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Author E.C. Smeets  
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## **CHAPTER 6**

**Introductory notes regarding a European medical risk-related history (EMRRH)  
designed for use in the dental practice**

### **In Brief**

- The EMRRH partners are convinced that new advances in the prevention of medical emergencies can only be achieved at the European community level.
- The chances of a medical emergency in the general dental practice are constantly increasing with an ageing Western society; morbidity within the dental population justifies worries concerning the safety of the dental patient and the liability of the dental practitioner.
- The concrete benefits of the EMRRH questionnaire are hidden in the future; current research indicates its potential to reduce health risks related to dental treatment.
- A uniform system of registering health data in general and in relation to dental treatment may improve epidemiological research.
- A harmonised registration of dental data will strengthen the position of the GDP in the case of legal action by patients and policy proposals for dental healthcare.

The Medical Risk Related History (MRRH) has been in use for several years in the Netherlands. Since 1994 the MRRH system has been subject to research in nine European countries. Legal and ethical demands in all participating countries have been listed, and a national epidemiological analysis of pathology interfering with dental treatment has been undertaken for every participant.

The dental practitioner is today finding many more medically compromised patients in the practice than was previously the case; this change can be explained in a number of ways. Improvements in healthcare and living standards in Western civilisation have been largely responsible for an increase in longevity. Unfortunately, the age of onset of the first chronic illness that a person suffers has not altered in recent times: 58 for women and 59.5 for men.<sup>1</sup> The result is that the population contains more chronically ill people than in previous years; to this number must be added those affected by the trend to outpatient care rather than hospitalisation.<sup>2</sup>

Another factor to be taken into account is the shorter in-patient stay due in part to demand for beds. It is evident from the foregoing that there are nowadays many medically compromised

people in our communities and this altered balance is bound to be reflected in the dental patient population.<sup>3</sup> Greater dental consciousness by the general public plus retention of the natural dentition into later life have added to the number of these at-risk patients presenting for dental treatment.

The need for a new questionnaire arises not only from the increased numbers of medically compromised patients attending the general dental practice but also from the disparity in medical history taking methods used throughout Europe, varying from a simple question ('Are you in good health?') to elaborate written questionnaires. The mobility of professionals within the EC reinforces the need for an effective medical history taking method that can be applied and understood in the various countries. In the longer term the data accumulated using a standardised method would permit accurate planning of healthcare measures for these vulnerable patients. It is pertinent to note that the advisory committee of the European Commission has stated that all European Union Countries are expected to conform with the recommendations outlined for training of the dental student.<sup>4</sup> These recommendations emphasise the ability to: take a medical history; perform first aid; and recognise one's limitations.

The present study evolved from a series of trials of medical history taken among dental practitioners in Holland. The efficacy of history taking was investigated in respect of 30,000 Dutch patients.<sup>5</sup> This paper describes the development of an European Medical Risk Related History questionnaire (EMRRH) designed to alert the dental practitioner to any medical problems in his or her patients. The EMRRH is based on a health questionnaire developed by the American Society of Anaesthesiologists and uses their ASA scoring system for quantifying the medical risk detected.

## Material and methods

During 1994/95 experts from eight European countries agreed to undertake the necessary preliminary work, for instance detailing the legal and ethical norms of medical history taking in so far as it pertained to their own country, researching the relative frequency of diseases which could interfere with dental treatment, and the translation of the proposed EMRRH from Dutch into the appropriate language.

The English version of the questionnaire used in the study is shown in Table 1. Participants were then asked to instruct 20 dentists to use the translated EMRRH on ten patients each. Instructions (translated into the local language) on the reason for and the use of the EMRRH were provided for both patient and dentist. Only patients more than 18 years old were asked to participate in accordance with the terms of the Declaration of Helsinki. Informed consent, both for providing information to the dentist and providing information to the participating institutes in the study, was obtained before accepting respondents into the study. Patients were explicitly told that declining to participate in the study would not affect their dental treatment. In order for the participants to be able to interpret the results correctly the participating dentists had to be absolutely clear on both the content of the medical questions in the EMRRH plus the significance and use of the ASA risk scores. Each dentist was asked to fill in an evaluation form dealing with individual practice characteristics and the feasibility of the EMRRH for both patient and dentist in general dental practice.

