality.

KEYWORDS

antibacterial agents, clinical practice guideline, communicable diseases, primary health care, quality improvement, systematic review

1 | INTRODUCTION

1.1 | Background

Antibiotic therapy prescription, its nature and its duration are a very common decision-making situation in primary care practice. This choice is never innocuous, by its consequences for the patient and the bacterial ecosystem at a time. Appropriate antibacterial drug use is a major public health issue, given the growing antimicrobial drug resistance, which is responsible for 5500 deaths per year in France.[1]

Medical literature is constantly expanding. Each year, the amount of scientific papers increases. Evidence-based medicine requires the practitioners to keep themselves up to date continuously. This challenge is made harder when the field of knowledge is wide, as is the case for general practice.

Clinical practice guidelines (CPGs), also called recommendations for good practice, emerged for this reason. For a given question, they allow practitioners to delegate the tedious and time-consuming task of selecting and assessing sources, thus saving them valuable time. In general practice, as for other medical specialties, guidelines are consulted and used by a large proportion of physicians.

However, to be able to validate and use a CPG, good reliability is fundamental: its development process has to be thorough and trustworthy.[2] Each year, multiple guidelines of varying quality and sometimes inconsistent content are published.[3] In the field of chronic diseases for instance, the most part of CPGs are based on expert consensus. Less than 25% of them are built on good quality studies.[4–6] A recent German study revealed that more than half of CPGs are made by means of nonsystematic methods, in other words less rigorous methods.[7] That is all the more concerning if a 'strong' guideline is based on papers with low levels of evidence.[8,9]

1.2 | Objective

The aim of the study is to give a quality evaluation of French CPGs in the field of primary care infectious diseases. This evaluation will be made by means of the Appraisal of Guidelines for REsearch & Evaluation II (AGREE II) instrument.[10] Particular attention will be focused on two criteria, which are fundamental for a CPG's reliability: its rigour of development (Domain 3) and its editorial independence (Domain 6).

2 | MATERIALS AND METHODS

2.1 | Protocol registration

The methodology was registered on the online platform *osf.io*, before the completion of the study: DOI number: 10.17605/OSF.IO/3B7QH (https://osf.io/3b7qh).

2.2 | Searching and screening

The Antibioclic® website is a decision-support tool designed by a committee of experts, for the use of general practitioners (GPs). It compiles an exhaustive list of the current French CPGs in the field of infectious diseases. For each of the most primary care common situations, Antibioclic® provides access to the guideline that is quoted to justify the use of a given antimicrobial drug, through a direct web link. Its accurate and precise citation also easily helps users to find the guideline by way of any scientific research engine.

Research strategy consisted in an up-to-date systematic review of Antibioclic® website. Infectious pathologies are sorted by anatomic branches. For each condition that is inventoried, the one or more CPGs that are referred to by website editors were selected. Every condition, in all anatomic fields available on Antibioclic® website was processed. Data collection and data analysis are thereby extensive. The 'prophylaxis' section was included. CPGs that were cited several times were only included once.

This study is cross-sectional. To ensure results to be up-to-date with the newest guidelines, data collection was carried out twice: the first was made in December 2021, the second was in March 2023. Any guidelines that have been added on Antibioclic® website after March 2023 were not taken into consideration for data sources.

To process the most prevalent general practice situations, specific situations such as 'kidney insufficiency', 'pregnancy' and 'breastfeeding' were excluded. Other exclusion criteria were as follows: CPGs that do not deal with antimicrobial treatment or pharmaceutical management of the medical condition (CPGs were then considered as subsidiaries), CPGs that were not available online (missing data) and Covid 19-related guidelines.

2.3 | Assessment tool

AGREE II instrument is a validated tool, considered as the Gold Standard for a qualitative assessment of CPGs.[2,11,12] It consists in a reading grid, composed of 23 items, organised in six domains, along with an overall assessment. Each domain focuses on a dimension of guideline quality: 'scope and purpose', 'stakeholder involvement', 'rigour of development', 'clarity of presentation', 'applicability' and 'editorial independence'.

