BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2019-031360
Article Type:	Research
Date Submitted by the Author:	30-Apr-2019
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Keywords:	QUALITATIVE RESEARCH, Back pain < ORTHOPAEDIC & TRAUMA SURGERY, Musculoskeletal disorders < ORTHOPAEDIC & TRAUMA SURGERY, Shoulder < ORTHOPAEDIC & TRAUMA SURGERY

Physiotherapists' views on Choosing Wisely recommendations

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ABSTRACT

Objectives: Choosing Wisely holds promise for increasing awareness of low-value care in physiotherapy. However, it is unclear how physiotherapists' view Choosing Wisely recommendations. The aim of this study was to evaluate physiotherapists' feedback on Choosing Wisely recommendations and investigate agreement with each recommendation.

Setting: The Australian Physiotherapy Association emailed a survey to all 20,029 physiotherapist members in 2015 seeking feedback on a list of Choosing Wisely recommendations.

Participants: 9,764 physiotherapists opened the email invitation (49%) and 543 completed the survey (response rate 5.6%). Participants were asked about the acceptability of the wording of recommendations using a closed (Yes/No) and free text response option. Then using a similar response format, participants were asked whether they agreed with each Choosing Wisely recommendation.

Primary and secondary outcomes: We performed a content analysis of free-text responses (primary outcome) and used descriptive statistics to report agreement and disagreement with each recommendation (secondary outcome).

Results: There were 872 free-text responses across the six sections. The content analysis revealed that physiotherapists felt that blanket rules were inappropriate (range across recommendations: 13.9% to 30.1% of responses), clinical experience is more valuable than evidence (11.7% to 28.3%) and recommendations would benefit from further refining or better defining key terms (7.3% to 22.4%). 347 physiotherapists (63.9%) agreed with the "don't" style of wording. Agreement with recommendations ranged from 52.3% (electrotherapy for back pain) to 76.6% (validated decision rules for imaging).

Conclusions: Although most physiotherapists agreed with both the style of wording for Choosing Wisely recommendations and with the recommendations, their feedback

highlighted a number of areas of disagreement and suggestions for improvement. These findings will support the development of future recommendations and are the first step towards increasing the impact Choosing Wisely has on physiotherapy practice.

Key words: physiotherapy; Choosing Wisely; low-value care; qualitative; content analysis.

Strengths and limitations of this study

- This is the first study to explore physiotherapists views on Choosing Wisely recommendations
- Level of agreement between the two researchers coding responses from physiotherapists ranged from ‘substantial’ to ‘almost perfect’
- Our qualitative data is robust and highlights possible targets to increase adoption of Choosing Wisely recommendations among physiotherapists
- The main weakness is the low response rate to the survey (5.6%)
- Our sample might not be representative of all physiotherapist members of the Australian Physiotherapy Association

1. Introduction

Low-value care is defined as care that provides no benefit, causes harm, or provides a benefit that is too small when compared with its cost (1). In an effort to reduce low-value care, over 230 professional societies worldwide – such as the Australian Physiotherapy Association – have provided Choosing Wisely recommendations (2, 3). Choosing Wisely is a major public awareness campaign that aims to facilitate open patient-therapist communication about low-value care and ensure patients receive healthcare that is evidence-based, safe and necessary. Professional societies that endorse Choosing Wisely typically release a list of 5-10 Choosing Wisely recommendations. Choosing Wisely recommendations are brief statements that outline tests or treatments that are unnecessary and potentially harmful, and are likely provided by some society members.

Choosing Wisely holds promise for increasing awareness of the need to reduce low-value care in physiotherapy. This is particularly important as the profession is rapidly expanding across countries. In Australia, the number of physiotherapists has nearly tripled in just under 20 years (4, 5) and there are now more practising physiotherapists than any medical specialty (including general practice) (6, 7). In the United States, there are nearly 250,000 physical therapists, 250 physical therapy training programs (8) and the number of physical therapists is estimated to grow 29% within the next 10 years (9).

Audits of practice suggest that some physiotherapists provide low-value care and fail to provide evidence-based care. For example, 77% use traction for low back pain (survey of n=1001 physiotherapists) (10) and 83% use electrotherapy (e.g. ultrasound) (n=274) (11); both are considered low-value according to evidence-based clinical practice guidelines (12). Conversely, only 42% would provide advice to stay active and 51% prescribe home exercise for patients with chronic low back pain (n=410) (13); both recommended in guidelines (12).

Understanding physiotherapists' views towards adopting Choosing Wisely recommendations could inform strategies to replace low-value physiotherapy with evidence-based physiotherapy. Given that physiotherapists play a key role in the management of some of the leading causes of disability worldwide (e.g. low back and neck pain) (14), facilitating evidence-based physiotherapy has major implications for reducing healthcare costs and improving the health of millions. The primary aim of this study was to evaluate physiotherapists' feedback on a list of Choosing Wisely recommendations that were sent to members of the Australian Physiotherapy Association before final recommendations were endorsed and distributed. The secondary aim was to determine the proportion of physiotherapists that agreed and disagreed with each recommendation.

2. Methods

2.1. Study design

We performed a content analysis of free-text responses from members of the Australian Physiotherapy Association regarding a list of Choosing Wisely recommendations. The University of Sydney Human Research Ethics Committee approved all study procedures [Project number: 2018/518].

2.2. Participants and recruitment

In November 2015, the Australian Physiotherapy Association sent an email invitation to 20,029 physiotherapist members seeking feedback on a draft list of Choosing Wisely recommendations (15). Participants were informed that the Australian Physiotherapy Association would use their feedback to improve the Choosing Wisely recommendations. All responses were anonymous as participants were not asked to provide any identifiable information (e.g. age, gender, contact details). The draft Choosing Wisely recommendations were largely similar to the current recommendations (Supplementary Table 1).

2.3. Data collection

The survey included six sections; each section included a recommendation that was linked to a question (see Supplementary Table 2). First, participants were shown a Choosing Wisely recommendation from the American Physical Therapy Association: *"Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program"*. Participants were asked whether the style of wording (i.e. using "Don't") was an acceptable method for engaging the physiotherapy profession in discussions about evidence-based practice. Participants could answer 'Yes' or 'No' (or choose not to answer) and provide feedback in a free-text field. The next five sections presented draft Choosing Wisely recommendations from the Australian Physiotherapy Association. Participants were shown a recommendation and a brief explanatory note to help them understand why the Australian Physiotherapy Association selected the recommendation. Participants were then asked if they agreed with the recommendation (Yes/No/No answer) and were prompted to provide feedback in a free-text field.

2.4. Analysis

We used descriptive statistics (counts and percentages) to report agreement with each question and performed a content analysis on all free-text responses (16). The content analysis allowed us to report the content and frequency of codes expressed in responses; a code is a pre-established category which reflects an important characteristic of a response. The analysis represents the perspectives of physiotherapists working in an academic healthcare setting and private musculoskeletal clinics. Two researchers (JZ and AP) read through all the responses to familiarise themselves with their content, taking notes about key characteristics of responses. The same researchers discussed and refined the characteristics into codes (separately for each question), and re-read through all the responses to ensure the codes captured all the important information expressed by participants. The researchers (JZ and AP) then developed a coding framework and applied it to a random sample of responses

for each question (at least 20%) to test the reliability of the framework. Each response was allocated up to five codes based on its content.

Kappa statistics (95% confidence intervals (CI)) and percent exact agreement were calculated to assess level of agreement between JZ and AP for coding the responses for each question. This analysis used 5,000 bootstrap replications to calculate the 95% Confidence Intervals (CIs) and was performed using STATA statistical software (version 14.1). Kappa statistics (k) were interpreted as follows: <0.00="poor", 0.00–0.20="slight", 0.21–0.40="fair", 0.41–0.60="moderate", 0.61–0.80="substantial", ≥0.81="almost perfect" (17). The coding checklist for each question was refined until level of agreement on a random sample was k≥0.7. All disagreements on the random sample were resolved by discussion. Two researchers (JZ and AP) then applied the final framework to the remaining responses.

2.5. Patient or Public Involvement

Patients and members of the public were not involved in the design of this study

3. Results

There were 9,764 physiotherapists that opened the email invitation (49%) and 543 that completed the survey (response rate 5.6%). There were 152 (28.0%) free-text responses for section one, 106 (19.5%) for section two, 137 (25.2%) for section three, 180 (33.1%) for section four, 143 (26.3%) for section five, and 154 (28.4%) for section six. Level of agreement between the coding researchers was 'almost perfect' for sections one to five (range: k=0.86 to 0.94) and 'substantial' for section six (k=0.75, 95% CI: 0.54 to 0.94) (Table 1).

3.1. Feedback on recommendations

3.1.1. Section One: style of wording of Choosing Wisely recommendations

For responses that suggested disagreement, codes included: unqualified statements are inappropriate (n=49, 32.2%), wording would benefit from further refining (n=34, 22.4%), clinical experience is more valuable than evidence (n=19, 12.5%), shift the framing from negative to positive (n=18, 11.8%), threat to autonomy or the profession (n=16, 10.5%), and new evidence might change recommendations (n=4, 2.6%) (Supplementary Table 3). For example:

> *"Wording needs to be guidance, not definitive in most situations as individual cases may require alternative approaches"* (unqualified statements are inappropriate)
>
> *"Provocative. Too black and white…Are we going to drive our patients to masseurs and quacks"* (threat to autonomy or the profession)
>
> *"Evidenced base treatment are those that are proven, but they shouldn't exclude time worn treatments that are yet to be proven ineffective"* (new evidence might change recommendations).

For responses that suggested agreement, codes included: unqualified statements (i.e. those without reservation or limitation) are important (n=22, 14.5%), recommendations provoke discussion (n=20, 13.2%) and recommendations will help change practice (n=12, 7.9%) (Supplementary Table 3). For example:

> *"The wording of these statements should be like a pebble in every physio's shoe challenging our thinking and processes. I personally think the style of wording does that"* (unqualified statements are important)
>
> *"I like the wording because it makes the recommendations clear and may be an alarming prompt for clinicians to change their practice"* (recommendations will help change practice).

3.1.2. Section Two: validated decision rules for imaging

For responses that suggested disagreement, codes included: blanket rules are inappropriate (n=27, 25.5%), clinical experience is more valuable than validated decision rules (n=21, 19.8%), and threat to autonomy or the profession (n=5, 4.7%) (Supplementary Table 3). For example:

> *"There will always be situations where there is a need to contravene these rules, the statement leaves no scope for this"* (blanket rules are inappropriate)

> *"In over 40 years of disciplined Physio Practice, I have personally discovered a number of spinal and pelvic tumours in patients, that would otherwise have been missed, had X-rays not been taken"* (clinical experience is more valuable than validated decision rules).

Most responses that suggested agreement did not have any specific comments (n=43, 40.6%); a small percentage highlighted that educating patients and clinicians will support the adoption of imaging recommendations (n=10, 9.4%). A small percentage of responses suggested that the wording of the above-recommendation would benefit from further refining (n=16, 15.1%) and unqualified statements are inappropriate (n=3, 2.8%) (Supplementary Table 3). For example:

> *"There will need to be a great deal of re-education of the public for this to be seen as reasonable for certain clients"* (educating patients and clinicians will support the adoption of imaging recommendations)

> *"Physios generally don't use imaging of course, whereas advocate for imaging could be a better phrase"* (benefit from further refining).

3.1.3. Section Three: use of incentive spirometry

A large percentage of respondents commented that they did not have expertise to provide feedback on this recommendation (n=70, 51.1%). For responses that suggested disagreement, codes included: blanket rules are inappropriate (n=19, 13.9%), clinical experience is more valuable than evidence (n=16, 11.7%), questioning the purpose of the recommendation (n=5, 3.6%) and threat to autonomy or the profession (n=3, 2.2%) (Supplementary Table 3). For example:

> *"You could still use it if it's the only thing a patient will do to encourage larger tidal volumes"* (blanket rules are inappropriate)

> *"I do not want my practice methods dictated by anybody, Australian Physiotherapy Association or otherwise"* (threat to autonomy or the profession).

Most responses that suggested agreement did not have any specific comments (n= 17, 12.4%); a small percentage highlighted that the recommendation would help promote evidence-based care (n=11, 8.0%). A small percentage of responses suggested that the recommendation would benefit from further refining (n=10, 7.3%) and should shift the framing from negative to positive (n=8, 5.8%) and that unqualified statements are inappropriate (n=4, 2.9%) (Supplementary Table 3). For example:

> *"Movement and walking are cheaper, more functional alternatives to improving lung function"* (help promote evidence-based care)

> *"Can we suggest what should be done instead of incentive spirometry?"* (shift the framing from negative to positive).