**Table 2:**  
The ASA physical classification system

Class	Physical status	Therapy modifications
I	Healthy patient	None
II	Patient with a mild to moderate systemic disease	Possible stress reduction and other modification as indicated
III	Patient with severe systemic disease that limits activity but is not incapacitating	Possible strict modifications; stress reduction and medical consultation are priorities
IV	Patient with severe systemic disease that limits daily activity and is a constant threat to life	Minimal emergency care in office; hospitalise for stressfull elective treatment; medical consultation urged.
V	Moribund patient not expected to survive 24 hours with or without an operation	Treatment in the hospital is limited to life support only

The ASA scoring system (Table 2) was developed by the American Society of Anaesthesiologists in the early 1940s and was in use for several decades.<sup>6 7</sup> It was applied by

the anaesthetist to a patient-completed questionnaire and provided rapid indication of the anaesthetic risk posed by the patient. It was not intended to assess the surgical risk for the patient of any given procedure. The questionnaire has a number of 'yes or no' questions which seek to detect disease of the cardiovascular, pulmonary, central nervous systems etc. These are main or principal questions and are printed in bold type. A negative reply to a principal question is taken as indicating health and scores ASA I. A positive reply scores ASA II and alerts to the presence of disease. The principal questions are each followed by three or four subsidiary questions printed in ordinary type. The patient is instructed not to answer the subsidiaries unless he or she has recorded a positive answer to the principal question. These subsidiaries are usually graded to indicate increasing severity of disease.

A positive answer to the first subsidiary of a principal question normally gives rise to a score of ASA III and subsequent positives to second and third subsidiaries of the same principal question earn a score of ASA IV. Each score rating carries suggestions as to therapy modification – scores ASA III and IV include a recommendation to seek medical consultation. A score of ASA V was recorded when the patient was deemed to be moribund and not expected to survive 24 hours with or without an operation. The ASA V category was not included in the EMRRH as a patient in this condition would not be able to attend a dental practice.

The application of the ASA scoring to the first principal question of the EMRRH will serve to show how the system works (Table 3).<sup>8</sup> This illustration is taken from the revised EMRRH which emerged after discussion at the 1996 workshop. Scoring is not cumulative; the question with the highest score determines the score recorded for the entire questionnaire.

During a 2-day workshop (Amsterdam, August 1996) the findings were discussed. A non-participant served as independent chairman. The study was approved by the medical-ethical committee of the Academic Medical Centre in Amsterdam. Each question on the EMRRH was examined, and modified if necessary.

## Results

All participants accepted the modified ASA risk score system as shown in Table 1 and 3. The dental practitioners reported that in 70% of cases the medical information obtained was new and that in 88% of cases an interpretation was possible. In 87% of instances the reaction of the patient to the request regarding filling in the EMRRH form was either positive or neutral.

**Table 3:**

First question of the EMRRH, revised at the 1996 workshop.

	Yes	No	ASA-score
<b>Do you experience chest pain upon exertion (angina pectoris)? If so,</b>	0	0	<b>II</b>
Have you had to reduce your activities?	0	0	III
Have the complaints increased recently?	0	0	IV
Do you have chest pain at rest?	0	0	IV

Each item is subdivided into a main **bold** question and one or more subquestions. In order to minimise the investment in time and prevent confusion, the patient should answer subquestions only in case of a positive reply to the main question.

Negative response, ASA I, patients ignore the subquestions.

Positive response, ASA II, patients answer the subquestions. A Positive response to subquestion(s) brings scoring to ASA III or IV.

Scoring is not cumulative. The highest score determines the score for the entire questionnaire, eg if in question 1 the score was found to be ASA IV, the patients' medical risk factor would be recorded as ASA IV despite the fact that perhaps all other main questions were answered in the negative (ASA I).

Table 4 contains details of the distribution of medical problems uncovered by the questionnaire. Table 5 shows the ASA scoring returned. It is the intention to publish the detailed results and analysis of the findings in a subsequent paper.

