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ORIGINAL RESEARCH

# Advancing practice for back pain through stratified care (STarT Back)

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**Abstract**
*Background:* Low back pain (LBP) is common, however research comparing the effectiveness of different treatments over the last two decades conclude either no or small differences in the average effects of different treatments. One suggestion to explain this is that patients are not all the same and important subgroups exist that might require different treatment approaches. Stratified care for LBP involves identifying subgroups of patients and then delivering appropriate matched treatments. Research has shown that stratified care for LBP in primary care can improve clinical outcomes, reduce costs and increase the efficiency of health-care delivery in the UK. The challenge now is to replicate and evaluate this approach in other countries health care systems and to support services to implement it in routine clinical care.
*Results:* The STarT Back approach to stratified care has been tested in the National Health Service, within the UK, it reduces unnecessary overtreatment in patients who have a good prognosis (those at low risk) yet increases the likelihood of appropriate healthcare and associated improved outcomes for those who are at risk of persistent disabling pain. The approach is cost-effective in the UK healthcare setting and has been recommended in recent guidelines and implemented as part of new LBP clinical pathways of care. This approach has subsequently generated international interest, a replication study is currently underway in Denmark, however, some lessons have already been learnt.

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*Conclusions:* There are potential obstacles to implementing stratified care in low-and-middle-income settings and in other high-income settings outside of the UK, however, implementation science literature can inform the development of innovations and efforts to support implementation of stratified care.The STarT Back approach to stratified care for LBP is a promising method to advance practice that has demonstrated clinical and cost effectiveness in the UK. Over time, further evidence for both the effectiveness and the adaptations needed to test and implement the STarT Back stratified care approach in other countries is needed.


## Introduction, rationale and key principles of stratified care

First contact clinical care, or primary care, for most patients with low back pain (LBP) is provided by a range of clinicians such as family doctors/general practitioners (GPs), physiotherapists and chiropractors. The latest LBP clinical guidelines available[1,2] generally recommend clinicians triage patients into either those with serious spinal pathology (estimated to be no more than 3–6% of LBP patients in primary care),[3,4] nerve root problems (estimates include 36% with pain radiating below the knee)[5] or non-specific LBP (the majority of cases). The last two decades have seen a considerable increase in the volume of research, particularly randomised controlled trials (RCTs) and systematic reviews,[6,7] comparing the effectiveness of different treatments for non-specific LBP. Many of these RCTs and systematic reviews conclude either no or small differences in the average effects of different treatments, such as exercise, manual therapy and other physiotherapist-led treatments. Whilst there are several potential explanations for these findings, one suggestion is that these are the result of the inclusion of heterogeneous groups of patients with non-specific LBP, that patients are not all the same and that important subgroups exist that might require different treatment approaches.[8]

Stratified care involves targeting treatment to subgroups of patients with similar characteristics and has been suggested as a method to fast-track patients to appropriate treatment by supporting clinical decision-making in ways that serve to increase treatment benefit, reduce harm and increase the efficiency of health-care delivery.[9] LBP is an ideal clinical condition with which to develop and test models of stratified care, given that it includes a heterogeneous population of patients with substantial variability in prognosis,[10] and that numerous treatments are available[9] with some being costly and associated with high risk (e.g. spinal surgery). Further justification for considering stratified care approaches include the finding that most clinicians believe that non-specific LBP includes a number of distinct patient subgroups[11] and that due to the sheer volume of patients attending primary care with LBP it is impractical and unaffordable to refer all for expensive tests and treatments.[12]

There are several broad approaches to stratified care for LBP, those which start with the patient and identify characteristics of patients with which to subgroup them (most commonly using their prognostic profile, key characteristics or an underlying cause or mechanism that is thought to explain their symptoms) or those which start with available treatments and identify patients that appear to benefit more from one treatment over others (most commonly through the development and testing of clinical prediction rules). These different approaches have been considered in more detail elsewhere.[13] A team at Keele University in the UK have over the last 15 years developed and tested a model of stratified care based on subgrouping and targeting treatment for LBP. Their work has produced a primary care prognostic model in which multiple clinical predictors are used in one simple index of risk (the Keele STarT Back Tool (KSBT)) to identify an individual's risk of persistent disabling LBP and then matches those at low, medium and high risk to appropriate treatments.

## The Keele STarT Back Tool

The KSBT is a prognostic tool developed and validated for use in primary care to guide the management of patients with LBP.[14] It has nine items that screen for eight physical and psychological predictors of persistent disabling LBP six months later. These questions are summed into an index score with defined cut-points to identify those at low, medium, or high risk of persistent disabling LBP. The tool has good reliability and validity and has been externally validated in many different settings.[15–18] Clinicians need to interpret the findings of the KSBT in the context of a standard LBP subjective and objective assessment, including a screen for serious pathology (red flags) and a neurological examination. Clinicians can freely download the tool (in a range of languages) from the STarT Back website.[19] This model of stratified care comprises not only the use of the tool but also of matched treatments for each risk subgroup.

## The matched treatments

An outline of the three matched treatments is provided below, further information about the development of the



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