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Actions to improve documented pain assessment in adult patients with injury to the upper extremities at the Emergency Department – A cross-sectional study

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ABSTRACT

Background: Pain is one of the most common symptoms in the Emergency Department (ED) and is the cause of more than half of the visits to the ED. Several attempts to improve pain management have been done by using, for example, standards/guidelines and education. To our knowledge no one has investigated if and how different actions over a longitudinal period affect the frequency of pain documentation in the ED. Therefore the aim of this study was to describe the frequency of documented pain assessments in the ED.

Method: A cross-sectional study during 2006–2012 was conducted. The care of patients with wrist/arm fractures or soft tissue injuries on upper extremities was evaluated.

Result: Despite various actions our result shows that mandatory pain assessment in the patient’s computerized medical record was the only successful intervention to improve the frequencies of documentation of pain assessment during care in the ED. During the study period, no documentation of reassessment of pain was found despite the fact that all patients received pain medication.

Conclusion: To succeed in increasing the frequency of documented pain assessment, mandatory pain rating is a successful action. However, the re-evaluation of documented pain assessment was nonexistent.

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1. Introduction

Pain is one of the most common symptoms treated in the emergency department (ED) and is the cause of more than half of the visits to the ED (Cordell et al., 2002; Wilson and Pendleton, 1989). Previous studies have concluded that pain management is inadequate and oligoanalgesia is reported to be a problem in the ED (Fosnocht et al., 2005; Niruban et al., 2010; Todd et al., 2007). Barriers to achieving adequate pain relief for patients in the ED have been shown to be: failure to assess and acknowledge pain, lack of guidelines, failure to document pain, failure to assess treatment correctly, attitudes and inadequate knowledge among personnel (Motov and Khan, 2008). Since oligoanalgesia may be associated with increased risk of complications such as sleep disturbance, delirium, depression, and decreased response to interventions for other illnesses, especially among the elderly (Abou-Setta et al., 2011), the patient’s pain should be considered as the fifth vital sign (Purser et al., 2014). Several attempts to improve pain management in the ED have been made by using guidelines (Eder et al., 2003), implementing assessment using pain scales (Ritsema et al., 2007), and by education of the personnel (Decosterd et al., 2007). Documentation of pain assessment conducted in the ED has been shown to have an effect on pain management (Vazirani and Knott, 2012), but there is a large variation, with a range of 57–94 per cent in the frequency of documented pain assessment (Brown et al., 2003; Eder et al., 2003; Purser et al., 2014). In Sweden there are no national regulatory requirements for pain management in the ED, but local
guidelines concerning pain management have been developed. All
the above described attempts have, to some extent, improved pain
management in the ED, but pain management is still reported to
be insufficient (Lewén et al., 2010). To our knowledge, no one has
investigated if and how different interventions over a long period
affect the frequency of pain documentation in the ED. Therefore, the
aim of this study was to describe the frequency of documented pain
assessments in the emergency department.

2. Material and methods

A cross-sectional study of medical records was conducted from
2006 to 2012. The study was approved by the Medical Research
Ethics Committee, Stockholm, Sweden (2008/991-31/3).

2.1. Setting

The study was conducted on patients with wrist/arm fractures
or soft tissue injuries in a 24-hour adult ED (>15 years) at a public
urban teaching hospital in Stockholm. Each year, the hospital re-
ceives approximately 7300 patients with acute life-threatening
situation/condition by ambulance. In the health care system in Stock-
holm, patients with orthopaedic and/or surgical injuries >15 years
are always treated at an adult ED. During the study period the
number of patients attending the ED increased from 79,277 in 2006
to 109,982 in 2012 without the ED being expanded. Moreover, the
patients with wrist/arm fractures or soft tissue injuries increased
from 1353 to 1657. The hospital beds decreased from 560 to 505
over the same period. The ED serves all adult patients with surgi-
cal cardiology, orthopaedics and internal medicine requirements,
and no referral is needed. The ED has transfer agreements for pa-
ients requiring more comprehensive care such as neurosurgery and
burn injuries. The personnel working with direct patient care in the
ED are: physicians specializing in cardiology, surgery, orthopae-
dics, internal medicine or emergency medicine; and registered nurses
(RN) and RN with additional training in emergency care. There are
approximately 250 RN and nurse assistants working at the ED. The
RN s perform the first triage, supported by standardized protocols.
The aim of this first triage is to identify the patients’ need of care
based on the acuity of their condition. During the study period, pa-

tients with wrist/arm fractures or soft tissue injuries were treated
by orthopaedic surgeons or emergency physicians, and by nurses
with or without additional emergency care training.