3.1.4. Section Four: electrotherapy for low back pain

For responses that suggested disagreement, codes included: electrotherapy is appropriate to use as an adjunct to evidence-based care (n=54, 30.0%), clinical experience is more valuable than evidence (n=51, 28.3%), blanket rules are inappropriate (n=51, 28.3%), threat to

autonomy or the profession (n=11, 6.1%) and new evidence might change recommendations (n=6, 3.3%) (Supplementary Table 3). For example:

> *"It can [be] appropriate to use electrotherapy for low back pain to support other evidence-based practice interventions"* (appropriate to use as an adjunct to evidence-based care)

> *"My long experience (40 years) as a Musculoskeletal Physiotherapist shows me that pain, inflammation and muscle spasm is relieved by Interferential and sonophoresis, in most low back pain patients"* (clinical experience is more valuable than evidence)

> *"If we tell all other professions that electrotherapy are no longer used in physiotherapy treatment for low back pain, I can't see any difference between our work as a masseur or exercise physiologist in the years to come"* (threat to autonomy or the profession).

Most responses that suggested agreement did not have any specific comments (n=23, 12.8%); a small percentage highlighted that the use of electrotherapy needs to be reduced (n=13, 7.2%) and other evidence-based treatments are available (n=11, 6.1%). Codes for feedback on wording included: better define the disease presentation and modality of electrotherapy (n=17, 9.4%), unqualified statements are inappropriate (n=9, 5.0%) and shift the framing from negative to positive (n=4, 2.2%) (Supplementary Table 3). For example:

> *"Rarely used in last 10 years - always teach movement short of pain as a baseline"* (other evidence-based treatments are available)

> *"This recommendation needs to be re-worded to be more specific about the chronicity of the condition"* (better define the disease presentation and modality of electrotherapy)

"Should the statement not be: 'Don't use only electrotherapy modalities in the management of patients with low back pain'" (shift the framing from negative to positive).

3.1.5. Section Five: ongoing manual therapy for adhesive capsulitis

For responses that suggested disagreement, codes included: blanket rules are inappropriate (n=43, 30.1%), clinical experience is more valuable than evidence (n=28, 19.6%), threat to autonomy or the profession (n=7, 4.9%), manual therapy is appropriate to use as an adjunct to evidence-based care (n=7, 4.9%) and new evidence might change recommendations (n=6, 4.2%) (Supplementary Table 3). For example:

"This is true most of the time...but there are exceptions" (blanket rules are inappropriate)

"In the subacute to chronic setting I have effectively used manual therapy to improve shoulder range. I am at a loss as to how this evidence was derived" (clinical experience is more valuable than evidence).

Most responses that suggested agreement did not have any specific comments (n=23, 16.1%); a small percentage highlighted that other evidence-based treatments are available (n=14, 9.8%) and there is no evidence manual therapy alters natural history (n=4, 2.8%). Codes for feedback on wording included: better define the disease presentation and type of manual therapy provided (n=27, 18.9%) and unqualified statements are inappropriate (n=10, 7.0%) (Supplementary Table 3). For example:

"Problem is perpetuated by poor active movement, so retrain this" (other evidence-based treatments are available)

"[The statement] is too broad and encompassing to say never" (unqualified statements are inappropriate).

3.1.6. Section Six: ongoing physiotherapy without improvement in patient outcomes

For responses that suggested disagreement, codes included: physiotherapy could prevent or reduce deterioration in patients' symptoms (n=46, 29.9%), blanket rules are inappropriate (n=39, 25.3%), concern over the use of outcome measures (n=18, 11.7%) and threat to autonomy or the profession (n=17, 11.0%) (Supplementary Table 3). For example:

> *"Need also to consider situation where without contact with physio, patient demonstrates deterioration"* (physiotherapy could prevent or reduce deterioration in patients' symptoms)

> *"Sometimes the patient may need to rely on the therapist's intervention as they may not be able to independently exercise correctly"* (blanket rules are inappropriate)

> *"In my clinic we have had a good example of why this is not a reasonable blanket statement. We've had low back pain clients who have shown some activity of daily living and subjective improvement, whilst their Oswestry outcome measure was relatively insensitive to the improvement"* (concern over the use of outcome measures).

Most responses that suggested agreement did not have any specific comments (n=38, 24.7%); a small percentage highlighted that physiotherapy should focus on outcomes and try to reduce overtreatment (n=15, 9.7%). Codes for feedback on wording included: better define ambiguous terms (n=27, 17.5%), unqualified statements are inappropriate (n=5, 3.2%) and shift the framing from negative to positive (n=4, 2.6%) (Supplementary Table 3). For example:

"Physiotherapists have a role in being upfront to patients when no outcome has been achieved from ongoing physiotherapy" (physiotherapy should focus on outcomes and try to reduce overtreatment)

"The reasons sweeping statements like these don't tend to work (with a few exceptions), is that very few conditions are black and white, or can be covered by a single statement" (unqualified statements are inappropriate).

3.2. Agreement and disagreement with recommendations

Most physiotherapists agreed (and few disagreed) that validated decision rules should guide the use of imaging (76.6% agreed; 3.7% disagreed). Fewer agreed (and more disagreed) that physiotherapists should not provide incentive spirometry after abdominal and cardiac surgery (60.4% agreed; 7.9% disagreed), not use electrotherapy for low back pain (52.3% agreed; 25.4% disagreed), not provide ongoing manual therapy for adhesive capsulitis of the shoulder (59.3% agreed; 16.0% disagreed) and not provide ongoing treatment when there is no improvement in measurable patient outcomes (62.8% agreed; 13.6% disagreed). Most physiotherapists agreed that the wording of Choosing Wisely recommendations is an acceptable method to engage the profession in discussions about evidence-based practice (63.9% agreed; 24.7% disagreed) (Table 2).

4. Discussion

4.1. Statement of principal findings

The majority (63.9%) of physiotherapists agreed with the style of wording for Choosing Wisely recommendations and with draft recommendations (ranging from 52.3% to 76.6%), although a number of areas of disagreement and suggestions for improvement were identified. Many physiotherapists believe blanket rules are inappropriate, clinical experience is more valuable than evidence, and the recommendations threaten physiotherapists'

autonomy and the profession. Many also suggested that the recommendations need to better define key terms and shift the framing from negative to positive. Since there are few differences between the draft Choosing Wisely recommendations and current recommendations (Supplementary Table 1), the findings from this study are an important step towards developing and testing strategies to increase adoption of Choosing Wisely recommendations and replace low-value physiotherapy with evidence-based physiotherapy.

4.2. Strengths and weaknesses of the study

A strength of this study is that level of agreement between the two researchers coding responses ranged from 'substantial' (section six) to 'almost perfect' (sections one to five). The main weakness is the low response rate to the survey (5.6%). Our sample might therefore not be representative of all members of the Australian Physiotherapy Association; this reduces our confidence in the quantitative results of our study. Nevertheless, our qualitative data is robust and highlights possible targets to increase adoption of Choosing Wisely recommendations among physiotherapists.

4.3. Meaning of the study

We found that some physiotherapists believe blanket recommendations should not guide treatment choices and that clinical experience is more valuable than evidence. This is largely consistent with a qualitative study of 31 physicians in emergency medicine, internal medicine, hospital medicine, and cardiology from the United States (18). Many physicians felt that Choosing Wisely recommendations should act as guide and not be a strict set of rules for clinicians, while others disagreed with certain recommendations (e.g. general health checks) based on their clinical experience.

Disagreement with blanket recommendations and valuing clinical experience over evidence could explain why some physiotherapists do not use guidelines to inform their treatment choices (10, 13, 19-21). For example, previous research found only 46% of physiotherapists

believe guidelines should inform the management of low back pain (survey of n=274) (19), 66% apply guidelines to more than half of their patients with acute ankle sprains (survey of n=214) (20), and 39% use guidelines to inform the management of whiplash more than three-quarters of the time (survey of n=237) (21). Challenging these beliefs could be an important first step towards replacing low-value care with evidence-based care in physiotherapy.

Barriers to following Choosing Wisely recommendations emerged from our study. Some physiotherapists expressed that recommendations do not consider clinical reasoning or clinical experience, and make treatment 'recipe-based'. Others expressed that there will always be exceptions to practice recommendations, such as patient preference and fear of missing an important diagnosis. Similar barriers were identified in a Choosing Wisely report; 73% of physiotherapists were willing to perform low-value testing if requested by a patient and 61% when uncertain of a diagnosis (22). However, a qualitative study of 19 physicians in Canada identified different barriers of time pressure, uncertainty about what constitutes necessary care, and fear of litigation (23). This highlights the importance of exploring barriers to adopting Choosing Wisely recommendations across professions.

Physiotherapists appear to view practice recommendations as a recipe that does not allow for clinical reasoning nor considering patient preference; this belief could make increasing adoption of Choosing Wisely recommendations challenging. We believe that providing individualised care and adhering to guideline recommendations are not mutually exclusive. For example, physiotherapists need to tailor guideline-recommended treatments for low back pain, such as education and exercise, because of patient-level factors including health literacy and exercise preference. Clinical reasoning is also extremely important when it comes to deciding whether a patient with low back pain requires imaging. This is illustrated by the fact that 'clinical suspicion' is one of the few red flags endorsed in guidelines that are useful for

identifying patients with a serious pathology (e.g. positive likelihood ratio ranging from 12 to 54 for identifying malignancy (24)).

Some physiotherapists expressed that research evidence is not consistent with the treatment outcomes they observe in the clinic. This opens up an interesting debate about the value of healthcare and potential issues with using clinical experience to justify treatment choices. One argument is that it is reasonable to conclude a treatment is appropriate if the patient improves and they are happy with the care provided. The counter argument is that many factors could explain why clinicians observe improvement in patient outcomes despite providing treatment not supported by strong evidence. These include the confounding effects of natural history, regression to the mean, placebo effects and other non-specific treatment effects. In other words, the same patient might have got similar results from no treatment or better results from a treatment supported by evidence. Views about the value of clinical experience versus evidence could be the most difficult barrier to replacing low-value physiotherapy with evidence-based physiotherapy.

4.4. Unanswered questions and future research directions

This study provides insight into how physiotherapists view their Association's Choosing Wisely recommendations, although a more in-depth understanding of the barriers and facilitators to adopting Choosing Wisely recommendations is needed. We plan to conduct qualitative research to address this knowledge gap and further explore the barriers and facilitators to replacing low-value physiotherapy with evidence-based physiotherapy.

Future research should explore how different aspects of the language of Choosing Wisely could either support or discourage adoption of recommendations. Some physiotherapists expressed that unqualified recommendations were key to changing practice, while others believed that recommendations should be qualified to allow for clinical reasoning. Further, some suggested that recommendations should focus on a positive message; either by

providing an alternative to low-value care or stating when a typically low-value intervention could be provided. Choice experiments, such as discrete choice experiments or best-worst-scaling surveys, are a useful tool for eliciting preferences in healthcare (25) and could be used to determine whether modifying the language of Choosing Wisely recommendations could increase clinicians' willingness to follow them. Understanding how language influences the adoption of Choosing Wisely recommendations has implications for refining existing and developing new recommendations for the Australian Physiotherapy Association; as well as for the 230+ professional societies worldwide with Choosing Wisely lists.

5. Conclusion

Physiotherapists' views regarding Choosing Wisely recommendations highlight a number of areas of disagreement and suggestions for improvement. These findings could prove valuable for developing and testing strategies to increase physiotherapists' willingness to follow Choosing Wisely recommendations and so replace low-value physiotherapy with evidence-based physiotherapy.

Authors' contributions

All authors critically revised the manuscript for important intellectual content and approved the final manuscript. Please find below a detailed description of the role of each author:

- Joshua R Zadro: conception and design, acquisition, analysis and interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Aimie Peek: conception and design, acquisition and interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Rachael Dodd: conception and design, interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Kirsten McCaffery: conception and design, interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Christopher G Maher: conception and design, interpretation of data, drafting and revision of the manuscript and final approval of the version to be published

The Corresponding Author (JZ) attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

Competing interests: All authors declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work; no other relationships or activities that could appear to have influenced the submitted work.

Acknowledgements: The authors would like to thank the Australian Physiotherapy Association for the study data.

Ethics approval: The University of Sydney Human Research Ethics Committee approved all study procedures [Project number: 2018/518].

Funding source: This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data sharing: No additional data available.

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Table 1. Number of responses, codes, percent exact agreement and Kappa (95% Confidence Interval) for the level of agreement between reviews for coding a random sample of responses

Characteristic of recommendations	N (%)	Codes	Agreement	k	95% CI
All sections	114 (24.8)	165	86%	0.85	0.78-0.91
Section 1	16 (20.5)	24	91%	0.89	0.73-1.00
Section 2	15 (25.9)	18	94%	0.91	0.68-1.00
Section 3	21 (28.4)	24	91%	0.86	0.66-1.00
Section 4	29 (30.2)	46	86%	0.84	0.70-0.96
Section 5	14 (20.6)	23	94%	0.93	0.76-1.00
Section 6	19 (22.4)	28	80%	0.75	0.54-0.94

N: number of responses coded; k: kappa coefficient; CI: confidence interval.

