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Acute pain in adults admitted to the emergency room: development and implementation of abbreviated guidelines

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Summary

Aim: Although acute pain is frequently reported by patients admitted to the emergency room, it is often insufficiently evaluated by physicians and is thus undertreated. With the aim of improving the care of adult patients with acute pain, we developed and implemented abbreviated clinical practice guidelines (CG) for the staff of nurses and physicians in our hospital's emergency room.

Methods: Our algorithm is based upon the practices described in the international literature and uses a simultaneous approach of treating acute pain in a rapid and efficacious manner along with diagnostic and therapeutic procedures.

Results: Pain was assessed using either a visual analogue scale (VAS) or a numerical rating scale (NRS) at ER admission and again during the hospital stay. Patients were treated with paracetamol and/or NSAID (VAS/NRS <4) or intravenous morphine (VAS/NRS ≥4). The algorithm also outlines a specific approach for patients with headaches to minimise the risks inherent to a non-specific treatment. In addition, our algorithm addresses the treatment of paroxysmal pain in patients with chronic pain as well as acute pain in drug addicts. It also outlines measures for pain prevention prior to minor diagnostic or therapeutic procedures.

Conclusions: Based on published guidelines, an abbreviated clinical algorithm (AA) was developed and its simple format permitted a widespread implementation. In contrast to international guidelines, our algorithm favours giving nursing staff responsibility for decision making aspects of pain assessment and treatment in emergency room patients.

Key words: acute pain; emergency room; clinical practice guidelines

Introduction

Pain is defined by the International Association for the Study of Pain (IASP) as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" [1]. Even before identification of any underlying pathology associated with pain, it is important to first systematically research the cause of the pain to allow proper treatment. Diagnostic measures should at no time mask the deleterious effects of pain, ie stimulation of the autonomic nervous system, neuropsychological changes inherent to the experience of pain, "pain memory" by the organism with neuro-anatomic and biochemical changes [2, 3]. These negative effects can increase patient's discomfort or morbidities, make it harder for the patient to interact with medical personnel, add to health care costs and may even cause the pain to develop into a chronic condition [2–7]. Thus, rapid and efficacious treatment of the symptom of "pain" is necessary in concert with diagnostic and therapeutic procedures to determine its aetiology.

The prevalence of complaints of pain among emergency room patients is between 60–80% [8, 9]. This value most likely underestimates the true prevalence because patients are admitted on an

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irregular basis and the conditions in which they are interviewed and examined are not designed to assess pain. Despite agreement among some specialists [10, 11], health care providers are not well armed to combat pain and many European and American studies indicate a need for emergency physicians to address acute pain in their patients [8–10, 13]. For example, Wilder-Smith recently demonstrated that less than one third of anaesthesiologists and surgeons questioned use scores to evaluate pain and that only one tenth use clinical practice guidelines (CG) [12]. These health care practitioners cite the lack of training in this area as the main reason for an insufficient evaluation of pain in their patients. One study measuring satisfaction showed that health care providers significantly underestimate the intensity of pain as described by patients themselves, which can also explain the inadequate amount of pain medication administered [13]. Finally, it has been established that the delay in administering an effective analgesic is always longer than desired – most patients expect to receive pain relief soon after admission to the emergency room [9, 14, 15].

In view of these findings, our ER admissions service wanted to develop for its staff a simplified CG that included the evaluation of the quality of the treatment of acute pain in the adult. This article summarizes the methods used to develop a simplified CG. Moreover, it describes the guidelines including some specific elements as well as how they were implemented in our emergency room.

Methods

Development of guidelines

We developed a decision tree based on proven CG recommendations in the international literature (France, United States and Australia) [2–6, 16–18]. The foreign CG were used to create an abbreviated algorithm (AA) adapted to local practices and conditions. Our background research included a systematic Medline search using the key words "guidelines, acute pain management, emergency department". We also reviewed websites dedicated to analgesia or emergency medicine (IASP, International Association for the Study of Pain, French Society of Emergency Medicine, etc) based on applying those same key words in the Google search engine. Our documentation was completed using additional references selected manually. We used or adapted only those recommendations that were developed using methods that respected the process of grading scientific evidence. Individual references (books, articles) were consulted when necessary to compliment information found in the international references.

