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### Trajectories of low back pain



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#### A B S T R A C T

Low back pain is not a self-limiting problem, but rather a recurrent and sometimes persistent disorder. To understand the course over time, detailed investigation, preferably using repeated measurements over extended periods of time, is needed.

New knowledge concerning short-term trajectories indicates that the low back pain 'episode' is short lived, at least in the primary care setting, with most patients improving. Nevertheless, in the long term, low back pain often runs a persistent course with around two-thirds of patients estimated to be in pain after 12 months. Some individuals never have low back pain, but most have it on and off or persistently. Thus, the low back pain 'condition' is usually a lifelong experience.

However, subgroups of patients with different back pain trajectories have been identified and linked to clinical parameters. Further investigation is warranted to understand causality, treatment effect and prognostic factors and to study the possible association of trajectories with pathologies.

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## Introduction

Until recently, low back pain (LBP) was believed to be a self-limiting condition, much like the common cold. The European guidelines for the management of acute LBP state that 90% of patients will recover within 6 weeks [1].

However, research in the past two decades has shown that the majority of back pain sufferers experience episodes of the problem; LBP is actually a recurrent condition [2]. Thus, LBP resembles a long-term condition such as asthma rather than a self-limiting condition such as the common cold. This means that we need to look at LBP (and perhaps all types of spinal pain) as a lifelong process, perhaps with different causes and modifying factors as life goes on, but always present as an underlying 'trait'.

This shift of paradigm directs the focus of attention away from LBP seen as a single entity to the LBP condition regarded as a chain of LBP episodes [3], that is, with the focus on the course of LBP [4]. This new paradigm comes with a hope of being able to classify nonspecific LBP into clinically meaningful subgroups [5]. Such subgroups may offer new insights into causal mechanisms, prognostic factors and effective treatment strategies. In the past, most studies related to LBP as though it has an 'end point', measuring for example, pain intensity, return to work, or recovery at a rather arbitrarily chosen point in time with questionnaire surveys. Because patients with LBP experience ups and downs of varying intensity and duration, such end points are likely to capture LBP at different phases of the condition, making comparison between people and studies potentially meaningless. These outcomes should instead be viewed in the light of the long-term development of LBP (see also chapter 2 of this edition). However, little is known about the detailed course, and trajectory, of LBP.

## Methods of data collection for LBP trajectories

In order to study a pain trajectory, frequent measurements of pain, disability or any other outcome over a fairly long time are needed, as measures may vary considerably with time in a fluctuating condition. Until recently, this was not really possible using postal surveys, as this would be both difficult and expensive. Instead, realistically, frequent data collection could be achieved only by using paper-based diaries, which have been shown to produce data of questionable validity [6]. With modern technology, it is now possible to use Web-based diary systems to facilitate repeated and frequent data collection. However, this requires the respondents to have Internet access and to be disciplined in using it also at frequent intervals. This is likely to result in biased study samples.

Frequent e-mail messages is another method that is cheap and capable of collecting 'fresh' momentary data much like electronic diaries, but – again – requires easy and frequent use of the Internet plus the discipline suiting the rhythm of questions. In other words, study participants must be able and ready to answer the questions as they are sent out, frequently in some cases but less frequently in others.

In some recent prospective studies, text messages and mobile phones have been used to collect frequent data. Questions are sent on scheduled days and times to the included respondents, who answer with a reply text message in a fully automated Web-based system, SMS Track® [7]. This system has the advantages of being cheap [8] and user-friendly [9], as most people in the modern world carry their phone with them at all times and thus can respond at any time. Further, it has been shown to be capable of yielding valid data [8]. However, the questions asked are restricted by the size of the text message, and must be short, requiring only a short answer. Examples of how such questions can be worded are provided in Table 1.

Answers are immediately recorded in a data file, accessible to the researcher online at any time. Depending on the question asked, the respondents may, for instance, record their pain on a scale from 0 to 10, as it is right now, the past 24 h, the past week and so on. The choice of measure and the frequency of data collection must of course be matched to minimise memory bias and decay. For example, the optimal recall period for pain would not be the same as that for sick leave.

However, one could be concerned that frequent and repeated measurements may tire respondents. Nevertheless, the response rates in these studies are high, so far between 63% [10] and 82% [9]. Moreover, in one study, patients from secondary care answering two text message questions weekly for

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