Table 2. Agreement and disagreement with survey questions

Section	Question	Agree, n (%)	Disagree, n (%)	Neither, n (%)
One	In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?	347 (63.9%)	134 (24.7%)	62 (11.4%)
Two	Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?	416 (76.6%)	20 (3.7%)	107 (19.7%)
Three	Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?	328 (60.4%)	43 (7.9%)	172 (31.7%)
Four	Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?	284 (52.3%)	138 (25.4%)	121 (22.3%)
Five	Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?	322 (59.3%)	87 (16.0%)	134 (24.7%)
Six	Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?	341 (62.8%)	74 (13.6%)	128 (23.6%)

Supplementary Tables

Supplementary Table 1. Comparison of draft and current Choosing Wisely recommendations from the Australian Physiotherapy Association

Supplementary Table 2. Draft recommendations and survey questions

Supplementary Table 3. Frequency of codes in response to Section One to Six

N: number of respondents; *: percent of respondents that completed the free-text field for this question.

Supplementary Table 1. Comparison of draft and current Choosing Wisely recommendations from the Australian Physiotherapy Association

Draft recommendations	Current recommendations	Modification
Don't use imaging where validated decision rules indicate imaging is not necessary.	Don't request imaging for patients with non-specific low back pain and no indicators of a serious cause for low back pain.	Split into 3 recommendations each specifying a different clinical scenario
	Don't request imaging of the cervical spine in trauma patients, unless indicated by a validated decision rule.	
	Don't request imaging for acute ankle trauma unless indicated by the Ottawa Ankle Rules. (localized bone tenderness or inability to weight-bear as defined in the Rules)	
Don't use incentive spirometry after upper abdominal and cardiac surgery.	Don't routinely use incentive spirometry after upper abdominal and cardiac surgery.	'Don't' was replaced by 'Don't routinely'
Don't use electrotherapy modalities in the management of patients with low back pain.	Avoid using electrotherapy modalities in the management of patients with low back pain.	'Don't use' was replaced by 'Avoid using'
Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder	Don't provide ongoing manual therapy for patients with adhesive capsulitis of the shoulder.	'Don't use' was replaced by 'Don't provide'. The population was broadened from patients 'following acute adhesive capsulitis' to all patients with adhesive capsulitis
Don't use ongoing physiotherapy in cases where there isn't improvement in measurable patient outcomes.	No recommendation	This recommendation was not included in the current list

Supplementary Table 2. Draft recommendations and survey questions

SECTION 1

CONTEXT: The Choosing Wisely format deliberately uses "don't" or similar wording, and is expressly intended to incite discussion about interventions. One of the "5 Things Physical Therapists and Patients Should Question" by the American Physical Therapy Association in 2014 was:

RECOMMENDATION: Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program.

QUESTION: In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?

SECTION 2

RECOMMENDATION: Don't use imaging where validated decision rules indicate imaging is not necessary.

EXPLANATION: Imaging should only be requested when clinically appropriate. Physiotherapists should use appropriate clinical decision making tools such as Ottawa Ankle Rules, Canadian C-Spine Rule, Nexus, and should not be used in cases of non-specific low back pain with no signs of serious pathology.

QUESTION: Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?

SECTION 3

RECOMMENDATION: Don't use incentive spirometry after upper abdominal and cardiac surgery.

EXPLANATION: Physiotherapists should not routinely use incentive spirometry after upper abdominal and cardiac surgery. Physiotherapists should instead consider adding other interventions to standard care. For example, there is high level evidence for the addition of preoperative inspiratory muscle training when added to usual care.

QUESTION: Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?

SECTION 4

RECOMMENDATION: Don't use electrotherapy modalities in the management of patients with low back pain.

EXPLANATION: Clinical practice guidelines don't recommend electrotherapy modalities to manage low back pain. Physiotherapists should instead consider other interventions to manage low back pain, for example exercise prescription and education.

QUESTION: Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?

SECTION 5

RECOMMENDATION: Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder.

EXPLANATION: Physiotherapists should consider a range of other interventions to manage acute adhesive capsulitis, like exercise to optimize function, education and appropriate management of pain.

QUESTION: Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?

SECTION 6

RECOMMENDATION: Don't use ongoing physiotherapy in cases where there isn't improvement in measurable patient outcomes.

EXPLANATION: Physiotherapists should facilitate and empower the patient's independent management of chronic conditions.

QUESTION: Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?

Supplementary Table 3. Frequency of codes in response to Section One to Six

SECTION ONE			
RECOMMENDATION: Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program.			
QUESTION: In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?			
Code description	**Example**	**N**	**%***
Response suggests disagreement			
Unqualified statements are inappropriate	I would prefer an alternative phrase such as 'don't routinely'. I think the absolute statement of 'don't' requires an exhaustive list of all of the possible, even if rare, exceptions.	49	32.2
Would benefit from further refining	The statement is very broad which may need further refining in the actual discussion document.	34	22.4
Clinical experience is more valuable than evidence	This is an entirely inappropriate blanket statement. For example, a 12 year old comes in with a first ever episode of an acute wry neck. This can be completely resolved in one passive treatment. It would be inappropriate to give them a home exercise program as there is no evidence that it would be useful and it could focus them on having a problem which could create hyper-vigilance.	19	12.5
Shift framing from negative to positive	I would prefer a discussion point around the affirmative rather than the negative, e.g. only choose passive physical agents with demonstrable measurable outcomes.	18	11.8
Threat to autonomy or the profession	Combative and deprecating approach to practitioners. Suggestive of disrespect of practitioner and lack of sincere care for our patients.	16	10.5
New evidence might change recommendations	'Don't' is a strong word and if in the future an Australia Physiotherapy Association 'Don't' suggestion is found to be incorrect then the Australia Physiotherapy Association would have to provide an answer. More appropriate wording could be 'The current evidence suggests…'	4	2.6
Response suggests agreement			
Using unqualified statements is important	Physiotherapy, like other health professions, is inherently conservative and resistant to change. Physiotherapists won't pay attention to vaguely worded advice. The DON'T format is the key to the effectiveness of the Choosing Wisely strategy.	22	14.5
Provokes discussion	Especially where the explanation is provided as to why. I feel it is an emotive and engaging way to start a conversation/healthy debate.	20	13.2
Will help change practice	Strong, directive language is appropriate to make clinicians realise that they are directions to follow not suggestions to consider.	12	7.9

No further comment	I would completely agree with this statement - can't think of a better way of wording this concept!	12	7.9

SECTION TWO			
RECOMMENDATION: Don't use imaging where validated decision rules indicate imaging is not necessary.			
QUESTION: Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?			
Code description	**Example**	**N**	**%***
Response suggests disagreement			
Blanket rules are inappropriate	Doesn't always correlate with patient's wishes - sometimes they just want peace of mind, despite our clinical judgement.	27	25.5
Clinical experience is more valuable than validated decision rules	X-rays can give important but subtle information about the presenting circumstances - DISH; functional instability. The rules were developed around a concept of sensitivity for specific diagnoses. What level of risk are you prepared to accept and are these the only pathologies where x-rays are useful to the clinically reasoned management? Consequently they are limited, if not conceptually flawed.	21	19.8
Threat to autonomy or the profession	The situations where I would recommend imaging is when the patient is over cautious and if I have had trouble establishing a professional rapport with them even after explaining decision making to them. It is important that the patient has a professional belief in us because often the doctor will say something that has not been based on clinical decision and the patient believes that. E.g. the doctor says...and with questioning they haven't even looked at the body part. The reason for this is they are likely to go back to their doctor who will recommend an X ray anyway. Some patients feel the need to have this investigated and if that gives them piece of mind and therefore aids/speeds up their recovery then I am not against it.	5	4.7
Response suggests agreement			
No further comment	This is one area that there is clear evidence. The evidence supports that imaging can in fact do harm such as exposure to unnecessary radiation and in some cases impede progress and recovery. This is an important recommendation.	43	40.6
Educating patients and clinicians will support adoption	I think the APA should do a members value webinar promoting the Western Australia radiology imaging pathways website and mobile phone app. There is need for more education and easier access to the rules, as well as discussion on how to explain this to the modern client who wants images.	10	9.4
Feedback on wording			
Would benefit from further refining	Should we be a little more specific here and identify one area. It is still quite broad and worried that not ALL physios will understand validated decision rules or know of these.	16	15.1

Unqualified statements are inappropriate	Avoid using 'should not' - go for 'physiotherapists are urged to avoid imaging'... or 'Best practice indicates that physiotherapists follow validated decision rules regarding not imaging when contraindicated.'	3	2.8
Not area of expertise	This is not an area I have enough knowledge or experience to comment on.	3	2.8

SECTION THREE

RECOMMENDATION: Don't use incentive spirometry after upper abdominal and cardiac surgery.

QUESTION: Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?

Code description	Example	N	%*
Not area of expertise	I don't work in this area so prefer not to comment.	70	51.1
Response suggests disagreement			
Blanket rules are inappropriate	Another ideal recommendation that doesn't take health economics & workload into account. There are still plenty of patients who would never be seen pre-op, regardless of the planned surgery.	19	13.9
Clinical experience is more valuable than evidence	Patients are individuals and in my experience sometimes it has been indicated and also helpful but mass use is not indicated.	16	11.7
Questions the purpose of the recommendation	Patients enjoy and are encouraged by post-op increases in vital capacity etc. Negligible cost blowing in a machine.	5	3.6
Threat to autonomy or the profession	It is one tool in the toolbox, there is no reason not to use it other than that there is no evidence for its routine use. I really dislike these blanket DONT statements. They go against clinical judgement and reasoning...	3	2.2
Response suggests agreement			
No further comment	Love this!	17	12.4
Will help promote evidence-based care	Getting this out there with the medical professions' recommendations is exciting. Hopefully it will help us get the message to them to help influence a change in the hospital setting.	11	8.0
Feedback on wording			
Would benefit from further refining	The statement should mention evidence regarding early mobility rather than just inspiratory muscle training.	10	7.3

Shift framing from negative to positive	Statement doesn't address recommended therapy AFTER these surgeries at all - what about mobilization?	8	5.8
Unqualified statements are inappropriate	Don't infers it should never be used. This is not a safety issue that warrants a 'DONT'. Incentive spirometry may still be appropriate in some select patients who otherwise have difficulty taking/coordinating deep breaths, or who are post-operatively confused, or need motivation.	4	2.9

SECTION FOUR

RECOMMENDATION: Don't use electrotherapy modalities in the management of patients with low back pain.

QUESTION: Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?

Code description	Example	N	%*
Response suggests disagreement			
Appropriate to use as adjunct to evidence-based care	Used in conjunction with appropriate education, active exercise etc. may provide enough short term relief to encourage full participation in the before mentioned strategies.	54	30.0
Clinical experience is more valuable than evidence	Very few physios just use electro of anything and they need to [be] educated. However, in the real world of quality musculoskeletal practice, many physios use electro +/- heat/cold therapy as an adjunct to manual, exercise and other therapies. It is patient specific may be short term analgesia or easing for the muscle spasm and this may improve movement quality and exercise compliance. Used well there is no down side clinically and costs the patient and system nothing.	51	28.3
Blanket rules are inappropriate	Lower back pain can present with lots of erector spinae spasm. Studies have shown that Interferential Therapy and Transcutaneous Electro-Nerve Stimulation are effective analgesics and do not have side effects. Unlike Codeine. How the heck do you expect to establish trust with a patient if we are not reducing their fear and pain before touching them when they are in strong pain?	51	28.3
Threat to autonomy or the profession	Why would the college/panel of experts see this as one of the top 5 thing going wrong in physio practice? Incredible really. I employ a dozen physios, am a titled MS and Sports physio and have not found a colleague who agrees with this one! The feeling is that the Australian Physiotherapy Association has lost touch for even starting down this track!	11	6.1
New evidence might change recommendations	Research published in the Lancet regarding the effectiveness of low level laser to treat cervical pain may indicate a place for this in low back pain but I am not aware of any research to show this is effective or not so I am not happy about a blanket ban of use of all modalities. Laser may well prove to be of use.	6	3.3

Response suggests agreement			
No further comment	100% agree.	23	12.8
The use of electrotherapy must be reduced	Physiotherapists are intelligent people who should be able to use a multitude of more successful and evidence based treatments for low back pain patients. Anyone resorting to the passive electrophysical modalities is either trying to pump through as many patients as they can to make money or hasn't done a course recently enough to give them up to date treatment approaches.	13	7.2
Other evidence-based treatments are available	Physiotherapists have so many more manual and exercise skill sets to offer patients with low back pain.	11	6.1
Feedback on wording			
Better define the disease presentation and modality of electrotherapy provided	This is a very general statement about many types of applications. It would be better to see electrotherapy replaced with a specific modality for which there is Level 1 evidence.	17	9.4
Unqualified statements are inappropriate	This statement I think reflects academics who are not working in the clinical setting for most of their practice. Ask any clinician and they would comment that to put a blanket ban so to speak on electrotherapy is probably exceeding the actual value of the evidence we have. That said, there is no doubt that long-term management of backs should not be based upon electrotherapy of course, but clients will tell you that TENS and such actually do provide the ability to improve their activities of daily living. Hence my concern with 'Don't'. Rather something like 'it should not be the mainstay of therapy' or similar...	9	5.0
Shift framing from negative to positive	Is the statement: *"Clinical practice guidelines don't recommend electrotherapy modalities to manage low back pain. Physiotherapists should instead consider other interventions to manage low back pain, for example exercise prescription and education"* going to be included in our statement, if so I like this recommendation.	4	2.2
Not area of expertise	I don't know the latest evidence to comment here.	3	1.7

SECTION FIVE
RECOMMENDATION: Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder.
QUESTION: Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?

