ORIGINAL ARTICLE

Development and Pilot Test of a New Set of Good Practice Indicators for Chronic Nonmalignant Pain Management

Pedro Jesus Saturno, PhD*; Daniel Ángel-García, PhD†; Ismael Martínez-Nicolás, PhD†; Francisco López Soriano, MSc‡; Maria Pilar Escolar Reina, PhD§; María Beatriz Guerrero Díaz, MSc¶; María Encarnación Ros Martínez, MSc**; Francesc Medina Mirapeix, PhD§; Mayo Saturno Marcos, PhD††

*Center for Evaluation Research and Surveys, National Institute of Public Health, Cuernavaca, Morelos Mexico; †San Antonio Catholic University of Murcia, Department of Physiotherapy, Murcia; ‡Department of Physiotherapy, San Antonio Catholic University of Murcia, Murcia; §Department of Physical Therapy, Regional Campus of International Excellence "Campus Mare Nostrum, University of Murcia, Murcia, Spain; ¶Cartagena-East Health Center, Cartagena; **Multidisciplinary Educational Unit on Family and Community Care, Cartagena-Mar Menor, Murcia; ††Department of Anesthesiology and Reanimation, Reina Sof´ıa University Hospital, Murcia, Spain

Abstract

Objectives: This study was designed to address the current relative void of valid measures by developing evidence-based quality indicators for pain management of chronic nonmalignant pain.

Methods: We performed a 10-year literature search to identify guidelines and review articles on chronic pain management to identify evidence-based recommendations for the different conditions associated to chronic pain. A complementary search of indicators and indicator-related articles was also performed. Then, we built new indicators or adapted existing ones to cover all the evidence-based recommendations we found. The resulting set was pilot tested for feasibility, reliability (kappa), and usefulness to identify quality problems, using the Lot Quality Acceptance method ($a \leq 0.05$ and $b \leq 0.01$) for 75% (40% threshold) and 95% (70% threshold) compliance standards, and estimates with binomial exact 95% confidence intervals. We reviewed clinical records from a primary care center, a medium-size hospital (250 beds), and a large hospital (500 beds).

Results: Forty-six indicators were developed (6 general and 40 condition specific). Thirty-three were feasible in primary care and/or hospitals. Feasible indicators were also reliable (most kappa > 0.7). Regarding compliance, 4 quality indicators obtained compliance levels over 60%, addressing pharmacological treatment, multimodal approach, and appropriate use of neuro-image tests, while 16 obtained compliance scores under 15% (6 with 0% compliance).

Address correspondence and reprint requests to: Daniel A´ngel-Garc´ıa, PhD, Departamento de Ciencias de la Salud, Facultad de Ciencias de la Salud, Grado en Fisioterapia, Universidad Cato´lica San Antonio de Murcia, Campus de los Jero´nimos s/n, 30107 Guadalupe, Murcia, Spain. E-mail: angelgarcia.da@gmail.com.

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Conclusions: The created set has tested to be feasible, reliable, and useful, with the capacity to serve as the baseline for developing the necessary strategies to improve the management of chronic nonmalignant pain, by monitoring and evaluating quality of care. &

Key Words: chronic pain, pain management, quality indicators, healthcare quality assessment, evidence-based medicine

INTRODUCTION

Chronic pain of moderate to severe intensity occurs in 19% of European adults, seriously affecting the quality of their social and working lives[1] and producing a substantial social burden.[2] Currently available treatments rarely result in complete resolution of symptoms, but it is also true that the right selection of the different treatment options for the right type of patient does matter.[3] A European survey showed that wide variations exist in the management of chronic nonmalignant pain (CNMP).[4] This survey also highlighted that variation is a relevant problem associated with inadequate pain management. One of the identified barriers to change this situation is the lack of clearly defined measures of quality pain management, in order to identify problems and monitor changes in improvement initiatives.[5]

In spite of the complexity of conditions and mechanisms underlying chronic pain, some convincing evidence is available in relation to the effectiveness of multifactorial intervention programs involving a multidisciplinary team in reducing both pain and disability in patients with CNMP.[6–9] Furthermore, multiple Clinical Practice Guidelines (CPGs) have been developed for chronic pain, covering chronic pain in general[10] or specific health conditions such as low back pain,[11] osteoarthritis,[12] headaches,[13] neuropathies,[14] and others. The intent is to help clinical decision healthcare providers and patients to reduce variation in clinical practice. However, not all conclusive research and recommendations seem to have been fully translated into practice; valid and reliable quality indicators (QIs) for pain management can be used to identify existing problems, measure changes, and assure the best practice for these patients.

Appropriate QIs, or quality measures, enable the user to quantify performance and outcomes in relation to selected aspects of care by comparing it with an evidence-based criterion that specifies quality (http://www.qualitymeasures.ahrq.gov/). Thus, performance of a facility over time can be measured, quality of care between different healthcare providers can be compared, and areas for improvement can be identified.[15] Methodological approaches to QI development have been described.[16,17] Important attributes of high-quality QIs are their validity, feasibility, and reliability.[15] They further need to be easily understandable for providers and achievable.[18]

This study was designed to address the current relative void of valid measures by developing evidence-based QIs for pain management of different conditions underlying CNMP. The construction process of these QIs and pilot-test results regarding feasibility, reliability, and ability to identify quality problems is reported in this article. The proposed set focuses on a rather comprehensive approach, addressing both general and condition-specific aspects. Additionally, measurement data from the pilot-test sites illustrate a baseline situation regarding good practices in the control of CNMP. This is the second of a series of 3 studies addressing QIs for the 3 general types of pain—cancer,[19] chronic nonmalignant, and acute—we have considered.

METHODS

Indicators in scientific literature have been described as measures used to monitor, evaluate, and improve healthcare, organization, and support services that affect patient outcomes.[16,20] They can be related to structure, process, or outcome.[21,22] "Structure" refers to the characteristics (material and human resources) of the settings in which care occurs, and how they are organized. "Process" refers to how care is delivered and received using the available structure. "Outcomes" describe the effects of care processes on the health status and satisfaction of the patients. To consider a process indicator valid for measuring quality, it must have been demonstrated to increase the likelihood of a good outcome; similarly, a structure indicator needs to demonstrate its relation with a good outcome, or with a process that has been previously shown to yield better outcomes[16,23]; outcomes by themselves show the extent to which best practices are accomplished. Therefore, indicators must be constructed upon the existing evidence, translating it into quality measures.

To cover all the relevant methodological and clinical aspects of CNMP QIs, a multidisciplinary working group of experts was assembled from the disciplines of anesthesiology, pharmacy, nursing, family medicine, physiotherapy, and rehabilitation, as well as quality of care researchers with epidemiological expertise to help ensure methodological integrity of the clinical QIs and a

sound approach to data collection and data analysis. The group included people from diverse settings, including academics, hospitals, and primary care.

