PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Multiplicity and complexity: a qualitative exploration of influences on prescribing in UK general practice
AUTHORS	Carter, Mary; Chapman, Sarah; Watson, Margaret

VERSION 1 – REVIEW

REVIEWER	Dr Samuel Finnikin University of Birmingham, England
REVIEW RETURNED	29-Jun-2020

GENERAL COMMENTS	This is an interesting and well written manuscript that tackles and important but complex problem. There have been lots of attempts to understand what influences medical decision making and the answer is not clear, but I think this makes a contribution to the literature in this area. My main criticism is perhaps that the scope of the research question was too large to be answered in this way. Prescribing decisions are so complex, and there are so many different decisions to be made in general practice, that by keeping the topic so broad you have, perhaps, been unable to draw firm conclusions. I have a couple of points the authors may want to consider, although I acknowledge they may represent my personal viewpoint rather than any technical or significant impediments to publication. Firstly, I felt there was a de facto assumption that PBPs have a role in influencing prescribing in general practice. I wonder if this assumption has been made prior to the study and, if it has, it isn't adequately explored or justified within the manuscript. The other point is again one of tone, and may reveal my own bias. However, I think it may be worth mentioning at some stage that guidelines aren't to be 'followed'. As Sir David Haslam put is "guidelines, not tramlines". It is prescribers duty to be aware of guidelines and apply them to the individual patient in front of them. Following guidelines implies that there is a wrong way and a right way, but it is rarely that straightforward. There are some decisions that could be identified as 'wrong'; buy the majority are more shades of grey. The manuscript reads in a way that suggests that if a guildine is not 'followed' then the prescriber is wrong and should be influenced into prescribing more appropriately. I think this could be toned down a bit to reflect reality. I wonder if you want to reflect a little more on the lack of variation in the characteristics of your participants? None of the GPs were recently qualified for example - do you think this would change your findings. In my experience, newly qualified GPs have very different

	views on prescribing decisions. One minor point in the tables, you're target recruitment matrix identifies =<10 and >10 years since qualification as characteristics you recruited for, but in the characteristics table, all the GPs are identified as being >5 years since registration. There is a discrepancy here in your group cutoff. Overall, I think this is interesting and I look forward to your further work exploring this area.

REVIEWER	Dr Rosemary Lim Reading School of Pharmacy, University of Reading, United Kingdom.
REVIEW RETURNED	21-Jul-2020

GENERAL COMMENTS	Thank you for the opportunity to review this manuscript that is likely to be of interest to an international readership. Please find my comments below that I hope would help to strengthen this manuscript further: The title could be more accurately describe the study – the setting was in England rather than UK. Abstract • Participants: were pharmacists and nurses non-medical prescribers (NMPs)? E.g. supplementary and/or independent for pharmacists and nurses? Nurses can also prescribe using the nurse formulary. There are different prescribing qualifications for nurses e.g. V150, V300 etc. Their scope of practice could influence their prescribing practice. • NHS employees is very broad – could this be more specific? • Ensure that the number of participants state here matches the results section. Results section states 23 interviews; 17 prescribers and 6 NHS informants, plus 1 focus group with 5 NHS informants. Introduction • Pg 3 line 31 – please update the statistics used. There are around 34000 nurse NMPs and 8000 pharmacist NMPs now in the UK. • Overall, I think the introduction could be more focused. Is the focus around prescribing using guidelines or prescribing in general? If it is about prescribing using guidelines and by implication evidence-based medicines (as the text appears to suggest), then perhaps there could be more discussion around the use of guidelines. If it is about prescribing in general, there could be inclusion/discussion of the prescribing competencies framework and various standards that prescribers are required to follow. More description about what prescribing involves including the types of guidelines, professional standards, policies, legal framework etc would be valuable. There could also be more discussion about NMPs/the specific types of prescribers you want to target e.g. what can they prescribe, are there any limits etc. • Provide more context to your study setting (national and local level) to inform the international reader – there are not that many countries with NMPs and the UK is one of the most ‘advanced’ in the world. • Perhaps also unclear, is the rationale for this study and why the three groups of professionals, why is it important to ask them about the role and potential of PBPs, why the need to speak with key informants. What is driving these questions? Perhaps this can be more clearly/explicitly articulated.

