



COntinuous MOnitoring of Medication Overuse Headache in Europe and Latin America:

Development and STAndardization of an Alert and decision
support System



Tools

Experiences with diaries on headache diagnosis and monitoring

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Headache is a frequent disorder in the general population but there are not typical biological markers of the disease to define a diagnosis. The International Classification of Headache Disorders (ICHD-II) ¹ provides the diagnostic criteria for the different types of primary and secondary headaches. According to the ICHD-II, the diagnosis of primary headache is exquisitely clinical, based on the patient history, the reported symptoms and the outward signs.

Why a diary?

Because the use of monitoring charts to detect headache is crucial in the management of headache disorders. Besides the patient’s medical history details, the diaries and calendars provide the physician with important information about clinical features, frequency and temporal patterns of attacks, triggers and use of drugs.

On the basis of these remarks, in the Headache Centres the use of diary charts and calendars has been spread to detect headache, other associated symptoms, aura symptoms, precipitating factors²⁻¹⁴, and the recurrence of migraine related to female cycles¹⁵⁻¹⁷.

Our previous experiences with diaries^{18, 19}.

In the Headache Centre of Pavia, we have developed a headache diary for migraine and tension type headache, according to the International Classification of Headache and the ICHD-II criteria¹. After that, we have designed an online version of the headache diary (very effective for those who use Internet), to monitor headache patients from the initial medical examination to the course of the symptomatic and preventive treatment period. We use the paper version of the diary as a starting point. Both diaries include the same complete instructions and an example of how to fill in them. The



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electronic version of the diary has been uploaded to a website and the patients can have access to it with a password¹⁸. They complete it every day, just to submit it monthly to the physicians on the web. As it can be seen in the image below, adequate instructions are provided in order to complete it correctly.

The web headache diary is structured as a monthly calendar in which the dates (day 1-31) are ready-printed. The patients may add the weekday's information for the detection of weekend headaches. For each headache day, the patient is required to complete all the parts of a single column with specific information and symbols: 1) sleep time (hours), signed by S; 2) presence of aura symptoms and their duration (indicated by the letter A); 3) time of pain onset and its intensity (mild to severe with different symbols) throughout the attack; 4) presence of associated symptoms (nausea, vomiting, phonophobia, photophobia, osmophobia); 5) pain side (R for right, L for left, B for bilateral); 6) type of pain (P for pulsating, T for pressing/tightening, O for another type of pain); 7) aggravation of pain by physical activity. In addition, there is a specific section to write about the intake of painkilling drugs. This part includes: i) the type of drug (brand name), where should be noted down the initial letter of the name of the drug; the complete name of the drug will be recorded in the appropriate space, on the first page; ii) the time of the intake; iii) the total amount of painkillers taken during the 24 hours. Finally, the diaries include a section to indicate the monthly days of menstrual cycle and the use of contraceptive pill/hormonal treatment (days on which "the pill" is taken are indicated by inserting the letter P in the appropriate box).

Specific software has been developed to assist in the diagnosis of the different types of headaches (migraine, tension-type headache, probable migraine and probable tension type headache), according to the clinical information reported in the diary. Furthermore, the web diary is associated with a report system that provides a monthly datasheet with the information about: 1) number of days/month with headache; 2) number of headache attacks/months; 3) number of mild/moderate/severe attacks; 4) days on which associated symptoms were also presented (nausea, vomiting, phonophobia, photophobia, osmophobia); 5) daily pain score (daily number of hours with pain x pain intensity); 6) monthly severity score (monthly number of hours with pain x pain intensity); 7) number of days on which the patient took painkilling drugs; 8) total number of painkiller doses taken. The report may also include a bar chart section with the total number of headache attacks, their intensity and the number of attacks occurred during the menstrual bleeding and/or, where applicable, during the days of oral contraceptive intake.



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Results

The patients' impact with the web version of the diary was absolutely good (easy to understand and fill in) and the evaluation data showed a profitable degree of answers in the compilation of the different sections. The web diary was validated on 389 attacks (diagnosis of an expert headache specialist versus assisted diagnosis); the mean global concordance for the diagnosis was 82%. In a recent paper¹⁹, the authors have discussed about the development of a basic headache diary. The aim was to test the applicability and potential usefulness of a simplified diagnostic diary (for migraine, tension-type headache, medication overuse headache), to be used prior to the patient's first evaluation. The diary was given to headache patients before their first consultation at the headache centre. The 76 case studies demonstrated a highly satisfactory understanding of the diary. The data entered in the diary, for the diagnostic purpose, was complete in the 93% of cases. The level of agreement between headache information gathered through clinical interview and the headache diary was up to standard. The patients had no problem of comprehension in the 93% of the cases. The patients' compliance was completed in the 71% of the cases. When comparing the diary with the clinical interview, sensitivity was 92% for migraine, 75% for tension-type headache and medication overuse headache. Specificity was 58% for migraine and tension-type headache, 87% for medication overuse headache.

In conclusion, the use of the new information technologies and the web can provide useful support for the headache patient's management, from the first consultation to the subsequent follow-up stages, favouring easy communication between the patient and the physician. The headache diaries provide specialists with additional information to complement the clinical interview and improve the diagnostic process. Besides, the diaries reveal the frequency of headaches and their periodicity (such as weekend headache, menstrual related migraine, headache during sleep) and allow an evaluation of drug consumption. Obviously, all necessary precautions and prescribed privacy procedures have been strictly followed by the webmaster in order to ensure data protection and secrecy.



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