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The role for 'reminders' in dental traumatology: 1. Current practices in the UK and Ireland

Day PF, Duggal MS. The role for 'reminders' in dental traumatology: 1. Current practices in the UK and Ireland.
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Abstract – The aim of this study was to investigate the current method for recording trauma in UK dental hospitals. A standard questionnaire was sent out to all 19 UK and Irish dental hospitals to investigate how trauma was recorded both at initial presentation and at review appointments. Where a standard form was used, a copy was requested. Each form was analysed to assess what information was being recorded and whether prompts were used. For the initial presentation of trauma, nine institutions had a standard trauma form, one used a standard form for avulsions only, seven had no form and two did not respond. For subsequent follow-up visits of trauma cases, six hospitals had a standard form, one used a standard from for avulsions only, 10 had no form and two did not respond. There was considerable variation in the questions that were asked at initial presentation of trauma cases and follow-up reviews in dento-alveolar trauma. Without consistent recording, there is little chance that multi-centred prospective clinical trials can take place in the field of dental trauma.

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A Reminder is defined in Medline (1) as a 'system used to prompt or aid the memory. These systems can be in the form of computerized reminders, colour coding, telephone calls, or devices such as letters and postcards'. Wyatt (2) described the purpose of a reminder 'as to overcome the problems of information overload, by prompting the doctor to recall information that they already know or would be expected to know'. Reminders can take different forms:

1. *Cue sheet* – a reminder with generic knowledge or advice only, with no patient data or patient-specific advice and no space intended for recording a response.
2. *Checklist* – a reminder that contains statements or questions that indicate a response should be recorded, and provides space for that response (e.g. a box to tick or line to write on). A checklist may contain generic knowledge or advice but does not contain patient data or patient-specific knowledge or advice.
3. *Patient profile* – a reminder that contains patient data or patient and/or patient-specific knowledge or advice. Patient profiles may also contain generic knowledge or advice, but there is no space for a response to be recorded.
4. *Profile checklist* – a reminder that contains patient data and/or patient-specific knowledge or advice; one or more of the statements or questions indicate that a response should be recorded and space is provided for that response (e.g. a box to tick or line to write on). It may also contain generic knowledge or advice.

The role of reminders in medicine

A systematic review of the effect of manual reminders on clinical practice across medical specialties has been carried out (2), using Cochrane criteria and is now being updated for inclusion as a systematic review. Across all the medical specialties only 22 of 324 studies identified (2) were of sufficient

quality. In summary, two-thirds ($n = 14$) of studies had a positive effect ($P < 0.05$). One in three studies had no effect and in two studies there was deterioration in clinical practice. The effectiveness of manual paper reminders was influenced by the area of clinical practice that the reminder was seeking to improve. Reminders were more effective in improving preventative care (73%), for example, than for improving discharge planning, procedures or diagnosis (33%). In addition, reminders were more successful in outpatient and general practice settings than in an inpatient setting. The type of reminder used was also important with profile checklists being shown to be the most effective. This is consistent with psychological theories, which suggest that requiring clinicians to respond to a reminder and providing them with spaces to fill in the answer will enhance the likelihood of the reminder being successful. Fortunately, structured histories used in dento-alveolar trauma fall into this type of reminder system. This is because they ask a battery of questions that are specific to dento-alveolar trauma and require a patient specific data to be recorded.

The role of reminders in dentistry

Only one study in dentistry was included in the systematic review of reminders (2). This was that of Cohen et al. (3) which examined various methods, such as colour stickers on patients' notes as against no stickers, to remind dentists to give anti-smoking advice and help in the form of chewing gum. The stickers were effective insofar as they increased the time spent by a dentist giving anti-smoking advice and/or prescribing nicotine chewing gum.

The role of structured histories in dento-alveolar trauma

The role of a good history and thorough examination is especially important in dento-alveolar trauma which can be one of the few true emergencies in dentistry. A good written account of the history and examination is invaluable for patients' notes, future treatment, medico-legal cases and research. It is often only when the clinician revisits their notes that they find they are not as thorough as they thought or would have wished.

Textbooks on dento-alveolar trauma (4–8) all describe the importance of a thorough and systematic approach to history taking and examination. Other organizations have published copies of their prescribed structured histories (SH) for recording dento-alveolar trauma such as the American Academy of Pediatric Dentistry (9); however, the original SH was described by Andreasen and Andreasen (4).

In the dental literature only a few studies have investigated the effectiveness of SH in dento-alveolar trauma. Andreasen and Andreasen (10) described a SH used for dento-alveolar trauma and explained the reason for using it as being 'the requirement for identification of factors which contain prognostically relevant information that are registered at the time of injury'. This paper concerned the systematic examination of luxation injuries. As part of the study, the effectiveness of SH was also reported upon, although the methodology, results and conclusion were limited to one paragraph. There were few details and only 14 patients' records analysed. The authors found that when no structured history (e.g. a unstructured history) was used, only 53.3% of these prognostic factors were recorded.