All AGREE II items are evaluated using a rating scale from 1 to 7: 1 corresponding to '*strongly disagree*' with the item, 7 corresponding to '*strongly agree*', and 2–6 being assigned when the item does not meet the full criteria. Once the evaluation of the 23 items is performed, the assessor has to provide an 'overall' evaluation, that consists in making a judgement as to the overall quality of the guideline, while taking into consideration the above elements. This assessment is still based on a 7-point scale. The user is also asked whether he or she would recommend or not the use of the guideline. AGREE II method specifies that the score in each domain is calculated independently of the others. It is also required to have at least two different appraisers for each guideline. Details of the grid items,

instructions as well as calculation for each domain, with examples, are available in the user's manual.[10]

Among the various criteria, rigour of development (i.e., Domain 3) is essential to consider a CPG of good quality.[13,14] This domain gathers methodological issues such as selection criteria and internal validity. Editorial independence (i.e., Domain 6) is another major quality concern. The existence of financial conflict of interest is more frequently associated with guidelines that are in favour for the use of a drug or a device.[15,16] This situation has already led French Haute Autorité de Santé (HAS)* to repeal a CPG on several occasions.[17]

2.4 | Study design and data analysis

For each selected CPG, score calculation was conducted, by several reviewers in the same way. In our study, two different and consecutive panels ran the evaluation.† To ensure reproducibility, and in accordance with AGREE II user's manual, each panel was formed by three reviewers who simultaneously carried out the evaluation, each of them being blinded to the results of the others. Allocation to one or the other panel was made on chronological basis: CPGs that were collected in December 2021 were assessed by the first panel (M.B., M.Y., J.B.), whereas the second panel (K.A., E.L., R.B.) was in charge of assessing the more recently updated CPGs, collected in March 2023. In a second time, all data were gathered, for the data analysis to be run by one of the reviewers (K.A.).

For each CPG that was included in the study, all items from the grid in all domains were assessed on a 7-points scale (1 corresponding to '*strongly disagree*' with the item, 7 corresponding to '*strongly agree*'), by different reviewers. Then, data from all three appraisers are brought together. A domain score is calculated by summing up all the scores of the individual items and by scaling the total as a percentage of the maximum possible score in that domain. This ratio, from 0% to 100%, is calculated as follows: (Obtained score − Minimum possible score)/(Maximum possible score − Minimum possible score). Thus, for each selected CPG, a score was calculated in each of the six domains of quality. Overall score is calculated likewise, based on a similar 7-point scale, on a single item. Agreement between all reviewers on this overall score was measured by way of a κ coefficient.

Chosen statistical method was the use of a worksheet (Google Sheets®) for data collection and data analysis. κ coefficient calculation was run though the following website: http://justusrandolph.net/kappa.

2.5 | Outcomes

AGREE II user's manual does not indicate a specific threshold to determine whether a CPG is of good quality. However, in the literature, a 60% threshold is found satisfactory to deem the quality of a domain.[6,18] In this study, in each domain as to the overall score, a score ≥60% is considered positive.

A reliability score was designed for this study. It was defined as the combination of scores in Domain 3 (D3: rigour of development) and in Domain 6 (D6: editorial independence). Once all domain scores are computed, this reliability score can be obtained. Main outcome was a reliability score greater than or equal to 60% (i.e., D3 ≥ 60% + D6 ≥ 60%). We calculated the number and proportion of CPGs that reached this threshold.

Secondary outcomes were as follows: CPG evaluation of score in Domains 1–6; CPG evaluation of the overall score; number and proportion of CPGs for which a systematic review has been conducted during their conception; average reliability score for each CPG ('R score', calculated as D3 + D6/2).

3 | RESULTS

3.1 | Sample size

Data selection was conducted as described above. Twenty-eight CPGs were selected from the first data collection made in December 2021. Fifteen new CPGs were selected in March 2023. In total, 43 CPGs were included (see Figure 1: flow chart).

Twenty-two guidelines (51%) came from government organisation, mainly the HAS.‡ Eleven CPGs (26%) were issued by scientific societies, including SPILF, Société Française de Pédiatrie, Société Française de Dermatologie and European Society of Clinical Microbiology and Infectious Diseases (ESCMID). Seven CPGs (16%) were emitted by Colleges of Medicine, such as the French college of infectious disease (Collège des universitaires des maladies infectieuses et tropicales [CMIT]). Lastly, three CPGs (7%) were produced by expert consensus.

Table 1 provides information about infectious diseases addressed by each CPG, as well as the organisations developing them. Table 2 gives more detail about these organisations, sorting them in 3 categories.

Detail of the selected guidelines, as well as the reviewers panels to whom they were attributed, is available in Supporting Information S1: Appendix no. 1.