	• Can the authors discuss the theory(ies), if any, that underpinned the research design/study? Method • Study design section – provide more details about the design of the research here, rather than focus on the types of participants. Also, provide a rationale for using both interviews and focus groups. • Can the authors provide a rationale for the use of a 'target recruitment matrix', specifically in relation to the study design. • Where were these practices located in England? E.g. north, southeast, midlands etc? • Details of data collection could be clearer: who participated in the interviews and who took part in the focus groups? Were all the interviews one-to-one and via the telephone? It appears MC undertook all the interviews and the one focus group. NA supported the focus group only. Is this true? Perhaps the authors can make this much clearer in the manuscript. What were the backgrounds of the researchers e.g. were they pharmacists, academics, etc. What was the relationship, if any, with any of the participants? Did the researchers know any of the participants? What 'position' did the researchers take in the study? Data analysis • You mentioned 'both groups' – which groups are these? • Which analytical method was used to analyse the data? Was it interpretative or framework or thematic analysis - the description given does not make it clear? Refer also to the abstract where it was stated that thematic analysis was conducted. May I suggest referring to Braun and Clarke (2006) and this rich repository of materials relating to thematic analysis https://www.psych.auckland.ac.nz/en/about/thematic-analysis.html, or Ritchie and Spencer if you are using the framework method, or is it an interpretative approach e.g. IPA? • How were both sets of data treated – separately or combined? If combined, why, and how was this done? Results • This comment relates back to the study design – what was the rationale for some key informants to be interviewed and others to take part in a focus group? • Provide more information about the Clinical Pharmacists in GP programme – what kind of support does it provide? Would that have any influence on their prescribing practice? • What were the themes generated from the data analysis? It would be helpful to use these to describe your results. • The third objective of the paper was on the role and potential of PBPs – could there be a more in-depth description of what their current roles consist of? Discussion • I think the language used should be more accurate throughout e.g. 'nurses and pharmacists were found to be more likely to prescribe in accordance with the available evidence than GPs.' – is this true? Or were nurses and pharmacists perceive themselves to be following guidelines/evidence? Or did they say that they were following guidelines more than GPs? • Perhaps there could also be more justification/clearer rationale for suggestions e.g. 'strategies to increase the use of evidence-based guidelines should be tailored for different professional groups.'. It would be useful to know how professional groups are currently being

	encouraged to use guidelines. And if they don't, what are the specific reasons for it? Although the current study sought to identify influences on prescribing, it is not very clear whether there are different influences affecting medical and non-medical prescribers. This may be identified, and if so, may I suggest that these be more explicitly described in the results. For example, professional background was stated as an influence to prescribing – but what are the key components/elements about prescribers' background that needs to be targeted? Would these then be the way in which tailoring can be done, for example? • What are participants in this study more cautious about the PBP role? Could this be discussed in more depth – drawing from your results? What were their experiences? Implications for research and practice • It was not clear from the outset that the study was about the uptake of NICE guidelines to influence prescribing in general practice. Please ensure consistency and accuracy in reporting the aims and objectives. If it was about NICE guidelines, it would then also be key to ask participants about their perceptions of NICE, etc. Table 2 • Study no. – does this refer to participants?

REVIEWER	Dr Karen Hodson School of Pharmacy and Pharmaceutical Sciences, Cardiff University
REVIEW RETURNED	23-Jul-2020

GENERAL COMMENTS	Thank you for inviting me to review this interesting study; I really enjoyed reading it. I have a few minor comments to make regarding the paper and some minor typographical/grammatical suggestions are listed at the end. I apologise if the line numbering is one or two out, due to the way it has printed out at home. pg 2 line 31 I am unsure what "broader area levels" refers to and wondered if this term could be clarified. On pg 4 line 6 you mention individual, national and regional and local NHS roles which was easier to understand. Pg 3 line 31 I believe there are more current figures for the number of prescribers than those stated. The GPhC published a survey in 2016, which is currently not referenced, where they state that the numbers for pharmacists are: "As of the beginning of November 2015, there were 3944 annotated prescribers on the GPhC register, representing about eight per cent of the total number of pharmacists on our register. Of those, there were: • 2567 independent prescribers • 425 supplementary prescribers • 952 both independent and supplementary prescribers" (https://www.pharmacyregulation.org/sites/default/files/gphc_prescribers_survey_report.pdf) Pg 4, line 12; recruitment. It is unclear from the methodology how many potential interviewees were aimed for. The target sample matrix is provided but it is unclear how this was used. For example were you targeting recruiting all combinations? Further detail on this would be useful. See also comment Pg 10 line 17 Pg 4, line 45 On initial reading using the code AD for the researcher was confusing as they are not an author; it was not until the end of paper when reading the acknowledgements that it became apparent who AD was. Pg 5 line 16-18. This sentence suggests that all quotes will indicate a number of points. However only the participant number and role are stated alongside the quotes

	for the prescribers' perspective; although all points are stated for the key informants' perspective. Please amend the sentence to reflect what is presented. Pg 9 line 19. Please clarify was the opinion regarding favouring pharmacists within general practices, about favouring their placements in a single general practice as from the interviews some were based in just one practice and others were based across a number of practices. Pg 9, lines 45-49. Please provide more detail or examples of what the key informants meant by external services. Also I am unsure what you are trying to say in the last sentence of this section with respect to medicines optimisation. Please clarify for the reader. Pg 10, line 12. The text mentions that this current study has revealed conflicting attitudes about PBPs' contribution to evidence-based prescribing. Whilst the results demonstrate a variety of roles, I am not convinced from the results presented in the paper, that it reveals conflicting attitudes about evidence-based prescribing. Please review this section. Pg 10 line 17. In this section most prescribers were recruited from large practices (>10,000), however in the target recruitment matrix the criteria were small <5000 or medium/large >5,000. It seems the criteria used for reporting are different than those presented in Table 1. This is also similar to the years since qualification where in Table 1 it mentions 10 years, but in Table 2 the criteria is below or above 5 years. It is unclear the reasons for the matrix not being followed and I wondered if a comment regarding this could be incorporated into the final version. It is also mentioned within the text that most prescribers were from practices with lower level of deprivation (ie lower numbers indicate more deprivation), and yet in Table 2 there are 7 prescribers where IMD is <5, compared to 13 where IMD is >5. Pg 10 lines 24-25. Is it significant in the interpretation of the results whether the key informants had contact with general practice on a day-to-day basis? The factual information is stated but I am unsure if the writer believes this to be significant. Pg 19 Figure 1. Really liked this representation of the results. Typographical/Grammatical suggestions Pg 4 line 32, I wondered if an 'also' was required between who and led so it would read….. who also led the focus group Pg 4 line 53, I believe the brackets should be amended so that it is (SRQR guidelines) and not (SRQR) guidelines. Pg 6 line 16, I believe it should be individual prescribers' accumulated…. rather than prescriber's accumulated….. Pg 7, lines 13 and 14, I wonder if "noted by some as differing from close relationships in the past", should be replaced by "noted by some as being different from close relationships in the past" as I needed to reread the sentence a few times to understand what it was trying to say.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1				
1	This is an interesting and well written manuscript that	Our aim was to obtain and present an overview of		

