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transformation from subjective questionnaires Into objective real-time and  
patient-specific data reporting tools**

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## Letter to the editor



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# Improving the Patient-Physician Relationship in the Digital Era - Transformation From Subjective Questionnaires Into Objective Real-Time and Patient-Specific Data Reporting Tools

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### To the editor

The patient-physician relationship is the foundation of patient care and of paramount importance in order to gather information, establish diagnoses, and create treatment plans. Over the last century, we have seen continuous advances in neurosurgery, while the physician-patient interaction has remained conservatively “untouched.” With upcoming digital technologies, however, the dynamic between patients and physicians might undergo a similarly profound transformation.

Traditionally, encounters between patients and physicians are reduced to single events, where a patient’s physical and emotional conditions are reviewed. It is commonly perceived as progressive if standardized electronic health records (EHR) using patient-reported outcome measures (PROMs) are employed outside clinical studies.<sup>1</sup> There are important limitations inherent to this practice. First, condensing key symptoms such as pain or disability to a PROM questionnaire does not account for daily or even hourly fluctuations, therefore representing a radical loss in data granularity. Second, filling out questionnaires means a lot of effort to patients who, in turn, are usually unaware of the results. This does not promote compliance in an era of patient-centered healthcare.

Fortunately, the ongoing digitalization of the healthcare sector provides us with the fundamental tools to collect and sophisticatedly analyze “digital biomarkers” that can be used to construct longitudinal, accurate and intelligible medical profiles based on objective patient data. Examples for this endeavor include the continuous activity tracking before and after elective spine surgery with a low-cost consumer grade wearable accelerometer, or a spine-specific smartphone application that reports objective functional impairment by repeated GPS-based 6-minute walking tests (6WT) before and after conservative or operative treat-

ment for degenerative conditions of the lumbar spine (<http://clinicaltrials.gov: NCT03977961, NCT04062942>).<sup>2,3</sup>

These tools allow our patients to self-determine their functional ability within an environment that matters most to them (e.g., home/work). By collecting relevant self-measured outcome data, patients are empowered to take a greater degree of responsibility as an equal partner in their care.<sup>4</sup> The selection of objective outcome measures like daily step counts (accelerometer) or distance walked within a fixed time frame (6WT) are metrics that are relevant and understandable, a clear advantage over a constructed questionnaire score. As some of the tools provide analysis functions and immediate feedback (e.g., color coding, similar to traffic signals), patients are entitled to appreciate changes in their health condition over time, be it positive or negative.

To improve the engagement of the patient with his/her physician and with these functional assessments, we must rigorously validate the quality of new objective self-measurements and we must present them in fashion both useful and comprehensible to patients and physicians. Information collected by healthcare professionals (e.g., lab results/physiological parameters) could be sent to a patient's smartphone or tablet to be discussed during ward round or consultation.<sup>5</sup> At the same time, we have to improve the way patients can communicate their collected health data (e.g., step count/pain) and integrate it into the EHR to ultimately be relevant for shared decision-making. As a precondition, both patients and physicians need to be confident that the highly sensitive personal data is protected against theft and abuse.

In conclusion, modern patients increasingly demand control over their healthcare, disease-management and outcome measures. Involving patients more actively by means of digital technology has the potential to improve both diagnostics and treatment, lower overall health expenditures, and further empower the patient into a true care partnership with his physician. While embracing the potentials of these new technologies, physicians

have to communicate their expectations and rationales to successfully shape those new pathways of care. We would like to encourage physicians to appreciate the ongoing digital transformation as a trend that has the potential to ultimately strengthen the patient-physician relationship.

### Opinion of the Editorial Board

Editorial Board of Neurospine agrees to publish opinion from the readers of Neurospine. This piece of opinion expresses the view of its author(s), separate from those of editorial policy of Neurospine.

### CONFLICT OF INTEREST

The authors have nothing to disclose.

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Title: Musketeer with Pipe

Artist: Pablo Picasso

Year: 1968

Musketeers became a recurring theme in Picasso's art as he was recuperating after surgery in late 1965 (he was 84 at the time). With nothing much to do, he was then rereading his favourite literary classics – which included Alexander Dumas. Apart from that, Bernard Borderie's popular film "The Three Musketeers" was shown on TV at the time. These probably provided an inspiration for Picasso's subsequent works. The newspaper headlines of the time are dominated by news of the war in Vietnam, of Soviet troops entering Czechoslovakia, of student riots in Paris; Picasso's musketeers provide an odd contrast. He seems to be absorbed in the romantic images of "good old days" – more a quixotic figure beyond normal space and time than the man who had once created the immortal "Guernica". But it's not as simple as that: through his musketeers, Picasso manages, once again, to translate his staunch pacifism into his work. The musketeers, sarcastically shown as puffed up with immense, ludicrous pride, provide a perfect illustration for the idea. The choice of the subject is significant: rather than an efficient military force, the musketeers have always been regarded as romantic figures and cult objects. Their anachronistic attire, feathered hats and the swords they carried – aren't these a fitting allusion to war itself being outdated and futile?

More information: <https://www.pablo-ruiz-picasso.net/theme-musketeer.php>

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