Therefore, reminders have been shown to be effective in medicine and dentistry. Their success, however, is not guaranteed with a third of studies showing no improvement in clinical practice and in two studies clinical practice deteriorated. Reminders can come in different formats and types, which can influence their effectiveness. The aim of this study was to investigate the current practices in UK and Ireland dental hospitals for recording dento-alveolar trauma.

Material and methods

Selection of study sites

There are 17 dental hospitals in the United Kingdom and Ireland all of which have specialist paediatric dentistry departments. These centres provide secondary and tertiary paediatric dental care and specialist opinions. These dental hospitals are: Belfast, Birmingham, Bristol, Cardiff, Cork, Dublin, Dundee, Eastman, Edinburgh, Glasgow, Guys, Kings, Leeds, Liverpool, Manchester, Newcastle, Royal London, Sheffield and St. Georges. Although this list gives 19 centres, Guys and Kings have recently been amalgamated to Guys, Kings and St Thomas (GKT), however, these are two separate paediatric dentistry departments (Guys and Kings) which both have their own separate clinical protocols and personnel. St Georges is not a dental school but has a large dental department with paediatric dental consultants. In all therefore 19 sites were studied.

Questionnaire

A named specialist paediatric dentist (consultant in the British National Health Service, NHS) or head of department was contacted by either e-mail or by postal mail. A standard letter was written asking for details of their current practices for recording dento-alveolar trauma. They were asked to send to the author (PD) a copy of their Structure History sheet,

if one was used in their department. Where no reply was received, the senior author contacted another specialist paediatric dentist within the department by phone or e-mail to check if a SH was used for recording dento-alveolar trauma in the department. The census date for replies was set at 1 October 2002.

Assessment of structured history forms

Each SH returned to the authors was analysed to assess what information was being recorded. This was then compared against a 'gold standard', as published by Andreasen and Andreasen (4). The authors elected to use this as the gold standard as this was the first and the only one that has been validated by research for its effectiveness as a prompt to clinicians.

Data analysis

The data gleaned from the various SH was entered onto SPSS 10.1. Descriptive statistics were used to compare SH forms used in the British Isles and Ireland compared with the gold standard noted above.

Results

Current use of structured histories in dental schools of the British Isles and Ireland

No reply was received from two dental hospitals and, therefore, could not be included in the final analysis. At initial presentation of cases of dento-alveolar trauma, 10 of the 17 centres assessed used a SH to help with the taking of a history and examination. In one centre SH was computer based, this was part of a complete computer system for all hospital patients rather than a specific system for dento-alveolar trauma.

Structured history at initial presentation

One centre used a SH for avulsion injuries only. At initial presentation, therefore, a comprehensive SH was used by 9 of 17 centres who responded.

Follow-up review

Seven of the 17 centres used a SH for review appointments to encourage a continuation of a systematic and thorough examination at review appointments. Two centres used a ink-rubber stamp which was used to mark the patient's notes. Both forms of reminders, the stamp or the SH, prompted the clinician to perform a standard bank of clinical investigations.

Table 1. A comparison of specific structured history (SH) questions relating to accident and medical considerations asked by UK and Ireland dental hospitals ($n = 10$) compared with the format of Andreasen and Andreasen (4) used as a gold standard

Questions asked	Gold standard	UK and Irish SH
Patient identification	Yes	10
Age	Yes	7
Date of presentation	Yes	10
When	Yes	9
Where	Yes	8
How	Yes	9
Medical history	Yes	6
Loss of consciousness	Yes	6
Questions regarding skull fracture	Yes	0
Other medical symptoms/injuries	Yes	7
Tetanus status	Yes	5
Tooth fragments accounted for	Yes	5
Complains of	Yes	7
Previous dental history	No	5
Previous trauma	Yes	6
Referred by	Yes	3
Treatment provided by referrer	Yes	5

Where there is a 'no' in the gold standard column, this means that the question was not asked by the SH of Andreasen and Andreasen (4) but was asked by some of the UK and Irish SH.

Table 2. A comparison of specific questions relating to facial and general oral examination asked by UK and Ireland dental hospitals ($n = 10$) in their structured histories (SH) compared with that of Andreasen and Andreasen (4), used as the gold standard

Questions asked	Gold standard	UK and Irish SH
Extra oral – soft tissue	Yes	7
Extra oral – hard tissue	Yes	6
Intra oral – soft tissue	Yes	7
Intra oral – hard tissue	Yes	4
Teeth present	No	4
Occlusion overbite, overjet, incisor class	Yes	6
Occlusion interference	Yes	5
Oral hygiene, caries, etc.	Yes	3

Where there is a 'no' in the gold standard column, this means that the question was not asked on the gold standard SH of Andreasen and Andreasen (4) but was asked on some of the UK and Irish SH.

Specific questions related to those hospitals using a structured history

Rather than comparing individual centres with each other in the UK and Ireland it was decided to compare these against the Gold Standard assessed as that of Andreasen and Andreasen (4). These comparisons are shown in Tables 1–4.