There was no missing data. Every guideline cited on Antibioclic® website that was selected was available online.

3.2 | Main outcome

Out of 43 CPGs, none reached a reliability score greater than or equal to 60%. Only one CPG out of the 43 (w33), that is, 2.33%, obtained a score over 60% in rigour of development D3 (Table 3). Three CPGs (w3,10,27), that is, 6.98%, reached the 60% quality threshold in editorial independence D6 (Table 3).

*For all abbreviations and acronyms, see detail in dedicated Abbreviations section.
†M.B., M.Y., J.B., K.A., E.L., R.B. See detail of panels in Supporting Information S1: Appendix no. 1.

‡For all abbreviations and acronyms: see detail in dedicated section in Abbreviations.

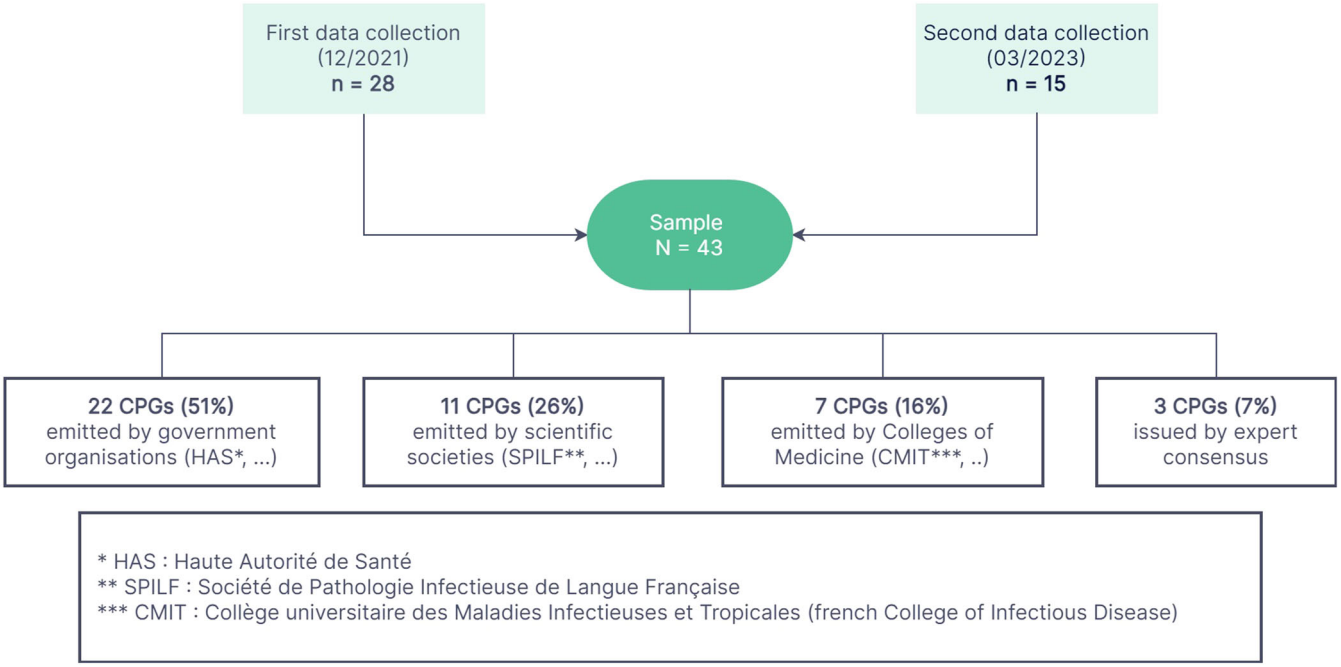

FIGURE 1 Flow chart. CPGs, clinical practice guidelines.

3.3 | Secondary outcomes

Rigour of development (D3) is the domain that received the lowest score, with an average of 11%. Editorial independence domain (D6) got the second lowest score, with an average of 21% (Table 4). Overall assessment is equally low, with an average of 29%. Only one CPG out of 43 (w33), that is, 2.33% of them, met the quality threshold of 60% as to overall assessment (Table 3). The domain that obtained the best score is Clarity of presentation (D4), with 26 CPGs out of 43, that is, 60.47%, that achieved a ≥60% score (w1, 3, 4, 8, 12, 14, 20, 21, 22, 27–43). A systematic review of the literature was mentioned for 10 CPGs, that is, 23.26% (w8, 10, 11, 15, 20, 22–24, 27, 33).