Code description	**Example**	**N**	**%***

Response suggests disagreement			
Blanket rules are inappropriate	Another concern with the wording is that limited manual therapy may be used to improve scapula position and control which is usually a problem in these cases.	43	30.1
Clinical experience is more valuable than evidence	In the subacute to chronic setting I have effectively used manual therapy to improve shoulder range. I am at a loss as to how this evidence was derived. In the acute setting I agree, but this statement appears to put a blanket ban on all manual therapy for all such shoulders.	28	19.6
Threat to autonomy or the profession	It does not matter what works in 2 or 3 studies, physiotherapists must be free to choose a variety of techniques and use more than one and education for each patient. Look at the way sports people are treated. I am thinking specific exercise type angles, timing and repetitions. Your committee could do well to stop 10 reps practice for all patients of all ages in hospital. More fruitful than this witch hunt against Private Practice practitioners.	7	4.9
Appropriate to use as adjunct to evidence-based care	This is never performed in isolation, but in conjunction with appropriate range of motion and strengthening exercises as range returns.	7	4.9
New evidence might change recommendations	As the recent Cochrane review concluded that *"No trial compared a combination of manual therapy and exercise versus placebo or no intervention"* I don't think we can dismiss the use of manual therapy so quickly in the management of this condition.	6	4.2
Response suggests agreement			
No further comment	Respect the process of physiology with this disorder	23	16.1
Other evidence-based treatments may be available	Hydrodilatation should be utilised by medical staff on a more regular basis.	14	9.8
No evidence manual therapy alters natural history	There is clear evidence that not only does manual therapy not facilitate recovery, but may actually impede recovery. Ongoing manual treatment reduces patients' self-efficacy and promotes dependency.	4	2.8
Feedback on wording			
Better define the disease presentation and manual therapy provided	Not sure here what is meant by ongoing how ongoing days. Months, years?	27	18.9
Unqualified statements are inappropriate	I don't think we know enough about this condition to be making clear and decisive statements. Maybe a statement saying "*Don't use ongoing manual therapy for patients (who do not respond) with adhesive capsulitis of the shoulder."* Ideally, we shouldn't be doing anything ongoing if the patient does not respond.	10	7.0

Not area of expertise	I can't comment on this clinically as I'm not across the evidence for this	12	8.4

SECTION SIX			
RECOMMENDATION: Don’t use ongoing physiotherapy in cases where there isn’t improvement in measurable patient outcomes.			
QUESTION: Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?			
Code description	**Example**	**N**	**%***
Response suggests disagreement			
Physiotherapy could prevent/reduce deterioration in symptoms	I work with a number of patients with palliative conditions. For them, the goal may be MAINTAINING as opposed to IMPROVING function. In these cases, it can be hard to anticipate the trajectory of the disease progression, but I think physiotherapy still plays a vital role in maintaining the patients' independence.	46	29.9
Blanket rules are inappropriate	Occasionally there are chronic patients with chronic conditions that still need our help/support/advice/symptomatic relief. Do we just turn our backs on them?	39	25.3
Concern over use of outcome measures	What you can objectively measure and the response or benefit the patient receives, are often quite divergent. What I mean is that if the patient doesn't believe they are getting anywhere and the physiotherapist is ethical, of course they would cease treatment. However, if the patient 'feels better' by getting physiotherapy intervention, who are you to say they can’t access it. After all it is their money they are spending.	18	11.7
Threat to autonomy or the profession	I have seen it time and again where physio has been written off because of failed physio interventions - however the failure has not been because physio cannot work, but because ineffective, non-evidence-based strategies have been administered often by junior or burnt-out physios.	17	11.0
Response suggests agreement			
No further comment	Patient and therapist both have better things to do.	38	24.7
Physiotherapy should focus on outcomes and try to reduce overtreatment	Absolutely, it diminishes the value of our profession and gives the appearance we are revenue raising, when treatment is continued when there is no change in measureable outcomes (or in fact I suspect sometimes, no initial assessment of outcome measures to review).	15	9.7
Feedback on wording			
Better define ambiguous terms	I feel this is too vague and doesn't really mean anything. There is no time limit imposed and in some cases there won’t be improvement, but rather a prevention of decline in outcomes. Also, what is meant by	27	17.5

	physiotherapy - is this just the application of physical interventions, or a broader scope of practice like education, self-management support , cognitive behavioural therapy, etc.		
Unqualified statements are inappropriate	To say 'Don't' worries me. Obviously we want to achieve positive client outcomes and these might include their own functional improvement, validated outcome scores, subjective and objective findings. My concern is that this statement needs qualification in that it appears that if outcome scores are not improving then physio should cease.	5	3.2
Shift framing from negative to positive	For a start the facilitation and empowerment is physiotherapy! Needs rewording to something like physiotherapy management should focus on.....	4	2.6
Unclear response	I am unsure and the details of a service that HCF audited and confirmed that 8 years of exercise therapy, twice weekly was appropriate for average back patients. Are there any normative statistics of the average length of back care programs in our industry?	1	0.6

N: number of respondents; *: percent of respondents that completed the free-text field for this question.

BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2019-031360.R1
Article Type:	Original research
Date Submitted by the Author:	07-Aug-2019
Complete List of Authors:	Zadro, Joshua; University of Sydney, Institute for Musculoskeletal Health, School of Public Health Peek, Aimie L.; University of Sydney, Musculoskeletal Health Research Group, Faculty of Health Sciences Dodd, Rachael; University of Sydney, Sydney School of Public Health, Faculty of Medicine and Health McCaffery, Kirsten; University of Sydney, Sydney School of Public Health, Faculty of Medicine and Health Maher, Christopher; University of Sydney, Institute for Musculoskeletal Health, Sydney School of Public Health, Faculty of Medicine and Health
Primary Subject Heading:	Public health
Secondary Subject Heading:	Evidence based practice, Health policy, Rehabilitation medicine
Keywords:	QUALITATIVE RESEARCH, Back pain < ORTHOPAEDIC & TRAUMA SURGERY, Musculoskeletal disorders < ORTHOPAEDIC & TRAUMA SURGERY, Shoulder < ORTHOPAEDIC & TRAUMA SURGERY

Physiotherapists' views on the Australian Physiotherapy Association's Choosing Wisely recommendations: a content analysis

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ABSTRACT

Objectives: Choosing Wisely holds promise for increasing awareness of low-value care in physiotherapy. However, it is unclear how physiotherapists' view Choosing Wisely recommendations. The aim of this study was to evaluate physiotherapists' feedback on Choosing Wisely recommendations and investigate agreement with each recommendation.

Setting: The Australian Physiotherapy Association emailed a survey to all 20,029 physiotherapist members in 2015 seeking feedback on a list of Choosing Wisely recommendations.

Participants: 9,764 physiotherapists opened the email invitation (49%) and 543 completed the survey (response rate 5.6%). Participants were asked about the acceptability of the wording of recommendations using a closed (Yes/No) and free text response option (Section 1). Then using a similar response format, participants were asked whether they agreed with each Choosing Wisely recommendation (Sections 2 to 6).

Primary and secondary outcomes: We performed a content analysis of free-text responses (primary outcome) and used descriptive statistics to report agreement and disagreement with each recommendation (secondary outcome).

Results: There were 872 free-text responses across the six sections. 347 physiotherapists (63.9%) agreed with the "don't" style of wording. Agreement with recommendations ranged from 52.3% (electrotherapy for back pain) to 76.6% (validated decision rules for imaging). The content analysis revealed that physiotherapists felt that blanket rules were inappropriate (range across recommendations: 13.9% to 30.1% of responses), clinical experience is more valuable than evidence (11.7% to 28.3%) and recommendations would benefit from further refining or better defining key terms (7.3% to 22.4%).

Conclusions: Although most physiotherapists agreed with both the style of wording for Choosing Wisely recommendations and with the recommendations, their feedback

highlighted a number of areas of disagreement and suggestions for improvement. These findings will support the development of future recommendations and are the first step towards increasing the impact Choosing Wisely has on physiotherapy practice.

Key words: physiotherapy; Choosing Wisely; low-value care; qualitative; content analysis.

Strengths and limitations of this study

- This is the first study to explore physiotherapists views on Choosing Wisely recommendations
- Two researchers developed a reliable coding framework to code written feedback from physiotherapists regarding Choosing Wisely recommendations
- Our qualitative data highlights possible targets to increase adoption of Choosing Wisely recommendations among physiotherapists
- The main weakness is the low response rate to the survey (5.6%)
- Our sample might not be representative of all physiotherapist members of the Australian Physiotherapy Association

1. Introduction

Low-value care is defined as care that provides no benefit, causes harm, or provides a benefit that is too small when compared with its cost (1). In an effort to reduce low-value care, over 230 professional societies worldwide – such as the Australian Physiotherapy Association – have provided Choosing Wisely recommendations (2, 3). Choosing Wisely is a major public awareness campaign that aims to facilitate open patient-therapist communication about low-value care and ensure patients receive healthcare that is evidence-based, safe and necessary. Professional societies that endorse Choosing Wisely typically release a list of 5-10 Choosing Wisely recommendations. Choosing Wisely recommendations are brief statements that outline tests or treatments that are unnecessary and potentially harmful, and are likely provided by some society members.

Choosing Wisely holds promise for increasing awareness of the need to reduce low-value care in physiotherapy. This is particularly important as the profession is rapidly expanding across countries. In Australia, the number of physiotherapists has nearly tripled in just under 20 years (4, 5) and there are now more practising physiotherapists than any medical specialty (including general practice) (6, 7). In the United States, there are nearly 250,000 physical therapists, 250 physical therapy training programs (8) and the number of physical therapists is estimated to grow 29% within the next 10 years (9).

Audits of practice suggest that some physiotherapists provide low-value care and fail to provide evidence-based care. For example, 77% use traction for low back pain (survey of n=1001 physiotherapists) (10) and 83% use electrotherapy (e.g. ultrasound) (n=274) (11); both are considered low-value according to evidence-based clinical practice guidelines (12). Conversely, only 42% would provide advice to stay active and 51% prescribe home exercise for patients with chronic low back pain (n=410) (13); both recommended in guidelines (12).

Understanding physiotherapists' views towards adopting Choosing Wisely recommendations could inform strategies to replace low-value physiotherapy with evidence-based physiotherapy. Given that physiotherapists play a key role in the management of some of the leading causes of disability worldwide (e.g. low back and neck pain) (14), facilitating evidence-based physiotherapy has major implications for reducing healthcare costs and improving the health of millions. The primary aim of this study was to evaluate physiotherapists' feedback on a list of Choosing Wisely recommendations that were sent to members of the Australian Physiotherapy Association before final recommendations were endorsed and distributed. The secondary aim was to determine the proportion of physiotherapists that agreed and disagreed with each recommendation.

2. Methods

2.1. Study design

We performed a cross-sectional online survey that utilised a content analysis of free-text responses from members of the Australian Physiotherapy Association regarding a list of Choosing Wisely recommendations. The University of Sydney Human Research Ethics Committee approved all study procedures [Project number: 2018/518].

2.2. Participants and recruitment

In November 2015, the Australian Physiotherapy Association sent an email invitation to 20,029 physiotherapist members seeking feedback on a draft list of Choosing Wisely recommendations. The draft list of recommendations were developed by a process of consensus over a series of meetings between 6-8 physiotherapists (clinicians and academics) from different sub-disciplines (e.g. musculoskeletal, cardiorespiratory) and a Choosing Wisely representative. Participants were informed that the Australian Physiotherapy Association would use their feedback to improve the draft Choosing Wisely recommendations. All responses were anonymous as participants were not asked to provide

any identifiable information (e.g. age, gender, contact details). The draft Choosing Wisely recommendations were largely similar to the current recommendations (Table 1).