The working group agreed to define potential QIs to cover the relevant aspects in relation to diagnostic examinations, treatment, and follow-up for CNMP and its more frequent underlying conditions. These were selected from the list provided in a World Health Organization (WHO) document,[1] along with the International Classification of Diseases (ICD), to assure cases to assess were clearly identified.

To define and eventually propose Qis, a structured process was followed (Figure 1), consisting of (1) review and systematization of existing evidence; (2) review and systematization of existing indicators; (3) the construct of a new set of indicators for the relevant aspects not covered by already existing acceptable indicators; (4) pilot testing of the new set of indicators for feasibility, reliability, and usefulness of measures; and (5) defining the new, proposed set of indicators. In addition, we asked external experts from other regions to rate the relevance of the proposed indicators for their practice (on a scale of 1 to 5) to further validate and prioritize them.

Review and Systematization of Existing Evidence

A comprehensive literature search was performed to identify systematic reviews and clinical guidelines in relation to CNMP management in both general and selected conditions. The search included the Medline, Cochrane, and Ovid databases for years 2001 to 2013. Clinical guidelines were additionally searched in the National Guideline Clearinghouse of the Agency for Health Research and Quality (AHRQ), the Scottish Intercollegiate Guidelines Network (SIGN), the New Zealand Guidelines Group (NZGG), National Institute for Health and Clinical Excellence (NICE), BMJ Evidence, and GuiaSalud (a Spanish database of clinical guidelines). Keywords used include "pain," "chronic pain," "pain clinic," "headache," "migraine," "pelvic pain," "chronic pelvic pain," "chronic low back pain," "unspecific low back pain," "osteoarthritis," "rheumatoid arthritis," "fibromyalgia," "neuropathic pain," and "chronic neuropathic pain" associated with "assessment," "treatment," or "outcome"; "systematic review" and "meta-analysis" also were used, as were "guideline" and "clinical practice guideline," depending on the type of document searched. Only "adult" and "older" populations were included.

The eligibility criteria used to select the documents were (1) must be CPGs, systematic reviews, or meta-analyses; (2) documents related to the diseases and conditions selected by the investigation group to represent CNMP (ie, chronic low back pain, osteoarthritis, rheumatoid arthritis, fibromyalgia, headache, neuropathic pain, and chronic pelvic pain, among others); and (3) published within 10 years before the review.

Given the variety of scales used for grading the evidence in the reviewed guidelines and publications, the group tried to harmonize the operational conclusions establishing our own unified scale for level of evidence and strength of recommendation, based mainly on the grading of recommendations assessment, development, and evaluation (GRADE),[24,25] SIGN,[26] and U.S. Preventive Services Task Force proposals,[27,28] as shown in Table 1. The group extracted and synthesized recommendations that had a supporting evidence level of A or B1, with a strength of recommendation A (must do), B (could be done), and D (must not do), but prioritizing evidence A and strength of recommendation A or D. When the level of evidence or the recommendation extracted from guidelines was unclear, the original articles were reviewed to verify the exact level or recommendation.

Review and Systematization of Existing Indicators

Apart from extracting and critically reviewing the indicators proposed in some guidelines, the working group also performed a comprehensive search of QIs in the National Quality Measures Clearinghouse of the AHRQ, and in the following databases: Medline, Scopus, Psycinfo, and Academic Premium. The indicators found in this search were assessed in terms of relevance for the aspects of care the working group had selected and for validity, looking for the available evidence to support or refute them.

New Indicator Development

The working group elaborated new indicators when definite and valid QIs were not found for the evidence-based recommendations selected in the first phase. Their task was to transform these recommendations into indicators, defining the following: indicator name; method of measurement (medical record review, direct observation, interview with key informants, or inspection of the existence of particular structural aspects); description of the indicator (including definition of target patient or condition, and the measures denominator and numerator); level of evidence and strength of

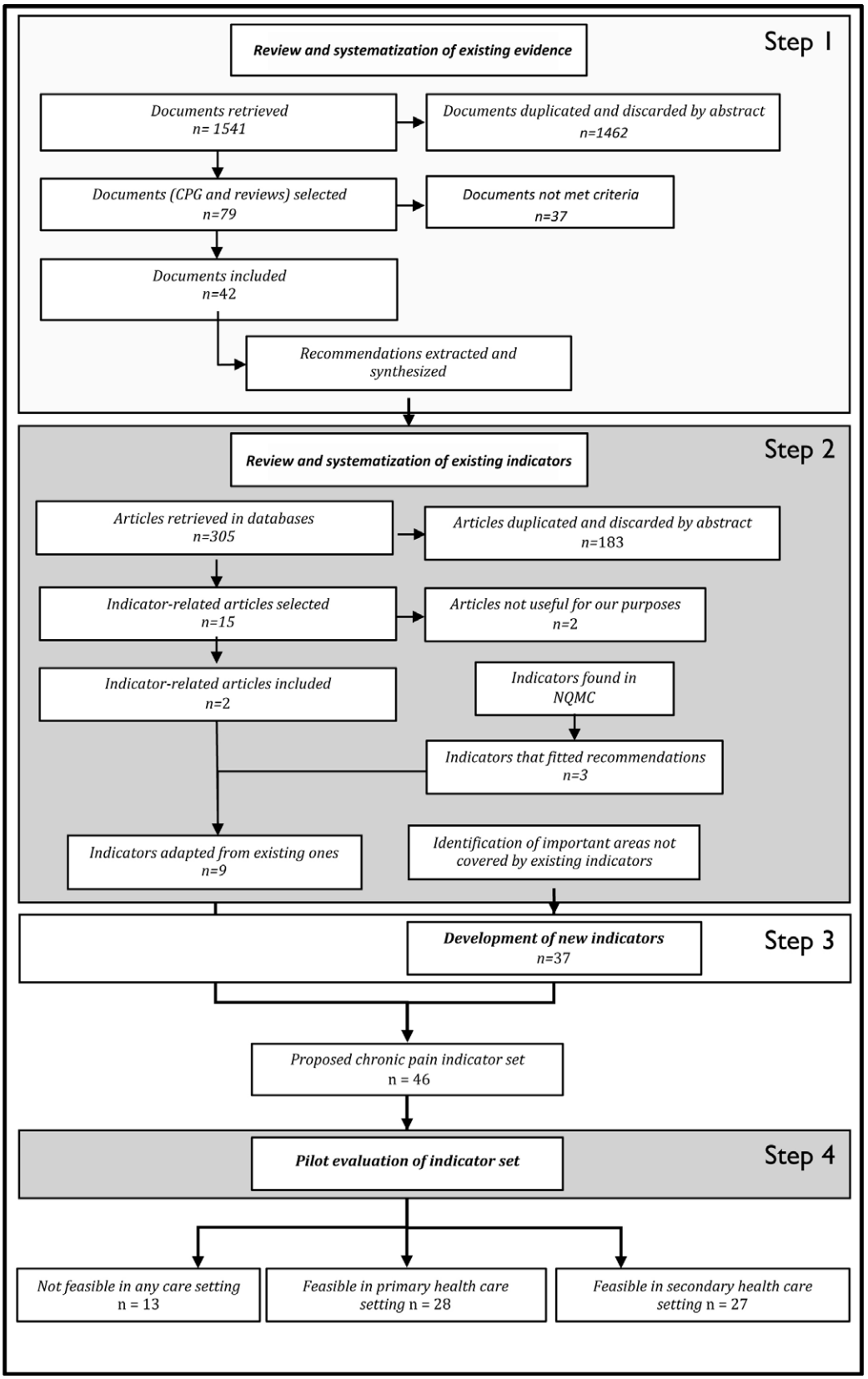

Figure 1. Detailed flowchart of the 4-step process used. CPG, Clinical Practice Guidelines; NQMC, National Quality Measures Clearinghouse.