κ coefficient on overall score was 72.09% (95% CI [0.56, 0.79] for free-marginal κ).

Figure 2 is a diagram showing distribution of the average reliability score ('R score'). 1 CPG reached an average reliability score over 60%: it was assessed CPG no 10 (w10), which is a study led by an expert group, and released by the French Ministry of Health, about HIV disease and treatment. Two CPGs had an average reliability score between 40% and 60%: w27 and w33, two guidelines emitted by ESCMID[§] (which is an European scientific society for infectious disease); one about endocarditis treatment, the other dealing with Clostridioides difficile. More than half of the CPGs (25 out of 43, i.e., 58%) reached a R score under 20%. In particular, every guideline issued by the French infectious diseases College of Medicine (CMIT) had a low R score, under 20%. For more detail, see average reliability score for each CPG in Supporting Information S2: Appendix no. 2.

[§]For all abbreviations and acronyms: see detail in dedicated section in Abbreviations.

Detailed domain scores, for each guideline, is available for consultation in Supporting Information S3: Appendix no. 3. Supporting Information S4: Appendix no. 4 provides all raw data used in our data analysis (i.e., for each CPG: detailed scores obtained by every reviewer, in each domain, plus overall score).

4 | DISCUSSION

4.1 | Summary of findings

For nearly all current French primary care guidelines in the field of infectious disease, the 60% quality threshold is not reached, both in rigour of development and in editorial independence. Yet, they are two essential criteria to appreciate the reliability of a CPG. Furthermore, only about a quarter of the CPGs mentioned that they performed a systematic review of the literature during their development process. It is nonetheless a crucial point to minimise study-selection bias.

4.2 | Strength and limitations

To our knowledge, this study is the first AGREE II evaluation that has been conducted on French guidelines, in the field of primary care infectious disease. Its results are consistent with those from the few similar studies that have been led on infectious disease guidelines in other countries.[19–21]

Collecting the CPGs through a unique platform could generate a selection bias. However, such a bias would tend to select higher

TABLE 1 Description of infectious diseases addressed by each CPG and organisation developing them (detail of CPGs in Supporting Information S1: Appendix no. 1).

CPG	Infectious disease	Organisation
w1	Urinary tract infections	Expert consensus
w2	Urinary tract infections	SFP, SPILF
w3	Paediatrics antibiotherapy	GPIP
w4	Sexually transmitted diseases	SFD
w5	Helminthiasis	CMIT
w6	Sexually transmitted diseases	SFD
w7	Lower genital tract	CNGOF
w8	Syphilis	IUSTI
w9	Syphilis	HAS
w10	HIV	Expert consensus
w11	Pelvic infection	CNGOF, SPILF
w12	Diverticulitis	HAS
w13	Helicobacter Pylori	HAS
w14	Upper respiratory tract infection	SPILF
w15	Lower respiratory tract infection	AFSSAPS
w16	Lower respiratory tract infection	SPILF, AFSSAPS
w17	Bronchiolitis	ANAES
w18	Whooping cough (pertussis)	CMIT
w19	Whooping cough (pertussis)	HCSP
w20	Lyme disease	SFD, SFR, CNGE, …
w21	Injuries and wounds	SFMU
w22	Bacterial skin disease	HAS
w23	Lyme disease	HAS
w24	Bacterial skin disease	AFSSAPS
w25	Bacterial and fungal dermatitis	CMIT
w26	Tuberculosis	Expert consensus
w27	Endocarditis	ESCMID
w28	Invasive meningococcal disease	DGS
w29	Cystitis	HAS
w30	Urethritis and cervicitis	HAS
w32	Infectious diarrhoea	CMIT
w33	Clostridioides difficile	ESCMID
w34	Parasitic intestinal disease	CMIT
w31	Pyelonephritis	HAS
w35	Nasopharyngitis, strep throat	HAS
w36	Nasopharyngitis, strep throat	HAS
w37	Otitis media	HAS
w38	Otitis media	HAS
w39	Sinusitis	HAS
w40	Sinusitis	HAS
w41	Erysipelas	HAS
w42	Erysipelas	HAS
w43	Impetigo	HAS