2.3. Data collection

The survey included six sections; each section included a recommendation that was linked to a question (Table 2). First, participants were shown a Choosing Wisely recommendation from the American Physical Therapy Association: *"Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program"*. Participants were asked whether the style of wording (i.e. using "Don't") was an acceptable method for engaging the physiotherapy profession in discussions about evidence-based practice. Participants could answer 'Yes' or 'No' (or choose not to answer) and provide feedback in a free-text field. The next five sections presented draft Choosing Wisely recommendations from the Australian Physiotherapy Association. Participants were shown a recommendation and a brief explanatory note to help them understand why the Australian Physiotherapy Association selected the recommendation. Participants were then asked if they agreed/disagreed with the recommendation (or neither agreed/disagreed) and were prompted to provide feedback in a free-text field.

2.4. Analysis

We used descriptive statistics (counts and percentages) to report agreement with each question and performed a content analysis on all free-text responses (15). The content analysis allowed us to report the content and frequency of codes expressed in responses; a code is a pre-established category which reflects an important characteristic of a response. The analysis represents the perspectives of physiotherapists working in an academic healthcare setting and private musculoskeletal clinics. Two researchers (JZ and AP) read through all the responses to familiarise themselves with their content, taking notes and developing codes to represent the key characteristics of responses. The same researchers

discussed and refined these codes (which was done separately for each question), and re-read through all the responses to ensure the codes captured all the important information expressed by participants. The researchers (JZ and AP) developed a coding framework using an inductive approach, as the aim was to generate new ideas from the data. This coding framework was then applied to a random sample of responses for each question (at least 20%) to test the reliability of the framework (see below). Each response was allocated up to five codes based on its content. A detailed outline of the coding framework is in Supplementary Table 1.

Kappa statistics (95% confidence intervals (CI)) and percent exact agreement were calculated to assess level of agreement between JZ and AP for coding the responses for each question. This analysis used 5,000 bootstrap replications to calculate the 95% Confidence Intervals (CIs) and was performed using STATA statistical software (version 14.1). Kappa statistics (k) were interpreted as follows: <0.00="poor", 0.00–0.20="slight", 0.21–0.40="fair", 0.41–0.60="moderate", 0.61–0.80="substantial", ≥0.81="almost perfect" (16). The coding checklist for each question was refined until level of agreement on a random sample was k≥0.7, with all disagreements resolved by discussion. Two researchers (JZ and AP) then applied the final framework to the remaining responses.

2.5. Patient or Public Involvement

Patients and members of the public were not involved in the design of this study.

3. Results

There were 9,764 physiotherapists that opened the email invitation (49%) and 543 that completed the survey (response rate 5.6%). There were 152 (28.0%) free-text responses for section one, 106 (19.5%) for section two, 137 (25.2%) for section three, 180 (33.1%) for section four, 143 (26.3%) for section five, and 154 (28.4%) for section six. Level of

agreement between the coding researchers was 'almost perfect' for sections one to five (range: k=0.86 to 0.94) and 'substantial' for section six (k=0.75, 95% CI: 0.54 to 0.94) (Supplementary Table 2).

3.1. Agreement and disagreement with recommendations

Most physiotherapists agreed that validated decision rules should guide the use of imaging (76.6% agreed; 3.7% disagreed). Fewer agreed that physiotherapists should not provide incentive spirometry after abdominal and cardiac surgery (60.4% agreed; 7.9% disagreed), not use electrotherapy for low back pain (52.3% agreed; 25.4% disagreed), not provide ongoing manual therapy for adhesive capsulitis of the shoulder (59.3% agreed; 16.0% disagreed) and not provide ongoing treatment when there is no improvement in measurable patient outcomes (62.8% agreed; 13.6% disagreed). Most physiotherapists agreed that the wording of Choosing Wisely recommendations is an acceptable method to engage the profession in discussions about evidence-based practice (63.9% agreed; 24.7% disagreed) (Table 3).

3.2. Feedback on recommendations

3.2.1. Section One: style of wording of Choosing Wisely recommendations

For responses that suggested disagreement, codes included: unqualified statements are inappropriate (n=49, 32.2%), wording would benefit from further refining (n=34, 22.4%), clinical experience is more valuable than evidence (n=19, 12.5%), shift the framing from negative to positive (n=18, 11.8%), threat to autonomy or the profession (n=16, 10.5%), and new evidence might change recommendations (n=4, 2.6%) (Supplementary Table 3). For example:

> *"Wording needs to be guidance, not definitive in most situations as individual cases may require alternative approaches"* (unqualified statements are inappropriate)

"Provocative. Too black and white…Are we going to drive our patients to masseurs and quacks" (threat to autonomy or the profession)

"Evidenced base treatment are those that are proven, but they shouldn't exclude time worn treatments that are yet to be proven ineffective" (new evidence might change recommendations).

For responses that suggested agreement, codes included: unqualified statements (i.e. those without reservation or limitation) are important (n=22, 14.5%), recommendations provoke discussion (n=20, 13.2%) and recommendations will help change practice (n=12, 7.9%) (Supplementary Table 3). For example:

"The wording of these statements should be like a pebble in every physio's shoe challenging our thinking and processes. I personally think the style of wording does that" (unqualified statements are important)

"I like the wording because it makes the recommendations clear and may be an alarming prompt for clinicians to change their practice" (recommendations will help change practice).

3.2.2. Section Two: validated decision rules for imaging

For responses that suggested disagreement, codes included: blanket rules are inappropriate (n=27, 25.5%), clinical experience is more valuable than validated decision rules (n=21, 19.8%), and threat to autonomy or the profession (n=5, 4.7%) (Supplementary Table 3). For example:

"There will always be situations where there is a need to contravene these rules, the statement leaves no scope for this" (blanket rules are inappropriate)

"In over 40 years of disciplined Physio Practice, I have personally discovered a number of spinal and pelvic tumours in patients, that would otherwise have been missed, had X-rays not been taken" (clinical experience is more valuable than validated decision rules).

Most responses that suggested agreement did not have any specific comments (n=43, 40.6%); a small percentage highlighted that educating patients and clinicians will support the adoption of imaging recommendations (n=10, 9.4%). A small percentage of responses suggested that the wording of the above-recommendation would benefit from further refining (n=16, 15.1%) and unqualified statements are inappropriate (n=3, 2.8%) (Supplementary Table 3). For example:

"There will need to be a great deal of re-education of the public for this to be seen as reasonable for certain clients" (educating patients and clinicians will support the adoption of imaging recommendations)

"Physios generally don't use imaging of course, whereas advocate for imaging could be a better phrase" (benefit from further refining).

3.2.3. Section Three: use of incentive spirometry

A large percentage of respondents commented that they did not have expertise to provide feedback on this recommendation (n=70, 51.1%). For responses that suggested disagreement, codes included: blanket rules are inappropriate (n=19, 13.9%), clinical experience is more valuable than evidence (n=16, 11.7%), questioning the purpose of the recommendation (n=5, 3.6%) and threat to autonomy or the profession (n=3, 2.2%) (Supplementary Table 3). For example:

"You could still use it if it's the only thing a patient will do to encourage larger tidal volumes" (blanket rules are inappropriate)

"I do not want my practice methods dictated by anybody, Australian Physiotherapy Association or otherwise" (threat to autonomy or the profession).

Most responses that suggested agreement did not have any specific comments (n= 17, 12.4%); a small percentage highlighted that the recommendation would help promote evidence-based care (n=11, 8.0%). A small percentage of responses suggested that the recommendation would benefit from further refining (n=10, 7.3%) and should shift the framing from negative to positive (n=8, 5.8%) and that unqualified statements are inappropriate (n=4, 2.9%) (Supplementary Table 3). For example:

"Movement and walking are cheaper, more functional alternatives to improving lung function" (help promote evidence-based care)

"Can we suggest what should be done instead of incentive spirometry?" (shift the framing from negative to positive).

3.2.4. Section Four: electrotherapy for low back pain

For responses that suggested disagreement, codes included: electrotherapy is appropriate to use as an adjunct to evidence-based care (n=54, 30.0%), clinical experience is more valuable than evidence (n=51, 28.3%), blanket rules are inappropriate (n=51, 28.3%), threat to autonomy or the profession (n=11, 6.1%) and new evidence might change recommendations (n=6, 3.3%) (Supplementary Table 3). For example:

"It can [be] appropriate to use electrotherapy for low back pain to support other evidence-based practice interventions" (appropriate to use as an adjunct to evidence-based care)

"My long experience (40 years) as a Musculoskeletal Physiotherapist shows me that pain, inflammation and muscle spasm is relieved by Interferential and sonophoresis, in most low back pain patients" (clinical experience is more valuable than evidence)

"If we tell all other professions that electrotherapy are no longer used in physiotherapy treatment for low back pain, I can't see any difference between our work as a masseur or exercise physiologist in the years to come" (threat to autonomy or the profession).

Most responses that suggested agreement did not have any specific comments (n=23, 12.8%); a small percentage highlighted that the use of electrotherapy needs to be reduced (n=13, 7.2%) and other evidence-based treatments are available (n=11, 6.1%). Codes for feedback on wording included: better define the disease presentation and modality of electrotherapy (n=17, 9.4%), unqualified statements are inappropriate (n=9, 5.0%) and shift the framing from negative to positive (n=4, 2.2%) (Supplementary Table 3). For example:

"Rarely used in last 10 years - always teach movement short of pain as a baseline" (other evidence-based treatments are available)

"This recommendation needs to be re-worded to be more specific about the chronicity of the condition" (better define the disease presentation and modality of electrotherapy)

"Should the statement not be: 'Don't use only electrotherapy modalities in the management of patients with low back pain'" (shift the framing from negative to positive).

3.2.5. Section Five: ongoing manual therapy for adhesive capsulitis

For responses that suggested disagreement, codes included: blanket rules are inappropriate (n=43, 30.1%), clinical experience is more valuable than evidence (n=28, 19.6%), threat to autonomy or the profession (n=7, 4.9%), manual therapy is appropriate to use as an adjunct to evidence-based care (n=7, 4.9%) and new evidence might change recommendations (n=6, 4.2%) (Supplementary Table 3). For example:

"This is true most of the time...but there are exceptions" (blanket rules are inappropriate)

"In the subacute to chronic setting I have effectively used manual therapy to improve shoulder range. I am at a loss as to how this evidence was derived" (clinical experience is more valuable than evidence).

Most responses that suggested agreement did not have any specific comments (n=23, 16.1%); a small percentage highlighted that other evidence-based treatments are available (n=14, 9.8%) and there is no evidence manual therapy alters natural history (n=4, 2.8%). Codes for feedback on wording included: better define the disease presentation and type of manual therapy provided (n=27, 18.9%) and unqualified statements are inappropriate (n=10, 7.0%) (Supplementary Table 3). For example:

"Problem is perpetuated by poor active movement, so retrain this" (other evidence-based treatments are available)

"[The statement] is too broad and encompassing to say never" (unqualified statements are inappropriate).

3.2.6. Section Six: ongoing physiotherapy without improvement in patient outcomes

For responses that suggested disagreement, codes included: physiotherapy could prevent or reduce deterioration in patients' symptoms (n=46, 29.9%), blanket rules are inappropriate (n=39, 25.3%), concern over the use of outcome measures (n=18, 11.7%) and threat to autonomy or the profession (n=17, 11.0%) (Supplementary Table 3). For example:

"Need also to consider situation where without contact with physio, patient demonstrates deterioration" (physiotherapy could prevent or reduce deterioration in patients' symptoms)

"Sometimes the patient may need to rely on the therapist's intervention as they may not be able to independently exercise correctly" (blanket rules are inappropriate)

"In my clinic we have had a good example of why this is not a reasonable blanket statement. We've had low back pain clients who have shown some activity of daily living and subjective improvement, whilst their Oswestry outcome measure was relatively insensitive to the improvement" (concern over the use of outcome measures).

Most responses that suggested agreement did not have any specific comments (n=38, 24.7%); a small percentage highlighted that physiotherapy should focus on outcomes and try to reduce overtreatment (n=15, 9.7%). Codes for feedback on wording included: better define ambiguous terms (n=27, 17.5%), unqualified statements are inappropriate (n=5, 3.2%) and shift the framing from negative to positive (n=4, 2.6%) (Supplementary Table 3). For example:

"Physiotherapists have a role in being upfront to patients when no outcome has been achieved from ongoing physiotherapy" (physiotherapy should focus on outcomes and try to reduce overtreatment)

"The reasons sweeping statements like these don't tend to work (with a few exceptions), is that very few conditions are black and white, or can be covered by a single statement" (unqualified statements are inappropriate).

4. Discussion

4.1. Statement of principal findings

The majority (63.9%) of physiotherapists agreed with the style of wording for Choosing Wisely recommendations and with draft recommendations (ranging from 52.3% to 76.6%), although a number of areas of disagreement and suggestions for improvement were

identified. Many physiotherapists believe blanket rules are inappropriate, clinical experience is more valuable than evidence, and the recommendations threaten physiotherapists' autonomy and the profession. Many also suggested that the recommendations need to better define key terms and shift the framing from negative to positive. Since there are few differences between the draft Choosing Wisely recommendations and current recommendations (Supplementary Table 1), the findings from this study are an important step towards developing and testing strategies to increase adoption of Choosing Wisely recommendations and replace low-value physiotherapy with evidence-based physiotherapy.