Discussion

There was considerable variation in recording dento-alveolar trauma between centres in the UK and Irish dental hospitals. Just over half the dental schools used a SH form for recording the initial

Table 3. A comparison of specific questions relating to history and examination of the tooth prior to treatment or replantation by UK and Ireland dental hospitals ($n = 10$) in their structured histories (SH) with that published by Andreasen and Andreasen (4)

Specific questions asked	Gold standard	UK and Irish SH
Colour	Yes	7
Mobility	Yes	9
Tenderness to percussion	Yes	8
Vitality electronic pulp tester	Yes	8
Vitality ethyl chloride	Yes	9
Displacement (mm) and direction	Yes	1
Tone on percussion, ankylosis	Yes	2
Gingival pocket	Yes	1
Extra alveolar medium	Yes	5
Extra alveolar time	Yes	5
Root surface contamination (dirt) prior to replantation	Yes	1
Rinsing prior to replantation	Yes	1
Transillumination	No	3
Sinus	No	4
Swelling	No	4

Where there is a 'no' in the gold standard column, this means that the question was not asked on the gold standard SH of Andreasen and Andreasen (4) but was asked on some of the UK and Irish SH.

Table 4. A comparison of specific questions relating to radiographs, photographs, diagnosis and treatment asked by UK and Ireland dental hospitals ($n = 10$) in their structured histories (SH) with that published by Andreasen and Andreasen (4)

Specific questions asked	Gold standard	UK and Irish SH
X-ray apical width/root development	No	5
X-ray report	Yes	9
Photo taken	Yes	3
Diagnosis hard tissue	Yes	8
Diagnosis soft tissue (periodontal ligament)	Yes	9
Treatment provided	Yes	8
Consequences explained	No	3
Follow up organized	No	3

Where there is a 'no' in the gold standard column, this means that the question was not asked on the gold standard SH of Andreasen and Andreasen (4) but was asked on some of the UK and Irish SH.

presentation for different types of dento-alveolar trauma. This figure decreased for review appointments, with just over a one-third of dental centres using a standardized SH format for different types of dento-alveolar trauma. These figures are low considering that SH have been shown to be effective (2).

One reason why many dental hospitals do not use SH could be attributed to department policy which is frequently made by senior members of staff. They are themselves well versed in the appropriate questions that need to be asked and are experienced in treating patients with dento-alveolar trauma and, consequently, they do not feel the need for a SH. Many trauma patients, however, are treated by junior staff who are not as experienced in history taking and examination. This was shown in a study looking at avulsion injuries where two-thirds of patients were seen at their initial presentation by a junior member of staff who was not in specialist training (11). Another possible reason could be the cost and time involved in producing and updating a SH.

It was also seen that there were large variations in the questions asked on SH forms used at different centres, though they all generally compared quite well with the gold standard. The latter (4) was very thorough and the large number of publications that have resulted from the data collected by it shows its effectiveness. The question, therefore, that must be asked is why a similar SH is not used universally?

When a child presents with a dento-alveolar injury, there is considerable stress for all concerned including the child, parent and sometimes the dentist. In addition, these injuries present without any warning and frequently result in delays to or cancellation of other patients' appointments. Once the patient is treated and leaves there is often an emotional enhancement, especially if the treatment of dento-alveolar trauma has been a relatively new experience for the dentist. There is also the attempt to catch up with the other patients who have been kept waiting. This situation, which can be stressful, makes it difficult to remember all the questions and answers that need to be recorded especially if a junior member of staff is completing the history and examination. The published SH of Andreasen and Andreasen (4) is long, comprising four sides of A4 paper and many of the UK and Irish dental hospitals using a SH have adapted this to shorter versions; these forms are all limited to two sides of A4 paper. Although this provides a neat and easy to manage form for the patient's records, it creates the problem as to which questions are left out (Tables 1–4).

Currently, there is no published minimum data set that should be collected for different types of dento-alveolar injuries. Without agreement on a minimum data set it is very difficult to compare different centres for the types of injuries seen and treatment provided or conduct multi-centre trails. Studies show that for the more severe periodontal injuries it is often the injury itself rather than the treatment provided which is the significant factor for pulpal and periodontal healing (12). Therefore, it is important that the history and examination are not only important to help an inexperienced clinician but also hold a large amount of prognostic information.

The aim of a SH is not only to record prognostic information about the accident and examination but simultaneously to allow the inexperienced clinician to arrive at the correct diagnosis. It is alarming, therefore, that there are SH being used in

several centres which do not require a diagnosis to be recorded or do not split the diagnoses up into separate periodontal and hard tissue areas in order to ensure that both are reported. When both hard and periodontal tissues are injured, there is a significantly increased detrimental effect on pulpal healing (13) and increased complexity in their management.

Conclusion

There was considerable variation in the use and quality of SH forms for dento-alveolar trauma within UK and Irish dental schools. There is a need to establish a minimum data set which should be recorded for each injury.

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