Abbreviations: AFSSAPS, Agence française de sécurité sanitaire des produits de santé (nowadays: ANSM, Agence nationale de sécurité du médicament); ANAES, Agence nationale d'accréditation et d'évaluation de la santé; CMIT, Collège des universitaires des maladies infectieuses et tropicales; CNGE, Collège national des généralistes enseignants; CNGOF, Collège national des gynécologues et obstétriciens français; CPGs, clinical practice guidelines; DGS, Direction générale de la santé; ESCMID, European Society of Clinical Microbiology and Infectious Diseases; GPIP, Groupe de pathologie infectieuse pédiatrique; HAS, Haute Autorité de Santé; HCSP, Haut Conseil de santé publique; IUSTI, International Union Against Sexually Transmitted Infections; SFD, Société Française de Dermatologie; SFMU, Société Française de Médecine d'Urgence; SFP, Société Française de Pédiatrie; SFR, Société Française de Radiologie; SPILF, Société de Pathologie Infectieuse en Langue Française.

TABLE 2 Detail of organisations emitting CPGs, sorted by type (for more clarity and detail, see List of abbreviations and acronyms).

Government organisations	Scientific societies	Colleges of Medicine
AFSSAPS	ESCMID	CMG
ANAES	GPIP	CMIT
DGS	IUSTI	CNGE
HAS	SFD	CNGOF
HCSP	SFMU	
	SFP	
	SFR	
	SPILF	

Abbreviations: AFSSAPS, Agence française de sécurité sanitaire des produits de santé (nowadays: ANSM, Agence nationale de sécurité du médicament); ANAES, Agence nationale d'accréditation et d'évaluation de la santé; CMIT, Collège des universitaires des maladies infectieuses et tropicales; CMG, Collège de Médecine Générale; CNGE, Collège national des généralistes enseignants; CNGOF, Collège national des gynécologues et obstétriciens français; CPGs, clinical practice guidelines; DGS, Direction générale de la santé; ESCMID, European Society of Clinical Microbiology and Infectious Diseases; GPIP, Groupe de pathologie infectieuse pédiatrique; HAS, Haute Autorité de Santé; HCSP, Haut Conseil de santé publique; IUSTI, International Union Against Sexually Transmitted Infections; SFD, Société Française de Dermatologie; SFMU, Société Française de Médecine d'Urgence; SFP, Société Française de Pédiatrie; SFR, Société Française de Radiologie; SPILF, Société de Pathologie Infectieuse en Langue Française.

quality guidelines, Antibioclic® website being administered by three scientific societies (SPILF, Collège de Médecine Générale and Collège national des généralistes enseignants**), which aim to provide the most up-to-date and relevant guidelines. This should consequently not alter our findings.

**For all abbreviations and acronyms: see detail in dedicated section in Abbreviations.

A limitation to our study could be related to the data collection process, which has been made in two stages, with an assessment carried out by two different panels. Still, a bias caused by the plurality of reviewers would be nondifferential. In addition, studies focusing on factors associated with high quality CPGs seem to indicate that publication year is not a significant factor.[6]

A weakness that can be pointed out is that of the use of AGREE II grid which, like any assessment tool, is imperfect. First, the assessment in itself is qualitative, without any weighting or prioritising of the assessed items. It is based on a subjective score, that everyone appropriates in their own way, and reviewers were not trained before its use. This potential measurement bias is reduced by the user manual that gives a detailed explanation of each item as well as the use of multiple reviewers. Moreover, agreement between reviewers was estimated by κ coefficient on overall assessment of 72%, which can be considered as good. Second, the 60% threshold that has been set to determine the guideline's quality may be considered as discretionary, all the more since the AGREE II manual states that no threshold should be ruled. However, the realisation of systematic reviews is an objective criteria that enables us to indirectly validate weakness of methodology for nearly three CPGs out of four.

Given the lack of quality that was observed at a global level in this study, we are unable to provide discernment between CPGs or organisations which would be more trustworthy than others. A more powerful study, led on a larger-scale for instance, could be contributive to determine factors associated with a more qualitative study.

TABLE 3 Number and ratio of CPGs reaching the 60% threshold, in each domain, according to AGREE II evaluation.

CPGs with score ≥ 60%	Number (n)	Ratio (%)
Domain 1 Scope and purpose	17	39.53
Domain 2 Stakeholder involvement	2	4.65
Domain 3 Rigour of development	**1**	**2.33**
Domain 4 Clarity of presentation	26	60.47
Domain 5 Applicability	0	0
Domain 6 Editorial independence	**3**	**6.98**
Overall score	1	2.33
Reliability score (D3 + D6)	**0**	**0**

Note: Bold values indicate necessary data for main outcome calculation (main results of our study).