Table 1. Unified System for Rating Evidence and Strength of Recommendation

Evidence		Meaning
A	1	Several randomized controlled trials with $P < 0.01$ with meta-analysis
	2	Several randomized controlled trials with $P < 0.01$ without meta-analysis
	3	A single randomized controlled trial with $P < 0.01$
B	1	Comparative observational studies with statistically significant differences
	2	Noncomparative observational studies
	3	Case report
C	1	A meta-analysis without significant differences
	2	Not enough studies for a meta-analysis, or Randomized controlled trials without significant differences, or Randomized controlled trials with inconsistent results
D		No studies identified or available literature of no use

Strength of Recommendation	Meaning
Type A (should be done)	Treatment of eligible cases is suggested. The benefit is significantly greater than the possible adverse effects.
Type B (may be done)	Treatment of cases is suggested. The benefit is greater than the possible adverse effects.
Type C (no recommendation)	There is no recommendation against treatment. The benefits and adverse effects are in balance. Not recommended in routine clinical practice.
Type D (should not be done)	The recommendation advises against treatment. The evidence suggests that the adverse effects outweigh the benefits.
Type I	Poor evidence or not enough evidence to decide for or against.

the recommendation used for the indicator as described in Table 1; data source; references of the evidence supporting the recommendation; observations or remarks to help measurement; and type of settings and disciplines potentially involved in performance. During this process, experts could provide new evidence when recommendations did not cover all the information needed to complete the indicator.

Standardized reports of potential indicators were proposed by the group members to be discussed in an iterative process until reaching agreement on adoption and final form. The group discussions considered mainly the validity of each of the proposed QIs and if they were understandable and achievable or modifiable by improvements for providers.

Pilot Testing of the Indicator Set

Pilot evaluation of the whole set was carried out in 3 healthcare settings, with different sizes and characteristics, selected to cover the different care environments for CNMP patients in the Spanish health system: 1 medium-size hospital (between 200 and 500 beds); 1 large hospital (more than 500 beds); and 1 primary healthcare center staffed by 20 physicians and 16 nurses. Primary care provides usual follow-up and long-term care for most CNMP patients; hospitals provide specialized care for severe, unstable, and particular CNMP cases.

Formats for data abstraction and guidelines for the pilot test were devised, specifying the ICD codes (to identify cases from the minimum data set in hospitals), and the International Classification of Primary Care (for the primary healthcare center). Two reviewers not involved in designing the indicators were recruited for data collection and preliminary analysis of the pilot test results.

The objectives of the pilot test were 3-fold: (1) feasibility of the measurement in the various settings and for the different types of CNMP patients in which the indicators are applicable; (2) reliability of the feasible indicators; and (3) potential usefulness for quality problem identification and improvement.

Feasibility problems could come from difficulties in identifying target CNMP patients, deficiencies in clinical records, very low prevalence of cases, and other circumstances in which it may not be possible to measure an indicator. Reviewers were asked to record and report for discussion the feasibility barriers encountered.

Reliability for feasible indicators was assessed using the inter-rater kappa index.[29] Two reviewers collected data of each QI in samples of 15 cases, analyzing the same care process with the same subjects, methods, and measurement tool. For composite QI of more than 1 item to assess, reliability was calculated for each of the items.

Indicators with kappa values under 0.60 or general agreement of < 95% were reported and revised by the whole group.

Usefulness for quality problem identification was analyzed using the lot quality acceptance sampling (LQAS) technique for 2 different situations: (1) standard compliance of 75% (40% threshold); and (2) standard compliance of 95% (70% threshold). Both were $a \leq 0.05$ and $b \leq 0.01$, requiring a sample size of 15 patients per assessed indicator and a minimum of 12 compliance cases for accepting a 95% compliance, or 8 compliance cases for accepting a 75% compliance. This technique, promoted by the WHO for rapid assessments, has been adapted as a problem identification tool for quality management,[30,31] allowing the identification of quality problems or situations where the prestated standard and threshold are not met. Additionally, compliance estimates were calculated for each center individually with exact binomial 95% confidence interval, and for the

aggregate of more than 1 center using the formula for nonproportional stratified sampling.

The project was authorized by the management and institutional review boards of the pilot sites, and a confidentiality commitment was signed by reviewers and data managers.

RESULTS

Steps 1 and 2 shown in Figure 1 contain detailed information about the literature and indicator review. From 100 identified recommendations and 9 adapted indicators, the team created 46 indicators: 6 concerning the overall management of chronic pain and 40 for the management of pain in patients with specific diseases. All of them are process indicators and based on medical record review as the measurement method. Measurement results are all expressed as percentage of compliance with the recommendation, from 0% to 100%. Indicators cover the following conditions: headaches (n = 13), chronic pelvic pain (n = 3), nonspecific low back pain (n = 5), osteoarthritis (n = 5), rheumatoid arthritis (n = 5), fibromyalgia (n = 4), neuropathic pain (n = 5), and general, non-condition-specific, approach to CNMP (n = 6). Some of them were composite indicators (eg, indicator number A.1.1: Full pain-oriented clinical assessment). Table 2 show usefulness in identifying quality problems (expressed as LQAS results and compliance estimates) of feasible indicators. Table S1 describes sources, level of evidence, strength of recommendation, and external expert ratings.

Feasibility of Measurement

Five of the 6 analyzed general QIs applying to all CNMP conditions were feasible in hospitals and primary care: full pain-oriented clinical assessment; pain treatment following the analgesic pain scale, tailored to each individual; multimodal approach to treating chronic pain; treatment with age-adjusted doses in patients > 65 years old; and treatment to prevent side effects of analgesics in patients > 65 years old. Regarding different conditions encompassed in the project, feasibility was variable according to difficulties encountered in the pilot test and prevalence of the conditions in the sites. One indicator regarding osteoarthritis and 3 for patients with fibromyalgia were the only condition-specific QIs feasible in all settings. Four of 5 QIs for chronic low back pain were feasible in primary care, while none of them were feasible in hospitals. Also, neuropathic QIs were only feasible (3 of 5) in hospitals, while none of them were feasible in primary care. Overall, 26 QIs were feasible in hospitals and 28 in primary care, and 33 were feasible in either of the 2 care levels. Thirteen were not feasible in either of the 2 care levels: 1 of the 6 QIs for all chronic pain conditions, 2 for neuropathic pain conditions, 1 for rheumatoid arthritis, 3 for osteoarthritis, 1 for chronic low back pain, 1 within the chronic pelvic pain group, and 4 within the headaches group. Although many indicators were not feasible, including those referring to menstrual migraine, cluster headache, chronic prostate pain, diabetic neuropathy, and neuropathic pain, all the groups of CNMP patients considered had at least 1 feasible indicator. Table S2 details feasible QIs by pilot site.