The authors wished to offer an ergonomic tool which facilitates the implementation of systemic analgesic treatments in emergency room patients with acute pain. We therefore developed abbreviated recommendations (AA) in the form of an algorithm or decision tree using double-sided colour A5 200 g-weight photographic quality paper (also referred to as pocket size AA). The final product went through an external validation process by the heads of all hospital departments who treat patients during or after an ER admission as well as by several outside experts.

Implementation of abbreviated recommendations (AA)

The AA were distributed and explained in systematic fashion over the course of one month by one person dedicated to this task. Since even a limited intervention is sufficient to improve pain management [28, 29], we hoped to reach most staff members that were active in the respective ER wards. To this end, the algorithm and its associated notes were distributed at staff meetings as well as at staff shift change (morning-evening) meetings. This distribution took place daily (including weekends) for over four weeks. We recorded the names of collaborators who received the algorithm and staff on sick leave or holiday later received the form by internal mail with an explanatory letter. Formal meetings to explain the AA were organised with the department heads of traumatology, surgery and internal medicine. In addition, we also briefed any other hospital collaborators desiring information on this subject. A stock of algorithms and associated notes were distributed to all department heads to allow further distribution of the AA within their units as well as to their consultants/specialists ie ENT, neurosurgery, etc. We wanted the maximum of hospital staff to be aware of the recommendations developed in the emergency room.

In addition to direct handouts, the AA was also posted in A3 and A4 format in the different departments to provide a visual cue or reminder. With this multi-faceted mode of distribution, 80% of our emergency room personnel (120 physicians and nurses) received a copy of the algorithm and the associated notes. In order to reach the remaining staff, the AA was also placed in a box in the emergency room so that it was freely available to any staff member or other medical personnel.

Results

The systematic research of published guidelines and proven methods emphasised three CG promoted by the health authorities in the USA, Australia and France [2–4]. They cite two main approaches or axes to treat acute pain in the adult admitted to the emergency room: on the one hand, the determination of the aetiology of pain and on the other hand, the timely administration of an analgesic following a standard clinical evaluation. These two axes should take place in parallel since it is generally accepted that the reduction or suppression of acute pain does nothing to change medical judgment, the secondary clinical exam or the chosen therapeutic modality [2, 3, 19, 20]. The

CG also describe two other important axes concerning medication: weak to moderate pain (VAS <4/10 cm) should be treated with an analgesic, paracetamol or a non-steroidal anti-inflammatory drug (NSAID) (in the absence of contraindications) with free choice as to type of administration (intravenous, intramuscular, or by oral or rectal route). Strong to intense pain (VAS >4/10 cm) should be treated with titrated morphine (0.1 mg/kg for the initial dose) preferably by intravenous administration as the subcutaneous route has proven inconsistent. Monitoring patients in the emergency room or other hospital department offers good possibilities for reversion of the analgesic effect in case of side effects. Despite numerous published comments about pain mechanisms and the specific ways in which to treat pain [2–7], the standard attitude about pain treatment in the emergency room consistently returns to these basic principles. The algorithm we developed and its associated notes are shown in figure 1.

Our algorithm diverges from these basic principles regarding headaches. The American [2] and Australian CG [3] address this subject in order to educate the clinician about the importance of easing this symptom quickly while highlighting the risks/benefits of each treatment. Since headaches are frequently found in emergency room patients, they occupy an "axis" of their own in our algorithm. A rapid analgesic is not only the preferred treatment for "typical" headaches but in patients with "atypical" headache (as defined by Bodenmann and Nater [21]) it may also reduce the symptom with a minimum of risks while waiting for complementary examinations. Paracetamol with its wide margin of safety [1–4, 21] is the treatment of choice in this instance and administration by rectal route is preferable to a more cumbersome intravenous administration.