Abbreviations: AGREE II, Appraisal of Guidelines for REsearch & Evaluation II; CPGs, clinical practice guidelines.

TABLE 4 Mean and SD, minimal and maximal score, in each domain, according to AGREE II evaluation.

	Average score (%)	SD	Minimal score (%)	Maximal score (%)
Domain 1: Scope and purpose	46	0.325	0	91
Domain 2: Stakeholder involvement	24	0.24	0	65
Domain 3: Rigour of development	11	0.04	0	60
Domain 4: Clarity of presentation	60	0.01	0	98
Domain 5: Applicability	31	0.015	0	58
Domain 6: Editorial independence	21	0.28	0	100
Overall score	29	0.16	0	72

Abbreviation: AGREE II, Appraisal of Guidelines for REsearch & Evaluation II.

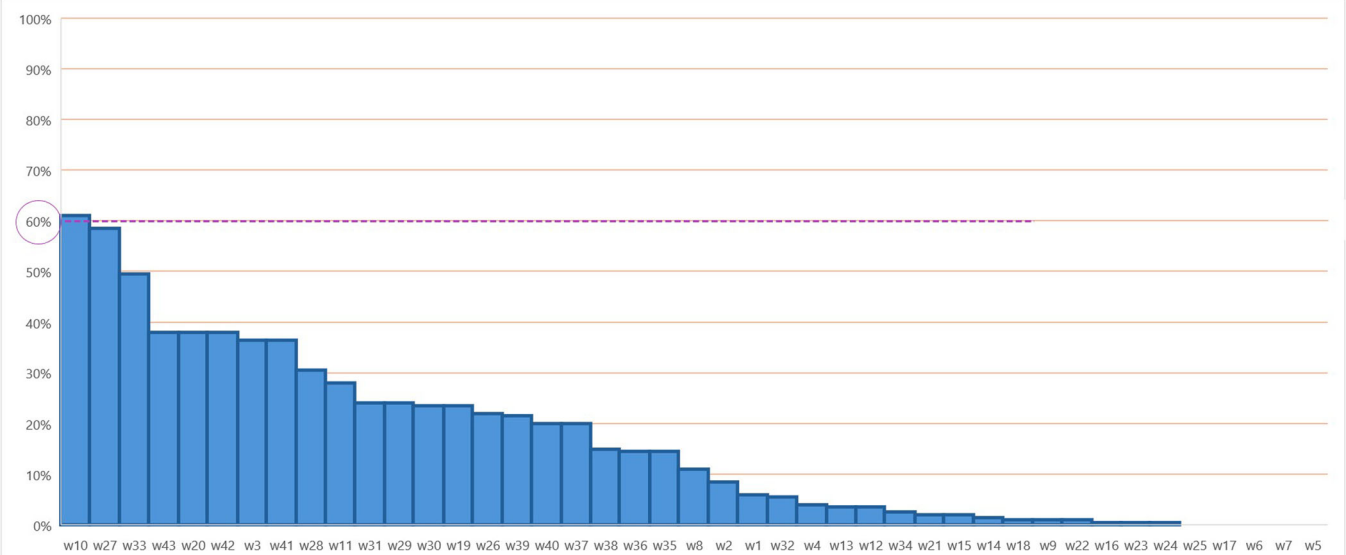

FIGURE 2 Distribution of average reliability scores.

AGREE II tool gives an assessment with regard to the CPG's development process and by no means to its scientific content in itself. A tool that would take into consideration these two dimensions could be interesting to develop.[11,22]

Lastly, although it may seem counter-intuitive, it should be noted that a CPG's internal validity is not always correlated to its methodological quality.[23] Therefore, even though important, AGREE II evaluation is in itself insufficient.[14]

4.3 | Perspectives

Quality of a guideline cannot be reduced to its methodology and its lack of conflict of interest. According to a study led by the Institute of Medicine (nowadays National Academy of Medicine), dealing with prerequisites in terms of quality of a guideline,[2] something to take into consideration is the type of studies referred to during its process: randomised controlled trials (RCTs), observational studies, meta-analyses of RCT, meta-analyses of observational studies. In particular, a CPG has a duty to cite meta-analyses of RCT from Cochrane library on the topic. A subsequent study could be made, comparing the existing Cochrane meta-analyses on a subject that should have been mentioned with those that are actually cited in CPGs. These issues will be explored in a further study, that is foreseen in the preregistration protocol.