The main reported reasons for nonfeasible QIs were difficulties in identifying cases due to current information systems. The recorded diagnosis at hospitals (ICD-9) and primary care (*International Classification of Primary Care,* second edition[32]) do not include chronic pain. In addition, when a pain-related diagnosis code was used, it was frequently inappropriate or inaccurate. Other feasibility problems included misreported as well as under-reported information in the clinical records. This made some indicators difficult to assess that were eventually classified as nonfeasible since reviewers were unable to make adequate measurements.

Indicator Reliability

Reliability results (see Table S1) were obtained from feasible indicators. Reliability was very good or excellent in most of the 33 indicators measured, even for the different items of composite QIs, with kappa indexes between 0.7 and 1. Only 4 measures had a kappa index ≤ 0.6 but very close to this value (between 0.56 and 0.59). These measurements were discussed, the causes of discordance were clarified, and improvements in their redaction were proposed. Agreement was over 95%, except for weight loss programs for patients with osteoarthritis. In this case, agreement was 87.7%, and reported causes of this discrepancy were due to variety of interventions and ambiguity of a clearly defined weight loss program.

Usefulness for Quality Improvement and Preliminary Quality Results

The LQAS assessment detected compliance problems for the majority of QIs (see first 2 columns of Table 2). Only 2 of them complied with the 95% standard and 7

Table 2. Quality Problem Identification with Lot Quality Acceptance Sampling (LQAS) and Compliance Estimates of Feasible Percentage-Based Indicators

Indicator		Centers with Good Quality (LQAS 75/40)	Centers with Good Quality (LQAS 95/70)*	Compliance Estimate in Hospital Care†	Compliance Estimate in Primary Care†	Total Compliance Estimate Combined†
A. General						
A.1. General						
A.1.1. Percentage of patients with chronic pain seen at a primary care, specialist, or palliative care consultation whose medical records show evidence of a full pain-oriented clinical assessment	1. Pain intensity (scale)	0 of 3	0 of 3	14.5 11.5	0.0 (0.0 to 21.8)	9.4 7.4
	2. Timing	2 of 3	2 of 3	98 3.7	20 (4.3 to 48.1)	70.6 7.6
	3. Distribution	2 of 3	2 of 3	86.7 13.4	26.7 (7.8 to 55.1)	65.6 11.8
	4. Course	2 of 3	1 of 3	72.2 16.4	20 (4.3 to 48.1)	53.9 12.8
	5. Accompanying symptoms	1 of 3	1 of 3	73 14.4	26.7 (7.8 to 55.1)	56.7 12.2
	6. Neurological examination	1 of 3	1 of 3	62.4 15.7	40 (16.3 to 67.7)	54.5 13.5
	7. Musculoskeletal examination	1 of 3	0 of 3	48.6 19.6	13.3 (1.7 to 40.5)	36.2 14.1
	8. Anxiety/depression	0 of 3	0 of 3	26.7 17.4	13.3 (1.7 to 40.5)	22 12.8
	9. Sleep	1 of 3	0 of 3	29.8 16.4	6.7 (0.2 to 37.9)	21.7 11.5
	10. Allergies	3 of 3	1 of 3	57.2 19.5	86.7 (59.5 to 98.3)	67.6 14.1
	11. Drug abuse	0 of 3	0 of 3	9.4 12.4	13.3 (1.7 to 40.5)	10.8 10.1
	12. Social/family status	0 of 3	0 of 3	8.6 10.4	0.0 (0.0 to 21.8)	5.6 6.7
	13. Occupational status and history	0 of 3	0 of 3	16.4 11.6	6.7 (0.2 to 37.9)	13 8.8
	14. Diagnosis	3 of 3	3 of 3	100 0.0	100 (48.2 to 100)	100 0.0
	Compliant on all points	0 of 3	0 of 3	0.0 0.0	0.0 (0.0 to 21.8)	0.0 0.0
	Proportional compliance	0 of 3	0 of 3	47.6%§	26.2%§	40.4%§
A.1.2. Percentage of patients with chronic pain (except headaches, pelvic pain, and fibromyalgia) prescribed a medication regimen adjusted to their pain assessment according to the WHO analgesic scale and their individual circumstances		0 of 3	0 of 3	7.8 6.5	0.0 (0.0 to 21.8)	5.1 4.2
A.1.3. Percentage of patients seen with chronic pain who are given multimodal treatment appropriate‡ to their condition (following the WHO analgesic ladder)		2 of 3	0 of 3	71.4 17.6	66.7 (38.4 to 88.2)	69.7 14.2
A.2. Patients > 65 years old						
A.2.1. Percentage of chronic pain sufferers > 65 years old on age-adjusted treatment		1 of 3	0 of 3	33.3 18.4	66.7 (38.4 to 88.2)	37.9 16.2
A.2.2. Percentage of chronic pain sufferers > 65 years old on analgesic therapy prescribed concomitant treatment to prevent the side effects of analgesics		1 of 3	0 of 3	40 10.9	73.33 (44.9 to 92.2)	44.6 16.8
B. Headaches						
B.1. General						
B.1.1. Percentage of patients with headache of any etiology treated with opioids or triptans for more than 3 months whose medical records show evidence of assessment for treatment abuse		0 of 2	0 of 2	0.0 (0.0 to 21.8)	6.67 (0.2 to 37.9)	3.5 2.9

Table 2. (Continued)