	tackles and important but complex problem. There have been lots of attempts to understand what influences medical decision making and the answer is not clear, but I think this makes a contribution to the literature in this area. My main criticism is perhaps that the scope of the research question was too large to be answered in this way. Prescribing decisions are so complex, and there are so many different decisions to be made in general practice, that by keeping the topic so broad you have, perhaps, been unable to draw firm conclusions.	the impact of evidence and other factors in general practice prescribing, rather than investigate particular patient groups and medications, so a qualitative exploration was the most appropriate approach to adopt. We have **amended** the text in the Discussion\Principal findings section to amplify the complexity of this topic: This message is echoed in the Conclusion: *A multiplicity of influences impact prescribing in general practice and compete with guidance from NICE and other bodies.*	*this study highlighted a complex range of competing realities which impact on prescribers' abilities or inclination*	11 13
2	I felt there was a de facto assumption that PBPs have a role in influencing prescribing in general practice. I wonder if this assumption has been made prior to the study and, if it has, it isn't adequately explored or justified within the manuscript.	We have **amended** the text in the Abstract to reflect our exploration (rather than assumption) of the current/potential role of PBPs regarding prescribing in general practice	*This study explored …. (2) the possibility that general practice-based pharmacists (PBPs) may contribute to greater engagement with evidence-based prescribing.*	2
3	I think it may be worth mentioning at some stage that guidelines aren't to be 'followed'. As Sir David Haslam put is "guidelines, not tramlines". It is prescribers duty to be aware of guidelines and apply them to the individual patient in front of them. Following guidelines implies that there is a wrong way and a right way, but it is rarely that straightforward. There are some decisions that could be identified as 'wrong'; buy the majority are more shades of grey. The manuscript reads in a way that suggests that if a guildine is not 'followed' then the prescriber is wrong and should be influenced	We have **amended** the text in the Introduction to acknowledge the potential tension between following guidelines and applying clinical judgement in the interests of individual patients. We have **amended** the text in the Discussion\Comparison with existing literature section to address this comment We have acknowledged that guidelines are not universally comprehensive	*In accordance with major professional bodies, NICE endorses 'Medicines Optimisation' principle [12] which explicitly promote prescribing based on individual patient experience, evidence and safety, and encompass a possible tension between strict adherence to guidelines and clinician judgement in individual cases.* *Taking account of local demographics and providing patient-centred care may impact the professional's prescribing and perceptions about the appropriateness of guidelines.*	3 12 12

	into prescribing more appropriately. I think this could be toned down a bit to reflect reality.	or flawless in the Discussion\Strengths and Limitations section: *Research to explore the uptake of guidelines for specific medical conditions or to investigate prescribing in instances where evidence is unclear or existing guidelines are considered unhelpful, may provide different insights.*		
4	I wonder if you want to reflect a little more on the lack of variation in the characteristics of your participants? None of the GPs were recently qualified for example - do you think this would change your findings. In my experience, newly qualified GPs have very different views on prescribing decisions.	Although there were no newly-qualified GP participants there was variation in years since qualification as prescribers amongst PBPs and nurses, gender of participants and the location of their practice (this information is included in the tables). We have **added** work location to the information in Table 2. We have **added** information to Table 3 to show that all key informants were based in England (greater detail may compromise anonymity of participants) We have **amended** the text in Discussion\Strengths and Limitations to address the reviewer's comment about variation amongst GP participants	(Table 2, column 3) *Employer & work location* (Table 3, column 4) ***England*** *Prescribers in smaller general practices and in areas of greater deprivation and more varied experience may have provided ….*	6 6 1 1
5	One minor point in the tables, you're target recruitment matrix identifies =<10 and >10 years since qualification as characteristics you recruited for, but in the characteristics table, all the GPs are identified as being >5 years since registration. There is a discrepancy here in your group cutoff.	We apologise for the discrepancy between tables (years since qualification). We have **amended** figures in Table 2 to match the figures in Table 1.		6
Reviewer 2				
6	The title could be more	Although most participants		