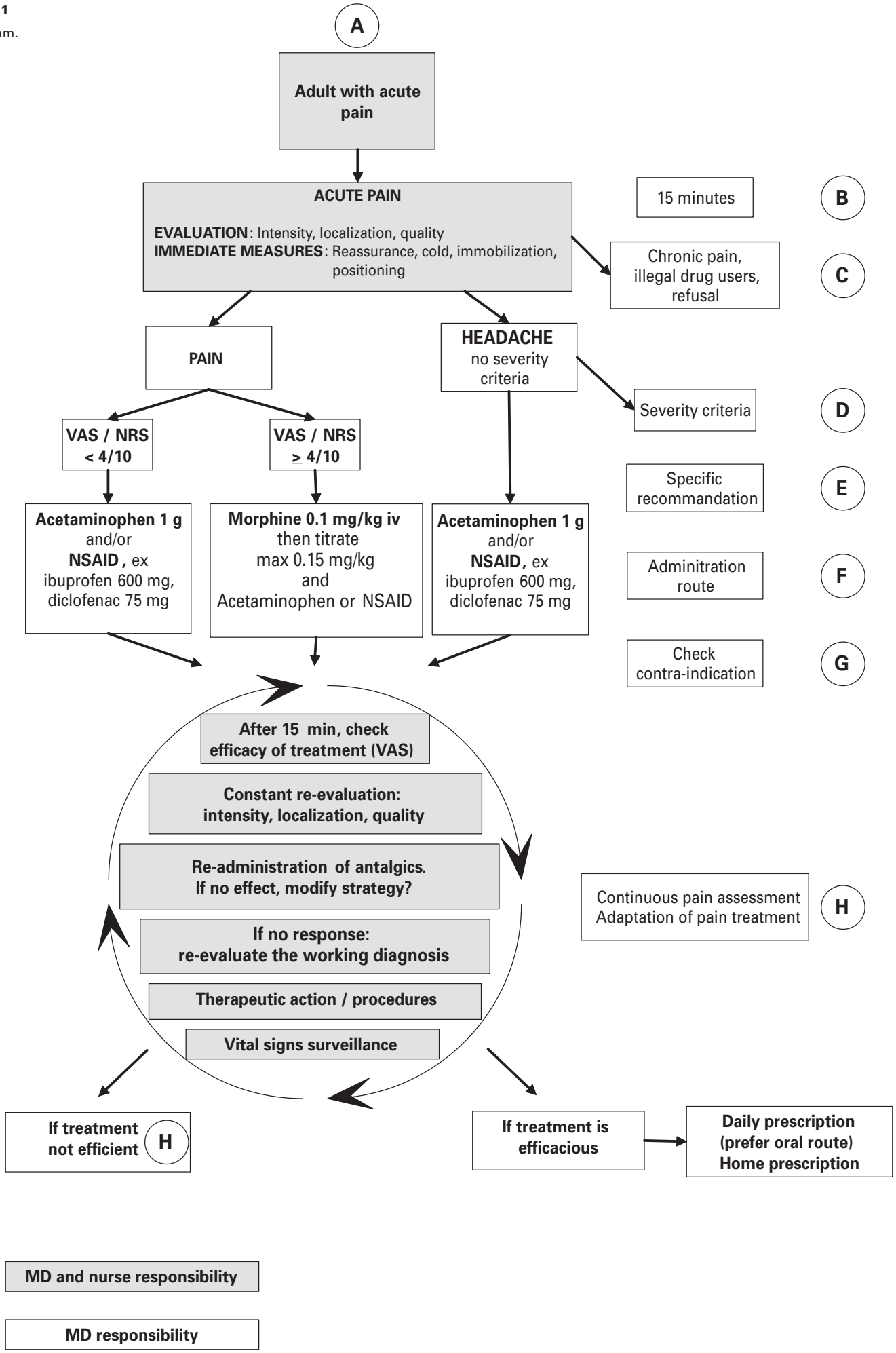
The algorithm and its associated notes also address the treatment of chronic acute pain and pain in drug addicts in order to assist medical personnel when faced with such patients. These guidelines are based not so much upon the published American CG [2] as on expert opinion and clinical habits of outside practitioners (palliative care specialists, anaesthesiologists, etc.). The treatment of pain in these types of emergency room patients should be identical to that found in any other patient with pain, with two exceptions. These patients have a different pain threshold requiring higher doses of titrated systemic analgesic [2, 3] and they should also receive timely intervention by the appropriate specialist (oncologist, palliative care specialist, rheumatologist, neurologist, anaesthesiologist, etc.).