Indicator	Centers with Good Quality (LQAS 75/40)	Centers with Good Quality (LQAS 95/70)*	Compliance Estimate in Hospital Care†	Compliance Estimate in Primary Care†	Total Compliance Estimate Combined†
B.2. Migraines					
B.2.1. Percentage of patients > 12 years old seen for migraine attack without aura given treatment appropriate‡ to its intensity level: • Mild pain: acetyl salicylic acid, ibuprofen, or naproxen; antiemetics; and/or anxiolytics • Moderate pain: add paracetamol • Intense pain: add triptans	0 of 2	0 of 2	66.7 (0.2 to 4.9)	0.0 (0.0 to 21.8)	3.18 2
B.2.2. Percentage of patients with migraine (except menstrual migraine and cluster headache) prescribed appropriate‡ prophylactic treatment (amitriptyline, venlafaxine, topiramate, propranolol, or valproate)	2 of 2	2 of 2	53.3 (26.6 to 78.7)	80 (51.9 to 95.7)	67.29 6.2
B.2.3. Percentage of migraine patients whose medical records show evidence of them having been offered complementary nondrug treatments	0 of 2	0 of 2	0.0 (0.0 to 21.8)	0.0 (0.0 to 21.8)	0.0 0.0
B.2.4. Percentage of migraine patients whose medical records show no evidence of treatment with ergotamine or botulinum toxin	0 of 2	0 of 2	13.3 (1.7 to 40.5)	6.7 (0.2 to 37.9)	10.6 7.4
B.2.5. Percentage of patients diagnosed with migraine whose neurological examination is normal who do not have neuroimaging tests	1 of 1	0 of 1	66.7 (38.4 to 88.2)	Not feasible¶	66.7 (38.4 to 88.2)
B.4. Migraine with aura in women					
B.4.1. Percentage of women being treated for migraine with aura whose medical records show no evidence of oral contraceptive treatment	0 of 1	0 of 1	Not feasible¶	13.3 (1.7 to 40.5)	13.3 (1.7 to 40.5)
B.5. Tension headache					
B.5.1. Percentage of patients seen for tension head ache whose medical records show evidence of treatment prescribed for acute attacks	0 of 2	0 of 2	46.7 (21.3 to 73.4)	33.3 (11.8 to 61.6)	42.7 14.2
B.5.2. Percentage of patients seen for tension headache prescribed prophylactic treatment	1 of 2	0 of 2	60 (32.3 to 83.7)	46.7 (21.3 to 73.4)	56 14
C. Chronic pelvic pain					
C.1. General					
C.1.1. Percentage of patients seen with chronic pelvic pain whose medical records show evidence of appropriate‡ treatment (paracetamol and/or C OX-2 and gabapentin or opioids and relaxation techniques)	0 of 2	0 of 2	40 (16.3 to 67.7)	26.7 (7.8 to 55.1)	34 14.4
C.3. Chronic bladder pain					
C.3.1. Percentage of patients seen with chronic bladder pain whose medical records show evidence of appropriate‡ treatment: 1st step: hydroxyzine + amitriptyline, and/or cyclosporin A 2nd step: associated intravesical treatment with pentosan polysulfate sodium or dimethyl sulfoxide, and hyaluronic acid and/or IV chondroitin sulfate	0 of 1	0 of 1	Not feasible¶	0.0 (0.0 to 21.8)	0.0 (0.0 to 21.8)

Table 2. (Continued)

Indicator	Centers with Good Quality (LQAS 75/40)	Centers with Good Quality (LQAS 95/70)*	Compliance Estimate in Hospital Care†	Compliance Estimate in Primary Care†	Total Compliance Estimate Combined†
D. Nonspecific low back pain					
D.1.1. Percentage of patients seen with nonspecific low back pain with evidence of inclusion in an educational program for a return to normal activity	0 of 1	0 of 1	Not feasible¶	0.0 (0.0 to 21.8)	0.0 (0.0 to 21.8)
D.1.2. Percentage of patients seen with nonspecific low back pain with evidence of inclusion in a therapeutic exercise program	0 of 1	0 of 1	Not feasible¶	6.7 (0.2 to 37.9)	6.7 (0.2 to 37.9)
D.1.3. Percentage of patients seen with nonspecific low back pain with evidence of inclusion in a cognitive behavior program	0 of 1	0 of 1	Not feasible¶	0.0 (0.0 to 21.8)	0.0 (0.0 to 21.8)
D.1.4. Percentage of patients with nonspecific low back pain with evidence of appropriate‡ drug treatment: Paracetamol: 650 to 1,000 mg every 6 hours or NSAIDs: < 3 month or Anti-inflammatories and muscle relaxants: < 1 week	1 of 1	0 of 1	Not feasible¶	66.7 (38.4 to 88.2)	66.7 (38.4 to 88.2)
E. Osteoarthritis					
E.1.1. Percentage of patients being treated for osteoarthritis included in a supervised therapeutic exercise program	0 of 3	0 of 3	12.51 10.9	20 (4.3 to 48.1)	14.3 9.4
E.1.2. Percentage of overweight patients being treated for osteoarthritis included in a weight loss program	0 of 2	0 of 2	13.3 (1.7 to 40.5)	0.0 (0.0 to 21.8)	7.6 9.4
F. Rheumatoid arthritis					
F.1.1. Percentage of patients seen with rheumatoid arthritis whose disease activity is measured regularly using standardized measurement systems such as DAS or DAS28	0 of 2	0 of 2	0.0 (0.0 to 21.8)	0.0 (0.0 to 21.8)	0.0 0.0
F.1.2. Percentage of patients with rheumatoid arthritis included in a supervised low-intensity exercise program	0 of 2	0 of 2	13.3 (1.7 to 40.5)	6.7 (0.2 to 37.9)	12.7 15.2
F.1.3. Percentage of patients diagnosed with rheumatoid arthritis with evidence of treatment with disease-modifying antirheumatic drugs	2 of 2	1 of 2	93.3 (68 to 99.8)	60 (32.3 to 83.7)	90.1 11.1
F.1.5. Percentage of patients with rheumatoid arthritis and pain with evidence of appropriate‡ analgesic treatment: 1st choice: paracetamol or codeine 2nd choice: NSAIDs or inhibitors (COX-2). Should be avoided in patients with ischemic heart disease, cerebrovascular disease, peripheral artery disease and moderate or severe heart failure. Gastro protection must be given to patients with duodenal ulcers that take NSAIDs.	1 of 1	0 of 1	Not feasible¶	46.6 (21.3 to 73.4)	46.6 (21.3 to 73.4)

Table 2. (Continued)

Indicator	Centers with Good Quality (LQAS 75/40)	Centers with Good Quality (LQAS 95/70)*	Compliance Estimate in Hospital Care†	Compliance Estimate in Primary Care†	Total Compliance Estimate Combined†
G. Fibromyalgia					
G.1.1. Percentage of patients seen with fibromyalgia given a validated questionnaire to assess disease impact	0 of 3	0 of 3	0.0 0.0	0.0 (0.0 to 21.8)	0.0 0.0
G.1.2. Percentage of patients with fibromyalgia included in a supervised aerobic exercise program	0 of 3	0 of 3	9 5.9	13.3 (1.7 to 40.5)	10.5 6.4
G.1.3. Percentage of patients being treated for fibromyalgia prescribed antidepressant treatment	1 of 3	0 of 3	64.3 15.1	13.3 (1.7 to 40.5)	46.9 11.2
G.1.4. Percentage of patients with fibromyalgia, on antidepressant treatment (for at least 12 weeks) without any improvement in FIQ score, with evidence of pregabalin or cyclobenzaprine treatment.	0 of 1	0 of 1	46.6 (21.3 to 73.4)	Not feasible¶	46.6 (21.3 to 73.4)
H. Neuropathic pain					
H.2. Post-herpetic neuralgia					
H.2.1. Percentage of patients with post-herpetic neuralgia pain prescribed tricyclic antidepressants, anticonvulsants, serotonin and norepinephrine reuptake inhibitors, and/or topical lidocaine at appropriate‡ doses as analgesic treatment	1 of 1	1 of 1	80 (51.9 to 95.7)	Not feasible¶	80 (51.9 to 95.7)
H.3. Trigeminal neuralgia					
H.3.1. Percentage of patients with trigeminal neuralgia prescribed appropriate‡ doses of carbamazepine as analgesic treatment or surgery if indicated	1 of 1	0 of 1	53.3 (26.6 to 78.7)	Not feasible¶	53.3 (26.6 to 78.7)
H.5. Chronic postsurgical pain					
H.5.1. Percentage of patients with chronic postsurgical pain with evidence of treatment with venlafaxine and/or topical capsaicin at an appropriate‡ dose and by an appropriate‡ route as analgesic treatment	0 of 1	0 of 1	26.7 (7.8 to 55.1)	Not feasible¶	26.7 (7.8 to 55.1)