	accurately describe the study – the setting was England rather than UK.	were from England, the study includes 1 participant from Scotland and 1 participant from Wales. We have **added** this information to Tables 2 and 3	(Table 2, column 3) *Employer & work location* (Table 3, column 4) *NHS level … **England***	6 6
7	Abstract Participants: were pharmacists and nurses non-medical prescribers (NMPs)? E.g. supplementary and/or independent for pharmacists and nurses? Nurses can also prescribe using the nurse formulary. There are different prescribing qualifications for nurses e.g. V150, V300 etc. Their scope of practice could influence their prescribing practice.	We aimed to recruit (i) medical and non-medical prescribers working in general practice and (ii) key informants. The non-medical, general practice prescribers we recruited were all independent prescribers Although we have had to summarise in the Abstract, we have **amended** the text in the Method\Recruitment, Results and Table 2 for consistency	*(METHOD)… elements were used to guide recruitment of (i) medical and non-medical prescribers in general practice.* *(RESULTS) Twenty-three interviews were completed with 6 GPs, 11 non-medical, independent prescribers (PBPs (n=6), nurses (n=5)) (Table 2) and six key informants…* *All PBPs and nurses were independent prescribers*	4 5 6
8	Abstract NHS employees is very broad – could this be more specific?	We have **amended** the text in the Abstract to clarify We have **added to** the description of key informants in the Method\Recruitment section.	*Individuals within the National Health Service (NHS) with responsibility for influencing, monitoring and measuring general practice prescribing.* *(ii) key informants working at local (one clinical commissioning group (CCG)), regional (across CCGs) and national NHS levels*	2 4
9	Abstract Ensure that the number of participants state here matches the results section. Results section states 23 interviews; 17 prescribers and 6 NHS informants, plus 1 focus group with 5 NHS informants.	We have **checked** that the number of participants in the Abstract and Results section match		2, 5
10	Introduction Pg 3 line 31 – please update the statistics used. There are around 34000 nurse	We have **amended** the text in the Introduction and **added** updated figures and references	*Currently there are approximately 48,000 nurse (independent or supplementary) prescribers [14] and 9,000 pharma*	3

	NMPs and 8000 pharmacist NMPs now in the UK.		*cist independent prescribers* [15]	
11	Introduction Overall, I think the introduction could be more focused. Is the focus around prescribing using guidelines or prescribing in general? If it is about prescribing using guidelines and by implication evidence-based medicines (as the text appears to suggest), then perhaps there could be more discussion around the use of guidelines. If it is about prescribing in general, there could be inclusion/discussion of the prescribing competencies framework and various standards that prescribers are required to follow. More description about what prescribing involves including the types of guidelines, professional standards, policies, legal framework etc would be valuable. There could also be more discussion about NMPs/the specific types of prescribers you want to target e.g. what can they prescribe, are there any limits etc.	We have reviewed the text in the Introduction and **added** to the text to clarify the focus and emphasise that the article is about the influences on prescribing, including guidelines as an important factor We have **added** to the text in the Introduction to include more informatio n about medical prescribers and NMPs	*This study investigated influences (including the use of guidelines) on prescribing and the PBPs' potential to optimise the use of evidence in prescribing in general practice.* *In contrast with most other countries, non-medical prescribing is a key feature of UK healthcare [13]. Whereas prescribing is embedded in undergraduate and postgraduate medical curricula, non-medical professionals undertake additional training to prescribe within their scope of competency.*	3 3
12	Introduction Provide more context to your study setting (national and local level) to inform the international reader – there are not that many countries with NMPs and the UK is one of the most 'advanced' in the world.	We have **amended** the text in the Introduction to provide context to our setting (see responses to comments 10 and 11)		3
13	Introduction Perhaps also unclear, is the rationale for this study and why the three groups of professionals, why is it important to ask them about the role and potential of PBPs, why the need to speak with key informants. What is driving these questions? Perhaps this can be more	We have **amended** the text in the Article Summary to emphasise the rationale for the study and to improve consistency in language The revised text in the Introduction (see responses to comments 10-12)	• *This study explored a range of perspectives, including:* ○ *Medical and non-medical professionals prescribing in general practice (doctors, ph*	3

	clearly/explicitly articulated.	highlights the difference in routes to prescribing between GPs and other healthcare professionals	○ *armacists a nd nurses)* *Key informants working at various NHS levels who are influencing, monitoring and measuring general practice prescribing*	
14	Introduction Can the authors discuss the theory(ies), if any, that underpinned the research design/study?	We have **added** text in Method\Study design section to indicate our theoretical underpinnings	*The study adopted pragmatist principles [16], seeking to gain a practical understanding of participants' experience of prescribing; data collection methods (interviews and focus group) suited to eliciting knowledge based on experience reflected this epistemological underpinning.*	3
15	Method Study design section – provide more details about the design of the research here, rather than focus on the types of participants. Also, provide a rationale for using both interviews and focus groups.	We have **added** text in Method\Study design section to address both parts of this comment (see response to comment 14 also)	*To encourage participation, participants were offered either a telephone or face-to-face interview. As a further boost to recruitment and to encourage an exchange of perspectives and experiences between key informants [17] …*	3
16	Method Can the authors provide a rationale for the use of a 'target recruitment matrix', specifically in relation to the study design.	We have **amended and added** text in Method\Recruitment to explain the use of a target recruitment matrix	*Individual and practice characteristics reported to influence prescribing (e.g. experience [19] and patient profile [20]) were included in a sample matrix (Table 1). Matrix elements were used to guide recruitment of (i) medical and non-medical prescribers in general practice and (ii) key informants working at local, regional and national NHS levels in roles connected with general practice prescribing. Recruitment ceased when all the matrix elements were addressed.*	4
17	Method Where were these practices	We have **added** work location to the information	(Table 2, column 3) *Employer & work location*	6

