Authors' response

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To Dr Fritz's Invited Commentary on: 'Prevalence of classification methods for patients with lumbar impairments using the McKenzie syndromes, pain pattern, manipulation and stabilization clinical prediction rules'

We would like to thank Dr Fritz for her articulate and insightful commentary, which has raised several important issues concerning the conceptualization of classification systems appropriate for routine clinical practice. There are several points by Dr Fritz, which we believe require additional comment. Before we address additional comments, we need to remember that our paper was not designed to compare the overall Mechanical Diagnosis and Therapy (MDT)¹ and Treatment-Based Classification (TBC)² paradigms. We simply analyzed prevalence rates of core levels of MDT system for our entire sample and for patients positive for two clinical prediction rules (CPRs).^{3,4} There were two important findings. First, the CPRs were applicable to a limited number of patients in routine clinical practice. Second, of those who were positive for the CPRs, a majority had centralizing symptoms, which implies that they may be managed successfully using prescriptive strategies described in the MDT philosophy.

We agree with Dr Fritz that evaluating the prevalence rates between different classification systems must consider the level of classification being compared (i.e. overall paradigm or system, individual category or subgroup, or specific criterion). However, it is equally important to consider the patient case-mix and practice setting in order to appreciate the potential clinical implications for the comparative prevalence rate data reported in different studies. For example, we believe that the high prevalence rates reported by Dr Fritz, ranging between 23–45% for manipulation and 24–41% for stabilization CPRs,^{5–7} can be primarily explained by differences in patient case-mix and practice setting rather than differences between comparing prevalence rates for an individual classification category and an overall classification paradigm. As we described in our study, patient characteristics of our sample were complex, yet

similar to Focus on Therapeutic Outcomes, Inc.'s large national normative database for patients with lumbar spine impairments.⁸ The sample included patients from diverse outpatient practice settings (i.e. military, private practice, and hospital-based) with few exclusion criteria. Therefore, we believe that our sample is representative of typical patients seeking physical therapy services in typical outpatient physical therapy settings. The low prevalence rates of 13% and 7% for the manipulation and stabilization CPRs respectively are not surprising considering the methods, practice settings and patient case-mix compared to the methods, practice settings and patient case-mix used for the manipulation and stabilization CPR derivation and validation studies.^{3–5,9,10}

Dr Fritz identified that we did not examine the prevalence rate for the overall TBC classification algorithm using the criteria outlined by Fritz *et al.* in Fig. 1 for the TBC classification algorithm.¹¹ We examined the prevalence rates for two of the three categories (manipulation and stabilization CPRs) used in the TBC applying the exact criteria described by Fritz *et al.*^{5,11} Our interest was in knowing whether the CPRs would be helpful for managing patients in a typical outpatient clinic. We found that the CPRs were of limited utility, and the majority of patients positive for the CPRs were also positive for centralization, which could impact clinical decision making.

In addition, we believe that we used a more exacting method to identify centralization¹ as compared to the method described for the TBC.^{5,6,11} Centralization is the key tenet in the TBC algorithm (Fig. 1) to classify a patient in the specific exercise category. Therefore, the prevalence rates for centralization reported in our study are not comparable directly to the prevalence rates for centralization in the TBC specific exercise category.^{5,6,11} We recommend those who apply the TBC to consider using what we believe is a more exacting method of identifying centralization, so results of future studies could be compared directly.

Dr Fritz also mentioned that the TBC algorithm was developed specifically in recognition of the reality that overlap between classification categories does

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exist. Therefore, a patient may have classification criteria for specific exercise as well as manipulation or stabilization. In other words, clinical decision making for TBC application becomes based in part on clinical judgment. This method may be appropriate given the complexity of the presentation of patients with spinal impairments, but use of clinical judgment when implementing a clinical classification method may erode reliability and validity of the classification process and makes mutual exclusivity almost impossible to achieve. We enjoyed and agreed with Dr Fritz's description of the essential considerations for evaluating the clinical utility of classification systems being 'discrimination, comprehensiveness, and mutual exclusivity'. The MDT system appears to suffer from a high prevalence of 'derangement', which may erode the MDT's systems ability to discriminate between patients. Both the overall TBC and MDT systems appear to be comprehensive, but mutually exclusivity analyses need to proceed. What if mutual exclusivity of classification categories is not achievable, i.e. patients could logically be placed into multiple categories concurrently? Could any classification system meet the criteria for clinical utility and be discriminating, comprehensive and mutual exclusive? Our data suggest that there is considerable overlap between some classification categories, and we are unaware of any published data regarding the mutual exclusivity for either the TBC or MDT algorithms. Our interest is in determining which classification systems or parts of classification systems suit the majority of patients with spinal impairments for the purpose of directing treatment designed to produce the most effective results as efficiently as possible. From Dr Fritz' published works, we believe that she agrees with this as well.

Finally, we agree with Dr Fritz and our research results suggest that given the biopsychosocial complexity of the illness of low back pain, we may not find one classification system to discriminate and comprehensively capture all patients with spinal impairments in a mutually exclusive manner. Because of the clinical diversity of patients with low back pain and the failure to date of clinicians and researchers to agree on one classification approach, particularly those classification systems developed using research designs that exclude the majority of patients treated in the typical outpatient rehabilitation clinic, comparative effectiveness research designs may be useful going forward. Comparative effectiveness research involves the direct comparison of the efficiency and effectiveness of two or more interventions in the real world of everyday clinical practice.¹²⁻¹⁵ The clinical utility for any classification system will ultimately be decided by its ability to improve patient outcomes

and to identify the right treatment for the right patient. We are a long way from this ultimate goal, but we have all benefited from the research that has shown that classification systems that guide treatment are better at producing improved outcomes than using no classification system.^{16,17} We look forward to continued discussion for the benefit of our patients.

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