Another important concept here is the level of evidence of the guideline, which differs depending on the type of study on which it relies.[24] We can mention the Grading of Recommendations, Assessment, Development and Evaluations system, which gives a frame to weigh guidelines: when the level of evidence is low, in most cases the guideline is conditional (it is 'suggested to'). This issue has to be balanced, based on whether it is a symptomatic treatment for instance, or conversely a paradigmatic situation for which urgent action is needed,[25,26] as for instance antibiotic therapy in bacterial meningitis.

Applicability in primary care is infrequently taken into consideration, or at least clearly outlined in the CPG, although in the opinion of GPs, it is a key element. As a matter of fact, if a guideline is based on studies conducted in secondary care (such as the hospital), GPs are less inclined to follow them.[27,28]

Moreover, the effect of a guideline on a target population's health is usually not evaluated, neither before nor after its publication. A CPG's enforcement can have negative consequences. One example is that of an American guideline that promoted the use of high-dose corticosteroids in patients with acute spinal cord injury in the 1990s, which led to an excess morbidity and mortality (over 5000 attributable deaths).[29,30] This observation raises the question of a systematic evaluation of CPGs. Such an evaluation could be required at the moment of publication of the document, as a part of the guideline itself.[31]

4.4 | Involvements

Practitioners need to be able to trust the quality of information they use for their patients.[17,32] CPGs must respect international quality standards.[2] To this end, the reliability issue is essential. A CPG may be scientifically accurate, but its development process may lack the rigour. What should we make of an applicable guideline, but which is not developed trustworthily? These findings suggest that current infectious disease guidelines could benefit from being revisited, with higher requirements as to their development process.

At present, at the international level, the different studies that have been conducted are consistent with insufficient methodological rigour and quality of CPGs. Practitioners who apply these guidelines should be aware of this statement, in order not to follow them blindly by virtue of their 'authority' status.[12,29] These results bring us to reflect on the position we want to accord guidelines in daily practice.

Finally, it is legitimate to delegate literature research and analysis work to experts that write CPGs, because practitioners don't have the time nor the skills to carry out this work. The minimum requirement is for these CPGs to be reliable, and that their authors conduct this work properly and independently. Our study shows that it is not the case in the field of primary care antibiotic therapy.

5 | CONCLUSIONS

Of all 43 guidelines that we collected and analysed, none achieved a reliability score over 60%. Results of this study suggest that current French guidelines in primary care infectious disease do not respect the international quality standards. Globally, in the field of infectious diseases, the CPGs' process of development should be reconsidered, with more emphasis on its quality. Authors should be free from any conflict of interest. The CPG should mention the completion of a systematic-review during its elaboration, as well as its interpretation.

ABBREVIATIONS

AGREE II	Appraisal of Guidelines for REsearch & Evaluation II
CPG	Clinical practice guideline
GRADE	Grading of Recommendations, Assessment, Development, and Evaluations
GP	General practitioner
IOM	Institute of medicine (nowadays National academy of medicine)
OSF	Open Science Framework
RCT	randomised controlled trial

COLLEGES OF MEDICINE

CMG	Collège de médecine générale
CMIT	Collège des universitaires des maladies infectieuses et tropicales
CNGE	Collège national des généralistes enseignants
CNGOF	Collège national des gynécologues et obstétriciens français

GOVERNMENT ORGANISATIONS

AFSSAPS	Agence française de sécurité sanitaire des produits de santé (nowadays : ANSM, Agence nationale de sécurité du médicament)

ANAES	Agence nationale d'accréditation et d'évaluation de la santé
DGS	Direction générale de la santé
HAS	Haute autorité de santé
HCSP	Haut conseil de santé publique

SCIENTIFIC SOCIETIES

ESCMID	European Society of Clinical Microbiology and Infectious Diseases
GPIP	Groupe de pathologie infectieuse pédiatrique
IUSTI	International union against sexually transmitted infections
SFD	Société française de dermatologie
SFMU	Société française de médecine d'urgence
SFP	Société française de pédiatrie
SFR	Société française de radiologie
SPILF	Société de pathologie infectieuse en langue française

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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