	located in England? E.g. north, southeast, midlands etc?	in Table 2. We have **added** work location to the information in Table 3.	(Table 3, column 4) *NHS level & **England***	6
18	Method Details of data collection could be clearer: who participated in the interviews and who took part in the focus groups? Were all the interviews one-to-one and via the telephone? It appears MC undertook all the interviews and the one focus group. NA supported the focus group only. Is this true? Perhaps the authors can make this much clearer in the manuscript. What were the backgrounds of the researchers e.g. were they pharmacists, academics, etc. What was the relationship, if any, with any of the participants? Did the researchers know any of the participants? What 'position' did the researchers take in the study?	Thank you for this comment, which has prompted us to check the article against COREQ guidelines. We have made the following additions/amendments in response to this comment: We have **amended** text in Method\Data collection (paragraph 1) to clarify We have **added** text in Method\Data collection (paragraph 2) to clarify We have **added** to the Method\Data analysis section to clarify the experience and position of the researchers. We have **added** COREQ to SRQR in the text at the Method section (including reference to COREQ)	*The topic guides (interview for prescribers and interview/focus group for key informants) (see Supplementary Information)* *All one-to-one interviews were conducted by telephone by one researcher (MC). MC led the focus group, supported by a facilitator (NA)* *Both MC and AD had previously conducted qualitative research with general practices, but neither was a pharmacist or prescriber. Two interviewees were known professionally to MC prior to participating.* *This report conforms to the Standards for Reporting Qualitative Research (SRQR) 24 and Consolidated Criteria for Reporting Qualitative Research (COREQ) [25] guidelines*	4 4 5 5
19	Analysis You mentioned 'both groups' – which groups are these?	We have **added** text in the Method\Data analysis section	*… interview and focus group participants (prescribers and key informants)*	5
20	Analysis Which analytical method was used to analyse the data? Was it interpretative or framework or thematic analysis - the description given does not make it clear? Refer also to the abstract where it was stated that thematic analysis was conducted. May I suggest referring to Braun and Clarke (2006) and this rich repository of materials relating to thematic analysis (thematic analysis link) or	We have added detail to the text in Method\Data analysis section to include more detail about thematic analysis undertaken	*Codes about the influences on prescribing and the PBP's role were generated using reflexive thematic analysis techniques [23] by which participants' experiences and perceptions were understood and categorised.*	5

	Ritchie and Spencer if you are using the framework method, or is it an interpretative approach, e.g. IPA?			
2 1	Analysis How were both sets of data treated – separately or combined? If combined, why, and how was this done?	We have **amended** text in the Method\Data analysis section to clarify analysis of the data	*Data were analysed interpretatively [22] in two groups 1) from interviews with prescribers and 2) from interviews and focus group for key informants. Topic guides included the same areas of investigation and allowed common features and themes between the groups to be identified.*	5
2 2	Results This comment relates back to the study design – what was the rationale for some key informants to be interviewed and others to take part in a focus group?	We have **amended** text in Method\Study design section to provide more detail about the study design	*Data collection methods (interviews and focus group) well-suited to elicit knowledge from the participants that was based on their experience were adopted, reflecting pragmatist epistemological principles [16]. To encourage participation, participants were offered either a telephone or face-to-face interview. As a further boost to recruitment and to encourage an exchange of perspectives and experiences between key informants [17], members of a Regional Medicines Optimisation Committee comprising five members were invited to attend a focus group as an adjunct to one of their half-yearly meetings.*	3
2 3	Results Provide more information about the Clinical Pharmacists in GP programme – what kind of support does it provide? Would that have any influence on their prescribing practice?	We have **amended** the text in the Discussion\Comparison with existing literature section to emphasise that the NHS England scheme included training and support, and that these aspects are important influences on pharmacist prescribers	*PBPs who had been part of the NHS England Clinical Pharmacists in General Practice scheme [26 39] were positive about the associated training, support and networking opportunities and these have previously been identified as important factors which optimise the complementary skills of prescribers from a pharmacy background*	1 2
2 4	Results What were the themes generated from the data analysis? It would be helpful to use these to describe your results	We have **added** to the text in the first paragraph of the Results section to confirm the results are organised in themes We	*The results are presented under theme headings in three sections* (e.g.) **Summary of prescribers' perspectives (themes in bold**	5 7, 9