4.2. Strengths and weaknesses of the study

A strength of this study is that two researchers developed a reliable coding framework to code written feedback from physiotherapists regarding Choosing Wisely recommendations. Level of agreement between the two researchers coding responses ranged from 'substantial' (section six) to 'almost perfect' (sections one to five). The main weakness is the low response rate to the survey (5.6%). Our sample might therefore not be representative of all members of the Australian Physiotherapy Association; this reduces our confidence in the quantitative results of our study. Further, as we have no demographic data for the participants, this might limit external validity. Nevertheless, our qualitative data highlights possible targets to increase adoption of Choosing Wisely recommendations among physiotherapists.

4.3. Meaning of the study

We found that some physiotherapists believe blanket recommendations should not guide treatment choices and that clinical experience is more valuable than evidence. This is largely consistent with a qualitative study of 31 physicians in emergency medicine, internal medicine, hospital medicine, and cardiology from the United States (17). Many physicians felt that Choosing Wisely recommendations should act as guide and not be a strict set of rules

for clinicians, while others disagreed with certain recommendations (e.g. general health checks) based on their clinical experience.

Disagreement with blanket recommendations and valuing clinical experience over evidence could explain why some physiotherapists do not use guidelines to inform their treatment choices (10, 13, 18-19). For example, previous research found only 46% of physiotherapists believe guidelines should inform the management of low back pain (survey of n=274) (11), 66% apply guidelines to more than half of their patients with acute ankle sprains (survey of n=214) (18), and 39% use guidelines to inform the management of whiplash more than three-quarters of the time (survey of n=237) (19). Challenging these beliefs could be an important first step towards replacing low-value care with evidence-based care in physiotherapy.

Barriers to following Choosing Wisely recommendations emerged from our study. Some physiotherapists expressed that recommendations do not consider clinical reasoning or clinical experience, and make treatment 'recipe-based'. Others expressed that there will always be exceptions to practice recommendations, such as patient preference and fear of missing an important diagnosis. Similar barriers were identified in a Choosing Wisely report; 73% of physiotherapists were willing to perform low-value testing if requested by a patient and 61% when uncertain of a diagnosis (20). However, a qualitative study of 19 physicians in Canada identified different barriers of time pressure, uncertainty about what constitutes necessary care, and fear of litigation (21). This highlights the importance of exploring barriers to adopting Choosing Wisely recommendations across professions.

Physiotherapists appear to view practice recommendations as a recipe that does not allow for clinical reasoning nor considering patient preference; this belief could make increasing adoption of Choosing Wisely recommendations challenging. We believe that providing individualised care and adhering to guideline recommendations are not mutually exclusive. For example, physiotherapists need to tailor guideline-recommended treatments for low back

pain, such as education and exercise, because of patient-level factors including health literacy and exercise preference. Clinical reasoning is also extremely important when it comes to deciding whether a patient with low back pain requires imaging. This is illustrated by the fact that 'clinical suspicion' is one of the few red flags endorsed in guidelines that are useful for identifying patients with a serious pathology (22).

Some physiotherapists expressed that research evidence is not consistent with the treatment outcomes they observe in the clinic. This opens up an interesting debate about the value of healthcare and potential issues with using clinical experience to justify treatment choices. One argument is that it is reasonable to conclude a treatment is appropriate if the patient improves and they are happy with the care provided. The counter argument is that many factors could explain why clinicians observe improvement in patient outcomes despite providing treatment not supported by strong evidence. These include the confounding effects of natural history, regression to the mean, placebo effects and other non-specific treatment effects. In other words, the same patient might have got similar results from no treatment or better results from a treatment supported by evidence. Views about the value of clinical experience versus evidence could be the most difficult barrier to replacing low-value physiotherapy with evidence-based physiotherapy.

The high proportion of physiotherapists that agreed with the draft Choosing Wisely recommendations might explain why only minor changes were made to the final list published by the Australian Physiotherapy Association. Further, our content analysis highlighted key areas of disagreement with the recommendations that might have been difficult to incorporate into a brief 'do not do' message (e.g. feedback that recommendations do not consider clinical reasoning or clinical experience, and make treatment 'recipe-based'). Nevertheless, the Australian Physiotherapy Association did not ignore this feedback and introduced the Choosing Wisely recommendations with the following statement: *"The*

recommendations are not prescriptive - instead, they should help to start a conversation about what is appropriate and necessary in individual patient consultation".

4.4. Unanswered questions and future research directions

This study provides insight into how physiotherapists view their Association's Choosing Wisely recommendations, although a more in-depth understanding of the barriers and facilitators to adopting Choosing Wisely recommendations is needed. We plan to conduct qualitative research to address this knowledge gap and further explore the barriers and facilitators to replacing low-value physiotherapy with evidence-based physiotherapy.

Future research should explore how different aspects of the language of Choosing Wisely could either support or discourage adoption of recommendations. Some physiotherapists expressed that unqualified recommendations were key to changing practice, while others believed that recommendations should be qualified to allow for clinical reasoning. Further, some suggested that recommendations should focus on a positive message; either by providing an alternative to low-value care or stating when a typically low-value intervention could be provided. Choice experiments, such as discrete choice experiments or best-worst-scaling surveys, are a useful tool for eliciting preferences in healthcare (23) and could be used to determine whether modifying the language of Choosing Wisely recommendations could increase clinicians' willingness to follow them. Understanding how language influences the adoption of Choosing Wisely recommendations has implications for refining existing and developing new recommendations for the Australian Physiotherapy Association; as well as for the 230+ professional societies worldwide with Choosing Wisely lists.

5. Conclusion

Physiotherapists' views regarding Choosing Wisely recommendations highlight a number of areas of disagreement and suggestions for improvement. These findings could prove valuable for developing and testing strategies to increase physiotherapists' willingness to follow

Choosing Wisely recommendations and so replace low-value physiotherapy with evidence-based physiotherapy.

Authors' contributions

All authors critically revised the manuscript for important intellectual content and approved the final manuscript. Please find below a detailed description of the role of each author:

- Joshua R Zadro: conception and design, acquisition, analysis and interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Aimie Peek: conception and design, acquisition and interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Rachael Dodd: conception and design, interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Kirsten McCaffery: conception and design, interpretation of data, drafting and revision of the manuscript, and final approval of the version to be published
- Christopher G Maher: conception and design, interpretation of data, drafting and revision of the manuscript and final approval of the version to be published

The Corresponding Author (JZ) attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

Competing interests: All authors declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work; no other relationships or activities that could appear to have influenced the submitted work.

Acknowledgements: The authors would like to thank the Australian Physiotherapy Association for the study data.

Ethics approval: The University of Sydney Human Research Ethics Committee approved all study procedures [Project number: 2018/518].

Funding source: This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data availability statement: De-identified participant data is not publicly available but may be obtained from the Australian Physiotherapy Association upon request.

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Table 1. Comparison of draft and current Choosing Wisely recommendations from the Australian Physiotherapy Association

Draft recommendations	Current recommendations	Modification
Don't use imaging where validated decision rules indicate imaging is not necessary.	Don't request imaging for patients with non-specific low back pain and no indicators of a serious cause for low back pain.	Split into 3 recommendations each specifying a different clinical scenario
	Don't request imaging of the cervical spine in trauma patients, unless indicated by a validated decision rule.	
	Don't request imaging for acute ankle trauma unless indicated by the Ottawa Ankle Rules. (localized bone tenderness or inability to weight-bear as defined in the Rules)	
Don't use incentive spirometry after upper abdominal and cardiac surgery.	Don't routinely use incentive spirometry after upper abdominal and cardiac surgery.	'Don't' was replaced by 'Don't routinely'
Don't use electrotherapy modalities in the management of patients with low back pain.	Avoid using electrotherapy modalities in the management of patients with low back pain.	'Don't use' was replaced by 'Avoid using'
Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder	Don't provide ongoing manual therapy for patients with adhesive capsulitis of the shoulder.	'Don't use' was replaced by 'Don't provide'. The population was broadened from patients 'following acute adhesive capsulitis' to all patients with adhesive capsulitis
Don't use ongoing physiotherapy in cases where there isn't improvement in measurable patient outcomes.	No recommendation	This recommendation was not included in the current list

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Table 2. Draft recommendations and survey questions

	Context	Example recommendation from the APTA	Question
Section 1	The Choosing Wisely format deliberately uses "don't" or similar wording, and is expressly intended to incite discussion about interventions. One of the "5 Things Physical Therapists and Patients Should Question" by the American Physical Therapy Association in 2014 was:	Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program.	In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?
	Draft recommendation	**Explanation**	**Question**
Section 2	Don't use imaging where validated decision rules indicate imaging is not necessary.	Imaging should only be requested when clinically appropriate. Physiotherapists should use appropriate clinical decision making tools such as Ottawa Ankle Rules, Canadian C-Spine Rule, Nexus, and should not be used in cases of non-specific low back pain with no signs of serious pathology.	Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?
Section 3	Don't use incentive spirometry after upper abdominal and cardiac surgery.	Physiotherapists should not routinely use incentive spirometry after upper abdominal and cardiac surgery. Physiotherapists should instead consider adding other interventions to standard care. For example, there is high level evidence for the addition of	Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?

		preoperative inspiratory muscle training when added to usual care.	
Section 4	Don't use electrotherapy modalities in the management of patients with low back pain.	Clinical practice guidelines don't recommend electrotherapy modalities to manage low back pain. Physiotherapists should instead consider other interventions to manage low back pain, for example exercise prescription and education.	Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?
Section 5	Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder.	Physiotherapists should consider a range of other interventions to manage acute adhesive capsulitis, like exercise to optimize function, education and appropriate management of pain.	Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?
Section 6	Don't use ongoing physiotherapy in cases where there isn't improvement in measurable patient outcomes.	Physiotherapists should facilitate and empower the patient's independent management of chronic conditions.	Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?

APTA: American Physical Therapy Association.

Table 3. Agreement and disagreement with survey questions

Section	Question	Agree, n (%)	Disagree, n (%)	Neither, n (%)
One	In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?	347 (63.9%)	134 (24.7%)	62 (11.4%)
Two	Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?	416 (76.6%)	20 (3.7%)	107 (19.7%)
Three	Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?	328 (60.4%)	43 (7.9%)	172 (31.7%)
Four	Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?	284 (52.3%)	138 (25.4%)	121 (22.3%)
Five	Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?	322 (59.3%)	87 (16.0%)	134 (24.7%)
Six	Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?	341 (62.8%)	74 (13.6%)	128 (23.6%)

Supplementary Tables

Supplementary Table 1. Coding Framework

Supplementary Table 2. Number of responses, codes, percent exact agreement and Kappa (95% Confidence Interval) for the level of agreement between reviews for coding a random sample of responses

N: number of responses coded; k: kappa coefficient; CI: confidence interval.

Supplementary Table 3. Frequency of codes in response to Section One to Six

N: number of respondents; *: percent of respondents that completed the free-text field for this question.

Supplementary Table 1. Coding framework

SECTION 1

CONTEXT: The Choosing Wisely format deliberately uses "don't" or similar wording, and is expressly intended to incite discussion about interventions. One of the "5 Things Physical Therapists and Patients Should Question" by the American Physical Therapy Association in 2014 was:

RECOMMENDATION: Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program.

QUESTION: In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?

CODING FRAMEWORK:

Response suggests disagreement

1. **Unqualified statements are inappropriate**
   - Any negative comment regarding the use of strong language
2. **Would benefit from further refining**
   - Any suggestion/comment for how the wording could be changed
3. **Clinical experience is more valuable than evidence**
   - Any comment suggesting that the respondents experience is more trustworthy than research evidence
4. **Shift framing from negative to positive**
   - Any comment suggesting that recommendations need to be more positive (e.g. providing a high-value alternative alongside a 'don't' recommendation, instructing clinicians what to do)
5. **Threat to autonomy or the profession**
   - Any comment expressing concern about clinicians not being able to apply clinical reasoning
   - Any comment expressing concerns that the recommendations could negatively impacting the profession
6. **New evidence might change recommendations**
   - Any comment that suggests new evidence might contradict current recommendations

Response suggests disagreement

7. **Using unqualified statements is important**
   - Any positive comment regarding the use of strong language
8. **Provokes discussion**
   - Any mention of discussion or debate prompted by the recommendations
9. **Will help change practice**
   - Any mention of how the recommendations will change practice
10. **No further comment**
   - Any form of agreement that does not specify the reason for agreement (e.g. *"I agree with this statement"*)

SECTION 2

RECOMMENDATION: Don't use imaging where validated decision rules indicate imaging is not necessary.