2.2. Data collection and variables

Patients’ medical records were used for data collection. To assess
the frequencies of pain rating over time, data were collected from
patients’ medical records. Inclusion criteria were: The first ten
medical records in the admission system for the ED of adult pa-

tients (>15-years or older) every month 2006–2012 (=120 patients/
year) with wrist/arm fractures or soft tissue injuries on the upper
extremities. Since we wanted to investigate the frequency of doc-
umentation regarding pain assessment we included patients that
had received analgesics. Patients with wrist/arm fractures or soft

tissue injuries on the upper extremities were selected since they
are a common group of patients and, among fractures, wrist frac-
tures are the most frequently treated in the ED (Court-Brown and
Caesar, 2006). Such patients can also be easily identified by the triage
nurse (an RN with additional training in emergency care). Also, in
accordance with local guidelines implemented in year 2002, the RN
is able to administer oral and/or intravenous pain medication at ad-
mission to this group of patients by using the nurse-initiated
analgesic protocols. The protocol states that the RN should assess
the patients’ pain using a pain rating scale (NRS), including docu-
mentation of pain assessment before and after administering
analgesics. The authors reviewed the patients’ medical record and
collected variables of documented pain ratings according to NRS,
reassessment of pain rating (yes or no), and demographic charac-
teristics such as gender and age. All collected variables were manually
entered into excel. No data were missing.

2.3. Interventions to improve assessment and documentation of pain

The interventions aiming to improve the pain assessment and
documentation in the ED during the study period were as follows:

• In 2002 a guideline describing a pain policy programme was pub-
lished and implemented in the ED. Overall, the policy programme

clearly stated that all patients with pain should have their pain
assessed and documented. The only implementation of this guide-
line was hospital management giving written information to the
ED personnel that a new pain assessment guideline was in place.

• In 2006 Stockholm County Council (SCC) published a report on
pain (Stockholm County Council 2006). The aim of the report was
to get health care personnel focused on pain and its treatment.
The report was available to all the personnel in the ED.

• In September 2007 a group of personnel with a special interest
in and knowledge of pain was formed by the first author (LS)
in the ED. The group consisted of six RNs and nurse assistants
all working in the ED. The overall purpose of the group was to
educate and facilitate other personnel in the ED in increasing pain
assessment and documentation. The group communicated their
message through various types of staff meetings.

• At the beginning of 2008, the heads of personnel in the ED
decided that the Numeric Rating Scale (NRS) should be used as
the pain rating scale since it is a validated pain rating scale for
use in the ED (Berthier et al., 1998; Bijur et al., 2003). In addi-
tion to the introduction of, and education about, the NRS the RNs
were instructed to note the NRS score in the patient’s medical
record when the patient arrived at the ED.

• In May 2008, to make pain management more visible for the RNs,

a reminder of pain assessment and the use of the NRS were noted
in the patients’ medical records.

• In January 2009, aiming to remind the RNs to assess and doc-
ument pain, the patients were informed by the triage nurse about
the pain rating. The information was meant to be a reminder to
the RNs to perform and document pain assessment.

• In October 2010, the patient medical report was computerized
and pain assessment became mandatory.

2.4. Data analysis

Data analysis was performed using Microsoft Office, Excel 2007.
The results are presented using descriptive statistics (numbers and
per cent).

3. Results

During the study period a total of 840 (120/year) patients with
wrist/arm fractures or soft tissue injuries and who had received an-
algesics at the ED were included. The medical records were examined
regarding documentation of pain assessment and reassessment post-
algesia. Patients included in the study were predominantly older
females (Table 1).

During 2006, the guidelines concerning assessment and docu-
mentation of pain were implemented in the ED, but adherence to
guidelines was poor, as shown in Table 2. In 2007 a group of per-
sonnel with special interest in pain was put together and the
frequency of documented assessed pain increased for a short period.
Despite various actions, there was no sustained effect until the doc-
umentation was mandatory and computerized during 2010, as
The patients measure their own pain intensity in the medical record. Interventions such as mandatory documentation of re-evaluation, or letting medical records. As examples of interventions that could improve evaluation of the patient’s pain was found to be documented in the fact that all patients in our study received pain medication, no re- to ‘work-around’ the mandatory documentation. Instead of assess- assessment in 2012 may indicate that the RNs have found a way of time than ever shown before. The decrease in documented pain However, our result shows a sustainable effect for a longer period of time. Our result shows that mandatory pain assessment in the patient's computerized medical record was successful for a period of time. The result was maintained for 21 months, before a slight decline in the frequency of pain assessment frequencies. Whether or not this could be improved by educational interventions is yet to be investigated.