		have **amended (embolde ned)** the text in the Results\Summary of prescribers' perspectives and Summary of key informants' perspectives to reiterate the text in the first paragraph	**text)** Prescribers acknowledged that **guidelines** from NICE and other bodies were a predominant influence on their prescribing. They also discussed the impact of their **professional background** …	
25	Results The third objective of the paper was on the role and potential of PBPs – could there be a more in-depth description of what their current roles consist of?	We have **added** to the text in the Results section to include an indication of current roles (word count does not allow a more detailed description).	*PBPs' current roles varied, but most included responsibility for medicines reviews, repeat prescriptions and some audit work.*	5
26	Discussion I think the language used should be more accurate throughout e.g. 'nurses and pharmacists were found to be more likely to prescribe in accordance with the available evidence than GPs.' – is this true? Or were nurses and pharmacists perceive themselves to be following guidelines/evidence? Or did they say that they were following guidelines more than GPs?	We have amended the text in the Discussion\Comparison with existing literature section to echo text in the Results section	*…nurses and pharmacists were perceived by themselves, GPs and key informants as more likely to prescribe in accordance with the available evidence than GPs'*	12
27	Discussion Perhaps there could also be more justification/clearer rationale for suggestions e.g. 'strategies to increase the use of evidence-based guidelines should be tailored for different professional groups.'. It would be useful to know how professional groups are currently being encouraged to use guidelines. And if they don't, what are the specific reasons for it? Although the current study sought to identify influences on prescribing, it is not very clear whether there are different influences affecting medical and non-medical prescribers. This may be identified, and if so, may I	We have **amended** the text in the Discussion\Comparison with existing literature section to address this comment and indicate the differences between medical and non-medical prescribers in terms of training and scope of prescribing.	*This suggests that strategies to increase evidence-based prescribing should be tailored for professional groupings and reflect their different routes to acquiring prescribing skills. Differences in the scope of prescribing routinely undertaken by medical and non-medical prescribers should also be considered.*	12

	suggest that these be more explicitly described in the results. For example, professional background was stated as an influence to prescribing – but what are the key components/elements about prescribers' background that needs to be targeted? Would these then be the way in which tailoring can be done, for example?			
28	Discussion What are participants in this study more cautious about the PBP role? Could this be discussed in more depth – drawing from your results? What were their experiences?	We have **amended** the text in the Discussion\Principal findings section to clarify and add detail about this point.	*…this study has revealed some caution (especially amongst GPs) about the potential for increasing PBPs' impact on general practice prescribing*	11
29	Implications for research and practice It was not clear from the outset that the study was about the uptake of NICE guidelines to influence prescribing in general practice. Please ensure consistency and accuracy in reporting the aims and objectives. If it was about NICE guidelines, it would then also be key to ask participants about their perceptions of NICE, etc.	We have **amended** and **deleted** text in the Discussion\Implications for research & practice section to improve consistency between objectives and conclusions in the article	*This study has demonstrated a range of complex and overlapping factors…*	12
30	Table 2 Study no. – does this refer to participants?	We have **amended** column heading *Study no.* in Tables 2 & 3	*Participant no.*	6
Reviewer 3				
31	pg 2 line 31 I am unsure what "broader area levels" refers to and wondered if this term could be clarified. On pg 4 line 6 you mention individual, national and regional and local NHS roles which was easier to understand.	We have **amended** the text in the Abstract to clarify (The l*ocal, regional and national levels* mentioned on page 4 refers to the work situations of the key informants)	*Determinants operating at individual, practice and societal levels impacted prescribing and guideline use.*	2 4
32	Pg 3 line 31 I believe there are more current figures for the number of prescribers than those	We have **amended** the text in the Introduction and **added** updated figures and references	*Currently there are approximately 48,000 nurse (independent or supplementary) prescribers [14] and 9,000 pharma*	3

	stated. The GPhC published a survey in 2016, which is currently not referenced, where they state that the numbers for pharmacists are: "As of the beginning of November 2015, there were 3944 annotated prescribers on the GPhC register, representing about eight per cent of the total number of pharmacists on our register. Of those, there were: • 2567 independent prescribers • 425 supplementary prescribers • 952 both independent and supplementary prescribers" (pharmacist prescriber numbers)		*cist independent prescribers* [15]	
33	Pg 4, line 12; recruitment. It is unclear from the methodology how many potential interviewees were aimed for. The target sample matrix is provided but it is unclear how this was used. For example were you targeting recruiting all combinations? Further detail on this would be useful. See also comment Pg 10 line 17	We have **amended** the text in Method\Recruitment to explain use of the target sample matrix	*Individual and practice characteristics reported to influence prescribing (e.g. experience* [19] *and patient profile* [20]*) were included in a sample matrix (Table 1). Matrix elements were used to guide recruitment of (i) medical and non-medical prescribers in general practice and (ii) key informants working at local, regional and national NHS levels in roles connected with general practice prescribing. Recruitment ceased when all the matrix elements were addressed.*	4
34	Pg 4, line 45 On initial reading using the code AD for the researcher was confusing as they are not an author; it was not until the end of paper when reading the acknowledgements that it became apparent who AD was.	We have **added** brief information for NA in the Method\data collection section We have **added** brief information for AD in the Method\data analysis section We have **added** initials to the names included in Acknowledgements	*(NA, post-doctoral researcher)* *(AD, PhD student)* *We would like to thank our participating investigators: Dr Nour Alhusein (NA) … Antoinette Davey (AD)*	4 5 14
35	Pg 5 line 16-18. This sentence suggests that all	We have **added** text in Results to address this	*For key informants the NHS level at which s/he worked and I-*	5