EXPLANATION: Imaging should only be requested when clinically appropriate. Physiotherapists should use appropriate clinical decision making tools such as Ottawa Ankle Rules, Canadian C-Spine Rule, Nexus, and should not be used in cases of non-specific low back pain with no signs of serious pathology.

QUESTION: Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?

CODING FRAMEWORK:

Response suggests disagreement

1. **Blanket rules are inappropriate**
   - Any comment that suggests the recommendation is inappropriate because it does not apply to every patient
2. **Clinical experience is more valuable than validated decision rules**
   - Any comment suggesting that the respondents experience is more trustworthy than validated decision rules
3. **Threat to autonomy or the profession**
   - Any comment expressing concern about clinicians not being able to apply clinical reasoning
   - Any comment expressing concerns that the recommendations could negatively impacting the profession

Response suggests agreement

4. **No further comment**
   - Any form of agreement that does not specify the reason for agreement
5. **Educating patients and clinicians will support adoption**
   - Any comment suggesting that educating patients and clinicians will support uptake of this recommendation

Feedback on wording

6. **Would benefit from further refining**
   - Any suggestion/comment for how the wording could be improved
7. **Unqualified statements are inappropriate**
   - Any negative comment regarding the use of strong language

Not area of expertise

- Any acknowledgement that this recommendation is outside the expertise of the respondent

SECTION 3

RECOMMENDATION: Don't use incentive spirometry after upper abdominal and cardiac surgery.

EXPLANATION: Physiotherapists should not routinely use incentive spirometry after upper abdominal and cardiac surgery. Physiotherapists should instead consider adding other interventions to standard care. For example, there is high level evidence for the addition of preoperative inspiratory muscle training when added to usual care.

QUESTION: Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?

CODING FRAMEWORK:

Not area of expertise

- Any acknowledgement that this recommendation is outside the expertise of the respondent

Response suggests disagreement

1. **Blanket rules are inappropriate**
   - Any comment that suggests the recommendation is inappropriate because it does not apply to every patient
2. **Clinical experience is more valuable than evidence**
   - Any comment suggesting that the respondents experience is more trustworthy than research evidence
3. **Questions the purpose of the recommendation**
   - Any comment that questions why the recommendation made the Choosing Wisely 'Top Five' list
4. **Threat to autonomy or the profession**
   - Any comment expressing concern about clinicians not being able to apply clinical reasoning
   - Any comment expressing concerns that the recommendations negatively impacting the profession

Response suggests agreement

5. **No further comment**
   - Any form of agreement that does not specify the reason for agreement
6. **Will help promote evidence-based care**
   - Any comment that suggests this recommendation will increase clinicians' use of evidence-based care

Feedback on wording

1. **Would benefit from further refining**
   - Any suggestion/comment for how the wording could be changed
2. **Shift focus from negative to positive**
   - Any comment suggesting that recommendations need to be more positive
3. **Unqualified statements are inappropriate**
   - Any negative comment regarding the use of strong language

SECTION 4

RECOMMENDATION: Don't use electrotherapy modalities in the management of patients with low back pain.
EXPLANATION: Clinical practice guidelines don't recommend electrotherapy modalities to manage low back pain. Physiotherapists should instead consider other interventions to manage low back pain, for example exercise prescription and education.
QUESTION: Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?

CODING FRAMEWORK:

Response suggests disagreement

1. **Appropriate to use as adjunct to high-value treatments**
   - Any comment highlighting the value of using electrotherapy alongside other treatments (e.g. exercise)
2. **Clinical experience is more valuable than evidence**
   - Any comment suggesting that the respondents experience is more trustworthy than research evidence
3. **Blanket rules are inappropriate**
   - Any comment that suggests the recommendation is inappropriate because it does not apply to every patient
4. **Threat to autonomy and the profession**
   - Any comment expressing concern about clinicians not being able to apply clinical reasoning
   - Any comment expressing concerns that the recommendations negatively impacting the profession
5. **New evidence might change recommendations**
   - Any comment that suggests new evidence might contradict the recommendation

Response suggests agreement

6. **No further comment**
   - Any form of agreement that does not specify the reason for agreement
7. **The use of electrotherapy must be reduced**
   - Any comment highlighting the need to reduce the use of electrotherapy
8. **Other evidence-based treatments are available**
   - Any comment that highlights the availability of evidence-based treatments for low back pain

Feedback on wording

9. **Absolute statements are inappropriate**
   - Any negative comment regarding the use of strong language
10. **Better define the disease presentation and modality of electrotherapy provided**
    - Any comment that suggests the recommendation should be clearer about the type of low back pain (or musculoskeletal condition) it's referring to (e.g. acute low back pain)
    - Any comment that suggests the recommendation should be clearer about the type of electrotherapy it's referring to (e.g. ultrasound)

11. Shift framing from negative to positive

- Any comment suggesting that recommendations need to be more positive

Not area of expertise

- Any acknowledgement that this recommendation is outside the expertise of the respondent

SECTION 5

RECOMMENDATION: Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder.
EXPLANATION: Physiotherapists should consider a range of other interventions to manage acute adhesive capsulitis, like exercise to optimize function, education and appropriate management of pain.
QUESTION: Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?

CODING FRAMEWORK:

Response suggests disagreement

1. **Blanket rules are inappropriate**
   - Any comment that suggests the recommendation is inappropriate because it does not apply to every patient
2. **Clinical experience is more valuable than evidence**
   - Any comment suggesting that the respondents experience is more trustworthy than research evidence
3. **Threat to autonomy and the profession**
   - Any comment expressing concern about clinicians not being able to apply clinical reasoning
   - Any comment expressing concerns that the recommendations negatively impacting the profession
4. **Appropriate to use as adjunct to evidence-based care**
   - Any comment highlighting the value of using ongoing manual therapy alongside other treatments interventions (e.g. exercise)
5. **New evidence might change recommendations**
   - Any comment that suggests new evidence might contradict the recommendation

Response suggests agreement

6. **No further comment**
   - Any form of agreement that does not specify the reason for agreement
7. **Other evidence-based treatments may be available**
   - Any comment that highlights the availability of evidence-based treatments for adhesive capsulitis
8. **No evidence manual therapy alters natural history**
   - Any comment that highlights the lack of benefit of manual therapy for adhesive capsulitis or the favourable natural history of adhesive capsulitis

Feedback on wording

9. **Better define the presentation and manual therapy provided**
   - Any comment that suggests the recommendation should be clearer about the stage of adhesive capsulitis it's referring to (e.g. early vs. late stage)
   - Any comment that suggests the recommendation should be clearer about the type of manual therapy it's referring to (e.g. massage, manipulation, passive movements)
10. **Unqualified statements are inappropriate**

- Any negative comment regarding the use of strong language

Not area of expertise

- Any acknowledgement that this recommendation is outside the expertise of the respondent

SECTION 6

RECOMMENDATION: Don't use ongoing physiotherapy in cases where there isn't improvement in measurable patient outcomes.
EXPLANATION: Physiotherapists should facilitate and empower the patient's independent management of chronic conditions.
QUESTION: Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?

CODING FRAMEWORK:

1. **Not area of expertise**

Response suggests disagreement

1. **Physiotherapy could prevent deterioration in symptoms**
   - Any comment highlighting that the role of a physiotherapist can be to maintain a patient's function or prevent deterioration
2. **Blanket rules are inappropriate**
   - Any comment that suggests the recommendation is inappropriate because it does not apply to every patient
3. **Concerns over use of outcome measures**
   - Any comment highlighting potential issues with outcome measures (e.g. availability, suitability, sensitivity to detect change, relevance to patients)
4. **Threat to autonomy and the profession**
   - Any comment expressing concern about clinicians not being able to apply clinical reasoning
   - Any comment expressing concerns that the recommendations negatively impacting the profession

Response suggests agreement

5. **No further comment**
   - Any form of agreement that does not specify the reason for agreement
6. **Physiotherapy should focus on outcomes and try to reduce overtreatment**
   - Any comment highlighting the potential harms of overtreatment in physiotherapy (e.g. unnecessary spending, diminishes the value of physiotherapy services)

Feedback on wording

7. **Better define ambiguous terms**
   - Any comment that suggests the recommendation should be clearer about the meaning of 'ongoing' and the type of patient outcomes it's referring to
8. **Unqualified statements are inappropriate**
   - Any negative comment regarding the use of strong language
9. **Shift framing from negative to positive**
   - Any comment suggesting that the recommendation needs to be more positive

Unclear response

- Any response that could not be interpreted

Supplementary Table 2. Number of responses, codes, percent exact agreement and Kappa (95% Confidence Interval) for the level of agreement between reviews for coding a random sample of responses

Characteristic of recommendations	N (%)	Codes	Agreement	k	95% CI
All sections	114 (24.8)	165	86%	0.85	0.78-0.91
Section 1	16 (20.5)	24	91%	0.89	0.73-1.00
Section 2	15 (25.9)	18	94%	0.91	0.68-1.00
Section 3	21 (28.4)	24	91%	0.86	0.66-1.00
Section 4	29 (30.2)	46	86%	0.84	0.70-0.96
Section 5	14 (20.6)	23	94%	0.93	0.76-1.00
Section 6	19 (22.4)	28	80%	0.75	0.54-0.94

N: number of responses coded; k: kappa coefficient; CI: confidence interval.

Supplementary Table 3. Frequency of codes in response to Section One to Six

SECTION ONE			
RECOMMENDATION: Don't employ passive physical agents except when necessary to facilitate participation in an active treatment program.			
QUESTION: In the context of the intent of the Choosing Wisely campaign do you think style of wording is an acceptable method to engage the physiotherapy profession in a conversation about evidence based clinical practice?			
Code description	**Example**	**N**	**%***
Response suggests disagreement			
Unqualified statements are inappropriate	I would prefer an alternative phrase such as 'don't routinely'. I think the absolute statement of 'don't' requires an exhaustive list of all of the possible, even if rare, exceptions.	49	32.2
Would benefit from further refining	The statement is very broad which may need further refining in the actual discussion document.	34	22.4
Clinical experience is more valuable than evidence	This is an entirely inappropriate blanket statement. For example, a 12 year old comes in with a first ever episode of an acute wry neck. This can be completely resolved in one passive treatment. It would be inappropriate to give them a home exercise program as there is no evidence that it would be useful and it could focus them on having a problem which could create hyper-vigilance.	19	12.5
Shift framing from negative to positive	I would prefer a discussion point around the affirmative rather than the negative, e.g. only choose passive physical agents with demonstrable measurable outcomes.	18	11.8
Threat to autonomy or the profession	Combative and deprecating approach to practitioners. Suggestive of disrespect of practitioner and lack of sincere care for our patients.	16	10.5
New evidence might change recommendations	'Don't' is a strong word and if in the future an Australia Physiotherapy Association 'Don't' suggestion is found to be incorrect then the Australia Physiotherapy Association would have to provide an answer. More appropriate wording could be 'The current evidence suggests…'	4	2.6
Response suggests agreement			
Using unqualified statements is important	Physiotherapy, like other health professions, is inherently conservative and resistant to change. Physiotherapists won't pay attention to vaguely worded advice. The DON'T format is the key to the effectiveness of the Choosing Wisely strategy.	22	14.5
Provokes discussion	Especially where the explanation is provided as to why. I feel it is an emotive and engaging way to start a conversation/healthy debate.	20	13.2
Will help change practice	Strong, directive language is appropriate to make clinicians realise that they are directions to follow not suggestions to consider.	12	7.9

No further comment	I would completely agree with this statement - can't think of a better way of wording this concept!	12	7.9

SECTION TWO			
RECOMMENDATION: Don't use imaging where validated decision rules indicate imaging is not necessary.			
QUESTION: Do you agree that physiotherapists should not use imaging when validated decision rules indicate it is not necessary?			
Code description	**Example**	**N**	**%***
Response suggests disagreement			
Blanket rules are inappropriate	Doesn't always correlate with patient's wishes - sometimes they just want peace of mind, despite our clinical judgement.	27	25.5
Clinical experience is more valuable than validated decision rules	X-rays can give important but subtle information about the presenting circumstances - DISH; functional instability. The rules were developed around a concept of sensitivity for specific diagnoses. What level of risk are you prepared to accept and are these the only pathologies where x-rays are useful to the clinically reasoned management? Consequently they are limited, if not conceptually flawed.	21	19.8
Threat to autonomy or the profession	The situations where I would recommend imaging is when the patient is over cautious and if I have had trouble establishing a professional rapport with them even after explaining decision making to them. It is important that the patient has a professional belief in us because often the doctor will say something that has not been based on clinical decision and the patient believes that. E.g. the doctor says...and with questioning they haven't even looked at the body part. The reason for this is they are likely to go back to their doctor who will recommend an X ray anyway. Some patients feel the need to have this investigated and if that gives them piece of mind and therefore aids/speeds up their recovery then I am not against it.	5	4.7
Response suggests agreement			
No further comment	This is one area that there is clear evidence. The evidence supports that imaging can in fact do harm such as exposure to unnecessary radiation and in some cases impede progress and recovery. This is an important recommendation.	43	40.6
Educating patients and clinicians will support adoption	I think the APA should do a members value webinar promoting the Western Australia radiology imaging pathways website and mobile phone app. There is need for more education and easier access to the rules, as well as discussion on how to explain this to the modern client who wants images.	10	9.4
Feedback on wording			
Would benefit from further refining	Should we be a little more specific here and identify one area. It is still quite broad and worried that not ALL physios will understand validated decision rules or know of these.	16	15.1