*Centers with LQAS 95/70 accomplishment also include LQAS 70/45 accomplishment. †Results are shown in percentage estimation using 95% binomial exact confidence interval for one center and nonproportional stratified sampling formula for the aggregate estimate in more than one center. ‡Definition of each appropriate treatment can be found in the technical specifications document (available at http://www.um.es/calidadsalud/ARCHIVOS2013/ENG-Fichas%20ESTANDARIZADAS%20de%20indicadores%20DCNO%20_Revisado%202013_pdf). § Proportion obtained by dividing the total number of items for which there was evidence of assessment by the total number of possible items that should be assessed in a full pain-oriented clinical assessment for the whole sample evaluated. ¶"Not feasible" refers to indicators that could not be measured in that particular care setting. WHO, World Health Organization; NSAID, nonsteroidal anti-inflammatory drug; DAS, Disease Activity Score; FIQ, Fibromyalgia Impact Questionnaire.

complied with the 75% standard in all settings where measurement was feasible. Overall, only 4 QIs addressing mainly pharmacological treatment obtained estimated compliance levels over 60%, while 16 QIs obtained compliance scores under 15% (see Table 2). These 16 measures are addressed at assessment and follow-up (3 QIs), prevention of secondary effects avoiding prescription of certain pharmacological treatments (2 QIs), nonpharmacological treatment (8 QIs), and an appropriate pharmacological treatment based on pain intensity and/or evidence (3 QIs).

Compliance levels are in many cases very low, with values of 0 or close to 0 in all those indicators related to nonpharmacological treatment, some of them with great clinical importance. For example, in the composite indicator of full pain-oriented clinical assessment, items related to social scope showed low compliance, but also other items, such as measuring pain intensity (which determines feasibility and compliance of other indicators based on pain intensity [eg, QI A.1.2. Prescribed medication regime adjusted to pain assessment according to the WHO analgesic scale]) or inquiry on drug abuse. Another notable case is the indicator on patients with fibromyalgia, where the impact of the disease on daily activities assessment is absent and there is a very low compliance of the treatment indicator on aerobic exercise. In general, all indicators related to therapeutic exercise and educational programs (such as in osteoarthritis and low back pain) have very low levels of compliance.

The best scores within QIs were obtained regarding patients diagnosed with rheumatoid arthritis with evidence of treatment with disease-modifying antirheumatic drugs. The worst scores, all at 0% compliance level, are present in the following 6 QIs: patients with fibromyalgia with a validated questionnaire to assess disease impact; patients with rheumatoid arthritis whose disease activity is measured regularly using standardized measurement systems such as the Disease Activity Score (DAS) or DAS28; patients with nonspecific low back pain who are included in a cognitive behavior program; patients with nonspecific low back pain who are included in an educational program for a return to normal activity; patients with chronic bladder pain whose medical records show evidence of appropriate treatment; and migraine patients whose medical records show evidence of them having been offered complementary nondrug treatments.

Most QIs were highly rated by the external experts (see Table S1). On a scale of 0 to 5, only 2 were rated below 3 (no use of ergotamine or botulinum toxin for migraine, and intra-articular injections for patients with osteoarthritis). The vast majority were rated > 3.5, and 36 of them > 4.0.

DISCUSSION

This article summarizes the development of a set of evidence-based QIs for measuring quality of care in patients with chronic nonmalignant pain. Forty-six indicators were developed and evaluated according to published evidence and methodological requirements based on the literature.[15–18] Of the 46 QIs, 6 were in a general group (4 for any CNMP condition and 2 for any CNMP condition in elders), and 40 QIs were distributed among 7 groups. All groups of conditions had feasible indicators after the pilot test. Furthermore, all QIs that were feasible in our pilot study demonstrate moderate to high reliability and usefulness to identify quality problems.

Having a set of QIs regarding chronic pain was needed in the field of pain management. The set may be used to identify specific quality problems and improvement initiatives for this type of patients.

The baseline study shows interesting results. We want to highlight 2 salient issues: first, we found that there is, still, a lack of commitment with the measurement of pain to adjust treatment; and second, the approach to pain treatment in the evaluated facilities is mainly pharmacological, while other approaches like exercise or physical therapy are widely neglected, with slightly better results in primary care.

We found no evidence of a similar set of indicators for chronic pain, addressing the more frequent conditions and applicable to all levels of care.

The Ongoing Quandary of Pain Assessment

The complex nature of chronic pain implies the necessity of a comprehensive evaluation in order to identify the right choices of treatment.[6] In addition, an adequate, and recorded, pain assessment facilitates follow-up and treatment adjustments. A clear example of these barriers for adequate treatment is the use of opioids[33]: abuse, fatal poisoning, and unintentional drug overdose deaths have been increasing recently, mostly because of scarcity in control and supervision of the treatment.[34–36] For these reasons, an appropriate assessment of pain is essential, at least in therapies that depend on pain intensity and in which the WHO pain ladder can contribute to the decision between nonopioid and

opioid treatment along a scale. Explicit and recorded pain assessment in CNMP is very low in our context (see the pain assessment component of indicator A.1.1, Table 2) and should be promoted because it may lead to better pain control. Other tools could be used, encompassing functionality or goal-oriented outcomes,[37,38] potentially capable of preventing factors related to the recent U.S. opioid crisis.[38] However, we have not found routine use of any of these tools in the pilot sites, particularly in primary health care. It is known that "you can^{0}t manage what you don^{0}t measure"; therefore, accountability of health professionals to assess pain is the first step that can lead to a better management of CNMP.

Evidence and Quality Indicators in Chronic Pain

While there is enough information in a variety of conditions that can lead to chronic pain, there are still a lot of barriers regarding the appropriate clinical management. Healthcare managers must promote the implementation of the existing practice guidelines and the development of protocols inside healthcare organizations to assure that the treatment offered by different professionals is founded on the same basis. If these protocols are well developed, they can facilitate best practices and avoid poor quality care, even though clinical protocols may not replace professional judgment. Accountability of clinical practitioners to translate the best evidence into practice is essential. QIs can help to close the gap between evidence and clinical practice, offering a tool to both healthcare professionals and managers to assess their practices and to find improvement opportunities.