Our algorithm also differs from the guidelines in the international literature in the area of pharmacology and the parenteral administration of NSAIDs in abdominal, renal or biliary colic-type pain. Foreign researchers favour the administration of diclofenac (over metamizole or pethidine [22–24]) administered intramuscularly. While this treatment is widespread in the USA it is not as popular in Switzerland due to its potential to cause pain as well as complications in patients on oral anticoagulant therapy. Our algorithm is based on the advice of specialists and suggests an intravenous administration when the oral route is not feasible while weighing the risks inherent to using diclofenac. Our algorithm emphasises preventive analgesic treatment prior to diagnostic and therapeutic procedures. This type of treatment is not well addressed in the foreign CG [2–4]. Our algorithm specifically addresses preventive analgesia in the context of the overall treatment of the patient in the hospital or emergency room admission process. In fact, we found that certain procedures in our hospital (ie radiological exams, applying external orthopaedic devices) are often conducted without the use of analgesics.

At each stage of the decision tree, our algorithm also introduces the respective competencies of physicians and nurses using a colour code (red for physicians, blue for nurses) (annex 1). In case of overlapping responsibilities, both colours are present. Competencies were determined in concert with the nursing staff. These tasks need to be re-examined over time in order to give nursing staff a maximum of decision making responsibilities once they integrate analgesic therapy in adults as a routine treatment for pain, as is commonly observed in other countries [25, 26]. The colour coding is specific to our algorithm. For example, the French CG vaguely describe some responsibilities without defining them in great detail [4], while other CG do not address competencies at all.

Some points merit additional comments. During the preparation of our algorithm we received many negative inputs on the use of opiates in patients with abdominal pain or respiratory insufficiency [2–5], and on the liberal usage of metamizole [27] and pethidine [3, 24], both frequently prescribed in our institution prior to this research. With regard to opiates, while an increase in the pressure of the sphincter of Oddi caused by morphine is documented in animal studies, it has not been shown to have a deleterious effect in man [20, 24]. However, the respiratory risks caused by opiates in patients with chronic respiratory insufficiency are well known to health care providers and deserve close monitoring. However, they do not call into question the basic principles of the algorithm. Finally, we found that the frequent secondary effects of metamizole and pethidine (including but not limited to blood disorders and central nervous system problems), often poorly understood by clinicians who use these substances, more than justified the omission of these medications from our AA.

Figure 1
Algorithm.



Discussion and conclusions

We note that the development of simple, ergonomic CG, adapted to local conditions and having user friendly visual cues not only reinforced the team spirit when confronted with a common problem but also encouraged a discussion about treating acute pain in adults admitted to the emergency room. This, together with the positive feedback we received, improved treatment of acute pain in our emergency room. Due to the strong interest our work elicited, our algorithm and its accompanying notes were also presented at medical conventions and were then further revised and edited. Thousands of copies were distributed in the emergency rooms of regional hospitals and an adapted form was distributed to medical students and to physicians in general practice throughout Switzerland. In order to further improve patient care we must now apply our knowledge regarding acute pain treatment in adults admitted to the emergency room. We are currently evaluating the impact of these practical recommendations in our own hospital's emergency room.

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