	quotes will indicate a number of points. However only the participant number and role are stated alongside the quotes for the prescribers' perspective; alt hough all points are stated for the key informants' perspective. Please amend the sentence to reflect what is presented.	comment	*interview or FG-focus group is indicated.*	
36	Pg 9 line 19. Please clarify was the opinion regarding favouring pharmacists within general practices, about favouring their placements in a single general practice as from the interviews some were based in just one practice and others were based across a number of practices.	We have **amended** text in Results\Key informants' perspectives to confirm that some participants believed that PBPs were best placed across a number of practices	*Some believed that PBPs' skills and time may be most effectively used within the emerging primary care networks, in which groups of practices are working together to provide a range of healthcare services for the local population*	11
37	Pg 9, lines 45-49. Please provide more detail or examples of what the key informants meant by external services. Also I am unsure what you are trying to say in the last sentence of this section with respect to medicines optimisation. Please clarify for the reader.	We have **amended** the text in the Results\Comparison section to explain 'external services' and also to simplify the last sentence about medicines optimisation.	*…key informants highlighted the effect of NHS organisational policies and the availability of external support (e.g. from secondary care). Key informants mentioned universal problems with medicines (e.g. polypharmacy) and the benefits of medicines optimisation principles for patient outcomes.*	11
38	Pg 10, line 12. The text mentions that this current study has revealed conflicting attitudes about PBPs' contribution to evidence-based prescribing. Whilst the results demonstrate a variety of roles, I am not convinced from the results presented in the paper, that it reveals conflicting attitudes about evidence-based prescribing. Please review this section.	We have **amended** the text in the Results\Prescriber perspectives\PBP roles section to address this comment and emphasise that GPs in particular were cautious about PBPs' potential. We have **amended** the text in the Discussion\Principal finding section to reflect the results	*Although other prescribers often mentioned the positive impact of PBPs' complementary knowledge and skills, some GPs were cautious about PBPs' potential impact on prescribing in general practice* *…this study has revealed some caution (especially amongst GPs) about the potential for increasing PBPs' impact on general practice prescribing*	9 11
39	Pg 10 line 17. In this section most prescribers were recruited from large practices (>10,000), however in the target recruitment matrix the criteria were small <5000 or	We apologise for the discrepancy between tables (years since qualification). We have **amended** figures in Table 2 to match the figures in Table 1.	*Whilst prescribers were evenly drawn from the different professional groups identified at*	6 11

	medium/large >5,000. It seems the criteria used for reporting are different than those presented in Table 1. This is also similar to the years since qualification where in Table 1 it mentions 10 years, but in Table 2 the criteria is below or above 5 years. It is unclear the reasons for the matrix not being followed and I wondered if a comment regarding this could be incorporated into the final version. It is also mentioned within the text that most prescribers were from practices with lower level of deprivation (ie lower numbers indicate more deprivation), and yet in Table 2 there are 7 prescribers where IMD is <5, compared to 13 where IMD is >5.	We have **amended** text in Discussion\Strengths & Limitations to confirm that most prescribers were recruited from practices with medium/large list sizes	*the study outset, most were from practices with medium to large list sizes (>5,000 patients) and with less deprivation (>5)*	
40	Pg 10 lines 24-25. Is it significant in the interpretation of the results whether the key informants had contact with general practice on a day-to-day basis? The factual information is stated but I am unsure if the writer believes this to be significant.	Although it was important to include and reflect a range of key informants and responsibilities, data analysis has not revealed key discrepancies based on participants' contact with general practices We have **amended** and **removed** text in the Discussion\Strengths and limitations section to reflect the range of participants but not emphasise their contact with general practices.	*Key informant participants were working at various levels within the NHS and encompassed a broad range of roles and perspectives.*	12
41	Pg 19 Figure 1. Really liked this representation of the results.	**Thank you!**		
42	Pg 4 line 32, I wondered if an 'also' was required between who and led so it would read….. who also led the focus group	We have **amended** text in Method\Data collection	*All interviews were conducted by telephone by one researcher (MC), who also led the focus group*	4
43	Pg 4 line 53, I believe the brackets should be amended so that it is	We have **amended** text in Method\Data analysis	*Standards for Reporting Qualitative Research (SRQR)* [24]	5

	(SRQR guidelines) and not (SRQR) guidelines.			
44	Pg 6 line 16, I believe it should be individual prescribers' accu mulated…. rather than prescriber's accumulated…..	We have **amended** text in Results\Prescribers' perspectives	*Individual prescribers'* accumulated experience	8
45	Pg 7, lines 13 and 14, I wonder if "noted by some as differing from close relationships in the past", should be replaced by "noted by some as being different from close relationships in the past" as I needed to reread the sentence a few times to understand what it was trying to say.	We have **amended** text in Results\ Prescribers' perspectives	*noted by some as being different from close relationships in the past*	9

VERSION 2 – REVIEW

REVIEWER	Dr Samuel Finnikin University of Birmingham, England
REVIEW RETURNED	17-Nov-2020