Currently, few indicators exists related to CNMP,[10,39–41] which, being such a wide field, is surprising when compared with the existing QIs for some other prevalent health conditions such as cardiovascular diseases or respiratory tract diseases. The creation of this set of QIs aimed for CNMP care, covering specific as well as overall health conditions, may be a step in the right direction to increase quality of care in CNMP.

Prevalence of Target Population and Feasibility Interactions

Some relevant findings regarding feasibility results are worth mentioning. For instance, the 4 QIs for chronic low back pain were feasible only in primary care, while 3 QIs in the neuropathic group were feasible only in hospitals. Although many factors can contribute in yielding such a result, we believe that the most relevant was the prevalence of cases in the pilot-test settings. Both cases could be considered a reflection of the flux of patients throughout our healthcare system. Feasibility also depends on the quality of medical records. Misreported and under-reported information can limit identification of valid cases. Evaluators found that many medical records were lacking specific information related to nonpharmacological treatments, pain intensity, and other aspects of pain assessment, such as the impact on daily living activities and comorbidities. Low compliance results, either because of a lack of information in medical records or "real" low level of good practices, are always considered poor quality, given that whatever the cause there is no evidence of the accomplishment of the expected standards.

The influence that the aforementioned factors have suggests that the feasibility of our set may be context dependent. Other results regarding feasibility could be achievable in facilities with higher medical records quality. In any case, it was possible to measure reliability and usefulness in 33 of the 46 initially developed Qis, providing a set of valid QIs ready to use.

Interdisciplinary Approach and Accountability as Principles for Improving CNMP

As demanded by the current situation of the healthcare system, the set of QIs presented here involves multidisciplinary interventions.[8,42,43] The objective should be facing chronic pain as a common issue, overcoming system barriers and achieving quality standards in a so-called interdisciplinary approach[43] (ie, a well-integrated, coordinated and multidisciplinary group with a same goal).

To reach such a high quality in pain management, accountability of stakeholders, from healthcare providers to quality managers, is also necessary. Professionals, whose performance is evaluated, have the key to carry out self and internal quality improvement initiatives. Administrative and quality managers must support these initiatives and work at the organizational level to commit to best evidence practices. There is a recent example of a system approach to pain management that can be used as a guide.[44] The QI set proposed in this article can be used to monitor and compare results over time and across institutional units or healthcare system organizations. We encourage and

promote monitoring activities by providing our set and supporting materials, which are accessible online (http://www.um.es/calidadsalud/herramientas/).

Limitations and Strengths of the CNMP Set

The principal limitation is that the results showed in the pilot test may be considered context dependent. Our results have highlighted opportunities for internal quality improvement in the participating centers. More studies in different contexts are necessary to confirm the feasibility and usefulness of the set, especially for the purpose of comparing centers and establishing good practice standards. Regarding reliability, the set has been piloted in Spanish.

Nevertheless, we have developed the proposed QIs using a standardized and rigorous evidence-based approach, following previously defined recommendations to ensure high methodological quality and maximal clearness of our outcomes,[15–18] which is a solid strength. Since our indicators are based on a high level of evidence and strength of recommendations, it is unlikely that they be changed by new investigations. However, updating and attention to eventual new evidence may be considered.

Finally, although we could add more CNMP conditions than we did, we tried to take into account the most prevalent ones. Furthermore, the QIs were developed by a multidisciplinary panel of experts to guarantee a wide acceptance of the results by institutions and organizations engaged in CNMP care.

The Path Ahead

The next steps for using these indicators in an international context encompass prioritization and adaptation. Prioritization should be made regarding the type of patients that healthcare institutions consider more relevant upon which to focus their improvement initiatives. In our experience, a participative approach may help to select conditions and indicators felt to be important for quality monitoring and improvement, sometimes complementing the ones already in place.[45] Adaptation may consider the particularities of the information system and the health system itself (ie, places and teams taking care of particular conditions), as well as local norms and legal issues, that could affect measurement specifications (eg, legislation in relation to opioids[46] and other drugs[47]). Finally, as for any other QI set, it will be important to keep it updated in relation to new evidence and international recommendations, which may reinforce or lead to complementing the specifications of some indicators. Opioid management and the recent increasing concern about abuse, misuse, and interactions are other examples.[48–51]

CONCLUSIONS

The created indicator set addresses the existing need for measures regarding CNMP management to assess the actual state of practice. This set has tested to be feasible, reliable, and useful, with the capacity to serve as the baseline for developing the necessary strategies to improve the management of CNMP.

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CONFLICT OF INTEREST

The authors state that they don't have any conflict of interest.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. Indicators for chronic non-malignant pain management: Source, evidence, strength of recommendations, Kappa and interest ratings

Table S2. Good practice indicators for chronic non-malignant pain management. Feasibility distribution by site

REFERENCES

1. Kumar N. *WHO Normative Guidelines on Pain Management*. Geneva, Switzerland: WHO; 2007.

2. Langley PC, Ruiz-Iban MA, Molina JT, De Andres J, Gonz´alez-Escalada Castello´n JR. The prevalence, correlates and treatment of pain in Spain. *J Med Econ*. 2011;14:367–380.

3. Turk DC, Wilson HD, Cahana A. Treatment of chronic non-cancer pain. *Lancet*. 2011;377(9784):2226–2235.

4. Breivik H, Collett B, Ventafridda V, Gallacher D. Survey of chronic pain in Europe: prevalence, impact on daily life, and treatment. *Eur J Pain*. 2006;10:287–333.

5. Gordon DB, Dahl JL. Quality improvement challenges in pain management. *Pain*. 2004;107:1–4.

6. Gatchel RJ, Peng YB, Peters ML, Fuchs PN, Turk DC. The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychol Bull*. 2007;133:581–624.

7. Argoff CE, Albrecht P, Irving G, Rice F. Multimodal analgesia for chronic pain: rationale and future directions. *Pain Med*. 2009;10(suppl 2):S53–S66.

8. Scascighini L, Toma V, Dober-Spielmann S, Sprott H. Multidisciplinary treatment for chronic pain: a systematic review of interventions and outcomes. *Rheumatology (Oxford)*. 2008;47:670–678.

9. H€auser W, Bernardy K, Arnold B, Offenb€acher M, Schiltenwolf M. Efficacy of multicomponent treatment in fibromyalgia syndrome: a meta-analysis of randomized controlled clinical trials. *Arthritis Rheum*. 2009;61:216–224.

10. Institute for Clinical System Improvement. *Assessment and Management of Chronic Pain Health Care Guideline: Assessment and Management of Chronic Pain*. Bloomington, MN: Institute for Clinical System Improvement; 2013 (November).

11. Pillastrini P, Gardenghi I, Bonetti F, et al. An updated overview of clinical guidelines for chronic low back pain management in primary care. *Joint Bone Spine*. 2012;79:176–185.