Unqualified statements are inappropriate	Avoid using 'should not' - go for 'physiotherapists are urged to avoid imaging'... or 'Best practice indicates that physiotherapists follow validated decision rules regarding not imaging when contraindicated.'	3	2.8
Not area of expertise	This is not an area I have enough knowledge or experience to comment on.	3	2.8

SECTION THREE			
RECOMMENDATION: Don't use incentive spirometry after upper abdominal and cardiac surgery.			
QUESTION: Do you agree that physiotherapists should not use incentive spirometry after upper abdominal and cardiac surgery?			
Code description	**Example**	**N**	**%***
Not area of expertise	I don't work in this area so prefer not to comment.	70	51.1
Response suggests disagreement			
Blanket rules are inappropriate	Another ideal recommendation that doesn't take health economics & workload into account. There are still plenty of patients who would never be seen pre-op, regardless of the planned surgery.	19	13.9
Clinical experience is more valuable than evidence	Patients are individuals and in my experience sometimes it has been indicated and also helpful but mass use is not indicated.	16	11.7
Questions the purpose of the recommendation	Patients enjoy and are encouraged by post-op increases in vital capacity etc. Negligible cost blowing in a machine.	5	3.6
Threat to autonomy or the profession	It is one tool in the toolbox, there is no reason not to use it other than that there is no evidence for its routine use. I really dislike these blanket DONT statements. They go against clinical judgement and reasoning...	3	2.2
Response suggests agreement			
No further comment	Love this!	17	12.4
Will help promote evidence-based care	Getting this out there with the medical professions' recommendations is exciting. Hopefully it will help us get the message to them to help influence a change in the hospital setting.	11	8.0
Feedback on wording			
Would benefit from further refining	The statement should mention evidence regarding early mobility rather than just inspiratory muscle training.	10	7.3

Shift framing from negative to positive	Statement doesn't address recommended therapy AFTER these surgeries at all - what about mobilization?	8	5.8
Unqualified statements are inappropriate	Don't infers it should never be used. This is not a safety issue that warrants a 'DONT'. Incentive spirometry may still be appropriate in some select patients who otherwise have difficulty taking/coordinating deep breaths, or who are post-operatively confused, or need motivation.	4	2.9

SECTION FOUR

RECOMMENDATION: Don't use electrotherapy modalities in the management of patients with low back pain.

QUESTION: Do you agree that physiotherapists should not use use electrotherapy modalities in the management of patients with low back pain?

Code description	Example	N	%*
Response suggests disagreement			
Appropriate to use as adjunct to evidence-based care	Used in conjunction with appropriate education, active exercise etc. may provide enough short term relief to encourage full participation in the before mentioned strategies.	54	30.0
Clinical experience is more valuable than evidence	Very few physios just use electro of anything and they need to [be] educated. However, in the real world of quality musculoskeletal practice, many physios use electro +/- heat/cold therapy as an adjunct to manual, exercise and other therapies. It is patient specific may be short term analgesia or easing for the muscle spasm and this may improve movement quality and exercise compliance. Used well there is no down side clinically and costs the patient and system nothing.	51	28.3
Blanket rules are inappropriate	Lower back pain can present with lots of erector spinae spasm. Studies have shown that Interferential Therapy and Transcutaneous Electro-Nerve Stimulation are effective analgesics and do not have side effects. Unlike Codeine. How the heck do you expect to establish trust with a patient if we are not reducing their fear and pain before touching them when they are in strong pain?	51	28.3
Threat to autonomy or the profession	Why would the college/panel of experts see this as one of the top 5 thing going wrong in physio practice? Incredible really. I employ a dozen physios, am a titled MS and Sports physio and have not found a colleague who agrees with this one! The feeling is that the Australian Physiotherapy Association has lost touch for even starting down this track!	11	6.1
New evidence might change recommendations	Research published in the Lancet regarding the effectiveness of low level laser to treat cervical pain may indicate a place for this in low back pain but I am not aware of any research to show this is effective or not so I am not happy about a blanket ban of use of all modalities. Laser may well prove to be of use.	6	3.3

Response suggests agreement			
No further comment	100% agree.	23	12.8
The use of electrotherapy must be reduced	Physiotherapists are intelligent people who should be able to use a multitude of more successful and evidence based treatments for low back pain patients. Anyone resorting to the passive electrophysical modalities is either trying to pump through as many patients as they can to make money or hasn't done a course recently enough to give them up to date treatment approaches.	13	7.2
Other evidence-based treatments are available	Physiotherapists have so many more manual and exercise skill sets to offer patients with low back pain.	11	6.1
Feedback on wording			
Better define the disease presentation and modality of electrotherapy provided	This is a very general statement about many types of applications. It would be better to see electrotherapy replaced with a specific modality for which there is Level 1 evidence.	17	9.4
Unqualified statements are inappropriate	This statement I think reflects academics who are not working in the clinical setting for most of their practice. Ask any clinician and they would comment that to put a blanket ban so to speak on electrotherapy is probably exceeding the actual value of the evidence we have. That said, there is no doubt that long-term management of backs should not be based upon electrotherapy of course, but clients will tell you that TENS and such actually do provide the ability to improve their activities of daily living. Hence my concern with 'Don't'. Rather something like 'it should not be the mainstay of therapy' or similar...	9	5.0
Shift framing from negative to positive	Is the statement: *"Clinical practice guidelines don't recommend electrotherapy modalities to manage low back pain. Physiotherapists should instead consider other interventions to manage low back pain, for example exercise prescription and education"* going to be included in our statement, if so I like this recommendation.	4	2.2
Not area of expertise	I don't know the latest evidence to comment here.	3	1.7

SECTION FIVE			
RECOMMENDATION: Don't use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder.			
QUESTION: Do you agree that physiotherapists should not use ongoing manual therapy for patients following acute adhesive capsulitis of the shoulder?			
Code description	**Example**	**N**	**%***

Response suggests disagreement			
Blanket rules are inappropriate	Another concern with the wording is that limited manual therapy may be used to improve scapula position and control which is usually a problem in these cases.	43	30.1
Clinical experience is more valuable than evidence	In the subacute to chronic setting I have effectively used manual therapy to improve shoulder range. I am at a loss as to how this evidence was derived. In the acute setting I agree, but this statement appears to put a blanket ban on all manual therapy for all such shoulders.	28	19.6
Threat to autonomy or the profession	It does not matter what works in 2 or 3 studies, physiotherapists must be free to choose a variety of techniques and use more than one and education for each patient. Look at the way sports people are treated. I am thinking specific exercise type angles, timing and repetitions. Your committee could do well to stop 10 reps practice for all patients of all ages in hospital. More fruitful than this witch hunt against Private Practice practitioners.	7	4.9
Appropriate to use as adjunct to evidence-based care	This is never performed in isolation, but in conjunction with appropriate range of motion and strengthening exercises as range returns.	7	4.9
New evidence might change recommendations	As the recent Cochrane review concluded that *"No trial compared a combination of manual therapy and exercise versus placebo or no intervention"* I don't think we can dismiss the use of manual therapy so quickly in the management of this condition.	6	4.2
Response suggests agreement			
No further comment	Respect the process of physiology with this disorder	23	16.1
Other evidence-based treatments may be available	Hydrodilatation should be utilised by medical staff on a more regular basis.	14	9.8
No evidence manual therapy alters natural history	There is clear evidence that not only does manual therapy not facilitate recovery, but may actually impede recovery. Ongoing manual treatment reduces patients' self-efficacy and promotes dependency.	4	2.8
Feedback on wording			
Better define the disease presentation and manual therapy provided	Not sure here what is meant by ongoing how ongoing days. Months, years?	27	18.9
Unqualified statements are inappropriate	I don't think we know enough about this condition to be making clear and decisive statements. Maybe a statement saying *"Don't use ongoing manual therapy for patients (who do not respond) with adhesive capsulitis of the shoulder."* Ideally, we shouldn't be doing anything ongoing if the patient does not respond.	10	7.0

Not area of expertise	I can't comment on this clinically as I'm not across the evidence for this	12	8.4

SECTION SIX			
RECOMMENDATION: Don’t use ongoing physiotherapy in cases where there isn’t improvement in measurable patient outcomes.			
QUESTION: Do you agree that physiotherapists should not use ongoing physiotherapy in cases where there is no improvement in measurable patient outcomes?			
Code description	**Example**	**N**	**%***
Response suggests disagreement			
Physiotherapy could prevent/reduce deterioration in symptoms	I work with a number of patients with palliative conditions. For them, the goal may be MAINTAINING as opposed to IMPROVING function. In these cases, it can be hard to anticipate the trajectory of the disease progression, but I think physiotherapy still plays a vital role in maintaining the patients' independence.	46	29.9
Blanket rules are inappropriate	Occasionally there are chronic patients with chronic conditions that still need our help/support/advice/symptomatic relief. Do we just turn our backs on them?	39	25.3
Concern over use of outcome measures	What you can objectively measure and the response or benefit the patient receives, are often quite divergent. What I mean is that if the patient doesn't believe they are getting anywhere and the physiotherapist is ethical, of course they would cease treatment. However, if the patient 'feels better' by getting physiotherapy intervention, who are you to say they can’t access it. After all it is their money they are spending.	18	11.7
Threat to autonomy or the profession	I have seen it time and again where physio has been written off because of failed physio interventions - however the failure has not been because physio cannot work, but because ineffective, non-evidence-based strategies have been administered often by junior or burnt-out physios.	17	11.0
Response suggests agreement			
No further comment	Patient and therapist both have better things to do.	38	24.7
Physiotherapy should focus on outcomes and try to reduce overtreatment	Absolutely, it diminishes the value of our profession and gives the appearance we are revenue raising, when treatment is continued when there is no change in measureable outcomes (or in fact I suspect sometimes, no initial assessment of outcome measures to review).	15	9.7
Feedback on wording			
Better define ambiguous terms	I feel this is too vague and doesn't really mean anything. There is no time limit imposed and in some cases there won’t be improvement, but rather a prevention of decline in outcomes. Also, what is meant by	27	17.5

	physiotherapy - is this just the application of physical interventions, or a broader scope of practice like education, self-management support , cognitive behavioural therapy, etc.		
Unqualified statements are inappropriate	To say 'Don't' worries me. Obviously we want to achieve positive client outcomes and these might include their own functional improvement, validated outcome scores, subjective and objective findings. My concern is that this statement needs qualification in that it appears that if outcome scores are not improving then physio should cease.	5	3.2
Shift framing from negative to positive	For a start the facilitation and empowerment is physiotherapy! Needs rewording to something like physiotherapy management should focus on.....	4	2.6
Unclear response	I am unsure and the details of a service that HCF audited and confirmed that 8 years of exercise therapy, twice weekly was appropriate for average back patients. Are there any normative statistics of the average length of back care programs in our industry?	1	0.6

N: number of respondents; *: percent of respondents that completed the free-text field for this question.

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation	Evidence
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	Pg1.
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	Pg2.
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Pg5-6. Introduction
Objectives	3	State specific objectives, including any prespecified hypotheses	Pg 6.
Methods			
Study design	4	Present key elements of study design early in the paper	Pg 6. Study design
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Pg6-7
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	Pg 6. Participants and recruitment
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Pg6-7. Data collection
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Pg6-7. Data collection
Bias	9	Describe any efforts to address potential sources of bias	Pg 7-8. Data analysis
Study size	10	Explain how the study size was arrived at	Pg 6. Participants and recruitment
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Pg 7-8. Data analysis
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	Pg 7-8. Data analysis

		(*b*) Describe any methods used to examine subgroups and interactions	N/A
		(*c*) Explain how missing data were addressed	N/A
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	N/A
		(*e*) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Pg 8. Results
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	N/A
		(b) Indicate number of participants with missing data for each variable of interest	N/A
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)	N/A
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	N/A
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	*N/A*
		Cross-sectional study—Report numbers of outcome events or summary measures	Pg 8-14. Results
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(*b*) Report category boundaries when continuous variables were categorized	N/A
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
Discussion			
Key results	18	Summarise key results with reference to study objectives	Pg 15-16. Discussion.
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Pg 16.
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Pg16-18
Generalisability	21	Discuss the generalisability (external validity) of the study results	Pg16-18

Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Pg21.

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.