GENERAL COMMENTS	Thank you for asking me to review the revised version of this manuscript. I have looked at the responses to my original comments and the revised manuscript. I reference the numbered reviewer's comments in this review: Comment 1: I understand the justification for your methods and accept it is an appropriate approach to adopt. Comment 2: I think the new phrasing is better Comment 3: I am still a bit uncomfortable with the way you have framed the 'tension' or 'competition' [the word compete is used in the conclusion] between guidelines and prescribing. I still don't think that the paper acknowledges that some prescribing is inconsistent with guidelines but that this is ok if the decision has been made in full knowledge of the guidelines and through a process of shared decision making. This is not a tension, guidelines (from NICE at least) specifically state that this is how they should be used: "When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian. " Guidelines are not there to be 'adhered to' and phrases like this are unhelpful in providing personalised care to individuals. I think further work needs to be done to express the nuance of 'evidence based' prescribing. Comment 4: Thank you for acknowledging that more varied experience may be useful, but is it possible to expand on the impact that having no GPs with <10 years experience. Why did you include this in your recruitment matrix? If you thought it may influence

	opinions then the lack of participants from this group is important. You could add the actual years of experience into the table (rather than just >10) to demonstrate the spread of experience - this would be more helpful. Comment 5: I think there may be an error in table 2; P29 has years of experience of <5 when I think it should read <10. Additionally in the recruitment matrix, you talk of small (<5000) and medium/large (>5000) practices, but in table 2 you categorise practices as either 5000-10000 or >10000 - is this an error? Sorry if I didn't pick up on this in the first review. Comment 6: Thank you for clarifying

REVIEWER	Rosemary Lim University of Reading
REVIEW RETURNED	23-Nov-2020

GENERAL COMMENTS	The authors have addressed the reviewers' comments.

REVIEWER	Dr Karen Hodson Cardiff University, UK
REVIEW RETURNED	01-Dec-2020

GENERAL COMMENTS	Thank you for allowing me the opportunity to review this manuscript again. I believe the authors have addressed the initial reviewers' comments. I have no further comments myself except to congratulate the authors on an interesting study.

VERSION 2 – AUTHOR RESPONSE

We would like to thank Dr Finnikin for taking the time to provide further feedback				
	Reviewer's comment	**Response**	**Additional or amended text**	**Page in clean document**
1	(Referring to comment 3 in original review) I am still a bit uncomfortable with the way you have framed the 'tension' or 'competition' [the word compete is used in the conclusion] between guidelines and prescribing. I still don't think that the paper acknowledges that some prescribing is inconsistent with guidelines but that this is ok if the decision has been made in full knowledge of the guidelines and through a process of shared	We recognise that we did not fully address your concerns in the updated version of the paper. We have now made several **alterations to** the text to reflect a more nuanced view of guidelines and their relationship with other influences on prescribing.	*Prescribing in UK general practice is influenced by multiple intersecting factors.* *These explicitly promote prescribing based on individual patient experience, evidence and safety and highlight a balance between strict observance of guidelines and clinician judgement for individual patients.* *… this study highlighted a complex range of intersecting factors …* *This study explored the use of guidelines in general and the factors*	P2 P3 P11 P12 P12

	decision making. This is not a tension, guidelines (from NICE at least) specifically state that this is how they should be used: "When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian. " Guidelines are not there to be 'adhered to' and phrases like this are unhelpful in providing personalised care to individuals. I think further work needs to be done to express the nuance of 'evidence based' prescribing.		*which intersect with them to influence general practice prescribing.* *This study identified several influences which general practice prescribers balance with the evidence-based approach promoted in guidelines when making prescribing decisions, in particular their own professional background.* *This study has demonstrated a range of complex and intersecting factors that affect prescribing in general practice* *A multiplicity of influences impact prescribing in general practice and intersect with guidance …*	P12 P13
2	(Referring to comment 4 in original review) Thank you for acknowledging that more varied experience may be useful, but is it possible to expand on the impact that having no GPs with <10 years experience. Why did you include this in your recruitment matrix? If you thought it may influence opinions then the lack of participants from this group is important. You could add the actual years of experience into the table (rather than just >10) to demonstrate the spread of experience - this	We have **added** the actual years since registration for each participating GP in Table 2 We have also **added** to the text in the Discussion, Strengths and Limitations section to acknowledge this limitation in our sample of prescribers.	Table 2 – actual years since qualification (GPs) added *All GPs recruited to the study had several years of experience. Prescribers in smaller general practices, in areas of greater deprivation and with less experience may have provided additional insights….*	6 11

	would be more helpful.			
3	(Referring to comment 5 in original review) I think there may be an error in table 2; P29 has years of experience of <5 when I think it should read <10. Additionally in the recruitment matrix, you talk of small (<5000) and medium/large (>5000) practices, but in table 2 you categorise practices as either 5000-10000 or >10000 - is this an error? Sorry if I didn't pick up on this in the first review.	Thank you for spotting the discrepancy about practice size between Tables 1 & 2. We have **amended** the information in Tables 1 and 2 so that it is the same in both. We have also **corrected** the error (P29) in Table 2**.**	Table 1, practice size (patient list) *Small (< 5000 patients)* *Medium (5000 - ≤ 10000 patients)* *Large (> 10000 patients)* Table 2, practice list size (for P10, P12, P13, P14, P18, P32) *5000 – ≤ 10,000* Table 2, years since registration *(P29) < 10*	4 6 6

VERSION 3 – REVIEW

REVIEWER	Dr Sam Finnikin University of Birmingham, UK
REVIEW RETURNED	15-Dec-2020

GENERAL COMMENTS	Thank you for considering my previous comments in this revision. The authors have made changes to the manuscript which answer my previous concerns adequately.