12. Nelson AE, Allen KD, Golightly YM, Goode AP, Jordan JM. A systematic review of recommendations and guidelines for the management of osteoarthritis: the Chronic Osteoarthritis Management Initiative of the U.S. Bone and Joint Initiative. *Semin Arthritis Rheum*. 2014;43:701–712.

13. Loder E, Burch R, Rizzoli P. The 2012 AHS/AAN guidelines for prevention of episodic migraine: a summary and comparison with other recent clinical practice guidelines. *Headache*. 2012;52:930–945.

14. Moulin DE, Clark AJ, Gilron I, et al. Pharmacological management of chronic neuropathic pain—consensus statement and guidelines from the Canadian Pain Society. *Pain Res Manag*. 2007;12:13–21.

15. Campbell SM, Braspenning J, Hutchinson A, Marshall M. Research methods used in developing and applying quality indicators in primary care. *Qual Saf Health Care*. 2002;11:358–364.

16. Mainz J. Defining and classifying clinical indicators for quality improvement. *Int J Qual Health Care*. 2003;15:523–530.

17. Mainz J. Developing evidence-based clinical indicators: a state of the art methods primer. *Int J Qual Health Care*. 2003;15(suppl 1):i5–i11.

18. McGlynn EA. Selecting common measures of quality and system performance. *Med Care*. 2003;41(suppl):I39–I47.

19. Saturno PJ, Mart´ınez-Nicola´s I, Robles-Garcia IS, Lo´pez-Soriano F, Angel-Garc´ıa D. Development and pilot test of a new set of good practice indicators for chronic cancer pain management. *Eur J Pain*. 2014;19:28–38.

20. Klazinga N, Stronks K, Delnoij D, Verhoeff AP. Indicators without a cause. Reflections on the development and use of indicators in health care from a public health perspective. *Int J Qual Health Care*. 2001;13:433–438.

21. Donabedian A. The quality of care. How can it be assessed? *JAMA*. 1988;260:1743–1748.

22. Donabedian A. Evaluating the quality of medical care. 1966. *Milbank Q*. 2005;83:691–729.

23. Palmer RH. Using health outcomes data to compare plans, networks and providers. *Int J Qual Health Care*. 1998;10:477–483.

24. Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328:1490.

25. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*. 2008;336:924–926.

26. SIGN (Scottish Intercollegiate Guidelines Network). *SIGN 50: A guideline Developer's Handbook—SIGN Grading System 1999–2012*. http://www.sign.ac.uk/assets/sign50_2015.pdf (accessed March 22, 2018)

27. U.S. Preventive Services Task Force. *Grade Definitions*. https://www.uspreventiveservicestaskforce.org/Page/Name/grade-definitions (accessed 22 March 2018)

28. Guirguis-Blake J, Calonge N, Miller T, et al. Current processes of the U.S. Preventive Services Task Force: refining evidence-based recommendation development. *Ann Intern Med*. 2007;147:117–122.

29. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977;33:159–174.

30. Robertson SE, Valadez JJ. Global review of health care surveys using lot quality assurance sampling (LQAS), 1984–2004. *Soc Sci Med*. 2006;63:1648–1660.

31. Saturno PJ. The binomial distribution and the Lot Quality Acceptance Sampling as methods for monitoring quality in health services. *Rev Calid Asist*. 2000;15:99–107.

32. World Organization of National Colleges A. *ICPC-2: International Classification of Primary Care*, 2nd ed. Oxford: Oxford University Press; 1998.

33. Zuccaro SM, Vellucci R, Sarzi-Puttini P, et al. Barriers to pain management: focus on opioid therapy. *Clin Drug Investig*. 2012;32(suppl 1):11–19.

34. Warner M, Chen LH, Makuc DM. Increase in fatal poisonings involving opioid analgesics in the United States, 1999–2006. *NCHS Data Brief*. 2009;22:1–8.

35. Centers for Disease Control and Prevention. CDC grand rounds: prescription drug overdoses—a U.S. epidemic. *MMWR Morb Mortal Wkly Rep*. 2012;61:10–13.

36. King NB, Fraser V, Boikos C, Richardson R, Harper S. Determinants of increased opioid-related mortality in the United States and Canada, 1990–2013: a systematic review. *Am J Public Health*. 2014;104:e1–e11.

37. Krebs EE, Lorenz KA, Bair MJ, et al. Development and initial validation of the PEG, a three-item scale assessing pain intensity and interference. *JGen Intern Med*. 2009;24:733–738.

38. Levy N, Sturgess J, Mills P. "Pain as the fifth vital sign" and dependence on the "numerical pain scale" is being abandoned in the US: Why? *Br J Anaesth*. 2018;120:435–438.

39. Chodosh J, Solomon DH, Roth CP, et al. The quality of medical care provided to vulnerable older patients with chronic pain. *J Am Geriatr Soc*. 2004;52:756–761.

40. SEMERGEN. *Documentos Cl´ınicos SEMERGEN: Manejo del dolor en AP*. Barcelona: SEMERGEN; 2006.

41. Perera GAR, Moriarty H. *Prescription Safety Pilot Project Report to the Health Quality and Safety Commission*. Wellington, New Zealand: Health Quality & Safety Commission; 2012.

42. Flor H, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain*. 1992;49:221–230.

43. Gatchel RJ, McGeary DD, McGeary CA, et al. Interdisciplinary chronic pain management: past, present, and future. *Am Psychol*. 2014;69:119–130.

44. Joint Commission on Accreditation of Healthcare Organizations. *Pain Management: A Systems Approach to Improving Quality and Safety*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations; 2012.

45. Saturno-Hern´andez PJ, Mart´ınez-Nicol´as I, Poblano-Ver´astegui O, et al. Implementacio´n de indicadores de calidad de la atencio´n en hospitales pu´blicos de tercer nivel en M´exico. *Salud Publica Mex*. 2017;59:227.

46. Liliana De Lima MH, Sakowski JA, Stratton Hill C, Bruera E. Legislation analysis according to WHO and INCB criteriaonopioidavailability: acomparativestudyof 5 countries and the state of Texas. *Health Policy*. 2001;56:99–110.

47. Eich W, B€ar K-J, Bernateck M, et al. Definition, Klassifikation, klinische Diagnose und Prognose des Fibromyalgiesyndroms. *Der Schmerz*. 2017;31:231–238.

48. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *MMWR Morb Mortal Wkly Rep*. 2016;65:1–49.

49. Opioid Therapy for Chronic Pain Work Group. *VA/DoD Clinical Practice Guideline for Opioid Therapy for Chronic Pain*. Washington, DC: Department of Veterans Affairs and Department of Defense; 2017.

50. Ruhm CJ. Drug involvement in fatal overdoses. *SSM Popul Health*. 2017;3:219–226.

51. Jones JD, Mogali S, Comer SD. Polydrug abuse: a review of opioid and benzodiazepine combination use. *Drug Alcohol Depend*. 2012;125:8–18.