It is also known that anxiety and fear can heighten the experience of pain intensity (Tanasele et al., 2013). Therefore, acute pain in the ED should be further investigated both from the patient’s and the ED personnel’s perspectives. The group that intended to educate other personnel in the ED started in 2007 and had a positive impact on pain assessment. The personnel who created the group also acted as facilitators, as described by Berben et al. (2012). Despite these interventions in the ED, personnel may not have recognized pain as the fifth vital sign, as described by Purser et al. (2014). Whether or not this could be improved by educational interventions is yet to be investigated.

### 4. Discussion

The aim of this study was to describe the frequency of documented pain assessments in an ED. Our result shows that mandatory pain assessment in the patient's computerized medical record was successful as an intervention to improve the frequency of documented pain assessment in the ED. The result was maintained for 21 months, before a slight decline in the frequency of pain assessment was shown. This result is consistent with the result of Vazirani and Knott concerning the long-term effect of different interventions to improve pain assessment (Vazirani and Knott, 2012). However, our result shows a sustainable effect for a longer period of time than ever shown before. The decrease in documented pain assessment in 2012 may indicate that the RNs have found a way to 'work-around' the mandatory documentation. Instead of assessing and documenting the patient's pain in accordance with NRS the RNs document “pain not possible to assess”. However, despite the fact that all patients in our study received pain medication, no re-evaluation of the patient's pain was found to be documented in the medical records. As examples of interventions that could improve pain documentation in the future, one could look at developments such as mandatory documentation of re-evaluation, or letting the patients measure their own pain intensity in the medical record.

As reported by Sampson et al. (2014), studies should include patient-centred outcomes such as reduction in pain score or better patient satisfaction as improved criteria of pain management. Our result shows that guidelines and educational efforts did not have any effect on the pain assessment frequencies, which differs from Decosterd et al. (2007), whose result showed an increase of pain assessment frequencies. Whether or not this depends on the kind of educational effort that has been made or how the guidelines have been created would be interesting to investigate further. Since pain is a frequent symptom reported by patients who visit the ED (Cordell et al., 2002; Wilson and Pendleton, 1989) it is remarkable that there was such a low frequency of documented pain assessment (NRS) during the first years of the study period, despite the fact that the patients had received initial pain medication. In contrast to other studies (Gordon et al., 2008), our result shows a disappointing rate of documentation of pain assessment despite the fact that the hospital already had a guideline stating that pain assessment was mandatory when the patient reported any pain. Other results show that when pain assessment is low, the treatment of pain is lacking (Silka et al., 2004) but this was not shown in our study. However, this is a question of patient quality within the health care system and should be investigated further.

### 4.1. Limitations

There are several limitations to this study. The documentation of pain assessment was studied and not the actual assessment of patients’ pain. Also, it is not known to what extent triage nurses administer analgesic prior to the physicians' examination of the patient. Excluding patients not receiving analgesics may cause difficulties in drawing conclusions about the frequency of documented pain assessment at the ED. However, documentation is a quality variable and should be considered as a reflection of performed patient care. Another limitation may be the sample size of 120 medical records per year. It may not reflect all documented pain assessment, but the data collection was done over a period of seven years so the result may still reflect the actual frequency of documented pain assessment at the ED.

Since these results were gathered from one urban hospital, the results are not necessarily generalizable to all EDs. However, as we used one commonly used diagnosis that affects all ages of adult patients, other EDs could use the result as a possible quality improvement variable for their own acute care.

The cross-sectional design makes it possible to collect data on one occasion; however, the possibility to bias the data increases over time. Our study design means that we cannot exclude the possibility that other parallel causes, such as educational efforts outside the ED, work load, and staffing may have contributed to an improved pain assessment, and not the described interventions per se.

### 5. Conclusion

Our result shows that mandatory pain assessment in the patient’s computerized medical record was successful for a period of time as an intervention to improve the frequencies of documentation of pain assessment during care in the ED. The result was stable for the...
21 months, before a slight decline in the frequency of pain assessment was shown. However, the re-evaluation of pain scores was non-existent and the computerized systems must build in a re-evaluation of pain.

References