**Table 4:**  
Percentages of medical problems from four out of eight participating countries

	Belgium <sup>9</sup>	Belgium*	Germany	Iceland	N Ireland
N medical problem	248	101	114	167	200
Cardiovascular disease	13	20	25	2	3
Hypertension	9	7	8	2	5
COPD	4	5	7	7	2
Endocrinological disease	8	6	6	4	2
Neurological disease	2	-	10**	-	-
Allergy	<1	2	23	11	-
Liver/Kidney	<1	3	3	-	0.5
Haem/Anaemia	<1	-	12	4	0.5
Tendency to bleed	<1	3	7	-	1
Infection	<1	1	1	-	-
Medication	<1	13	60	-	-

\*Validation reported in the workshop

\*\*The term Cardiovascular accident (CVA) was not correctly understood

Note: Findings are expected at a later date from Sweden, England and Hungary.

**Table 5:**  
ASA scores in % of patients reported by 8 participating countries

	% ASA I	% ASA II	% ASA III	% ASA IV	N
Belgium	57	25	11	7	248
Germany*	-	-	-	-	114
Hungary	30	29	21	20	200
Iceland	58	30	6	6	167
Sweden	76	19	4	1	337
N Ireland	60	24	12	5	200
England*	-	-	-	-	50
Mean	56	25	11	8	-
The Netherlands	63	26	9	2	4087

\*ASA scores for Germany and England will be available at a later date.

## Discussion

The workshop collated the legal and ethical norms for taking a medical history, noted the prevalence of systemic diseases interfering with dentistry and the variety of medical history questionnaires presently in operation. A number of participants believed that additional items should be added to the questionnaire and where practicable these suggestions were incorporated in a revised EMRRH to be used in a second trial which was to include validity testing. In contrast other items (eg enquiry into HIV status) sought by some participants were not incorporated as such. For instance, dentists in the Netherlands are not permitted to ask patients about their HIV status; for this reason a general question on infectious diseases was preferred. Even if a questionnaire is relevant in terms of frequency of disease, it will only be useful if both patients and dentists are willing to work with this instrument. The study disclosed problems with the EMRRH. The refining process at this (and subsequent) workshops is designed to improve its sensitivity and specificity. The participants are of the belief that the use of the EMRRH, or a similar type questionnaire, would make dental treatment safer for the patient and help prevent some of the medical emergencies that occur in the dental surgery.

## Conclusion

This evaluation study showed that generally speaking the concept of the EMRRH was found useful and acceptable in all eight countries. The EMRRH would be an effectual method of history taking for the dentist.

**Table 1:**

The English translation (from Dutch) of the proposed EMRRH

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### 1. Do you experience chest pain upon exertion

(angina pectoris)? If so,	II
Have you had to reduce your activities?	III
Have the complaints increased recently?	IV
Do you have chest pain at rest?	IV

<b>2. Have you ever had a heart attack? If so,</b>	<b>II</b>
Do you still have complaints?	III
Have you had a heart attack in the last 6 months?	IV
<b>3. Do you have a heart murmur, or heart valve dysfunction, or an artificial heart valve?</b>	<b>II</b>
<b>Have you had heart or vascular surgery within the last 6 months?</b>	<b>II</b>
Have you ever had rheumatic fever?	III
Do you have complaints connected with your heart?	IV
Which complaints?	
.....	
.....	
<b>4. Do you have heart palpitations without exertion?</b>	
<b>If so,</b>	<b>II</b>
Do you have to rest, sit down or lie down during papitations?	III
Are you short of breath, or pale or dizzy at these times ?	IV
<b>5. Do you have problems lying flat? If so,</b>	<b>II</b>
Do you need more than 2 pillows at night due to shortness of breath?	III
Are you short of breath lying down?	IV
<b>6. Have you ever had high blood pressure?</b>	<b>II</b>
<b>7. Do you have a tendency to bleed? If so,</b>	<b>II</b>
Do you bleed for more than one hour following injury or surgery?	III
Do you suffer from spontaneous bruising?	IV
<b>8. Do you have epilepsy? If so,</b>	<b>II</b>

Is your condition getting worse?	III
Do you continue to have attacks?	IV
<b>9. Do you suffer from asthma? If so,</b>	<b>II</b>
Do you use inhalers?	III
Is your breathing difficult today?	IV
<b>10. Do you have other lung problems? If so,</b>	<b>II</b>
Are you short of breath after climbing 20 steps?	III
Are you short of breath getting dressed?	IV
<b>11. Have you ever had an allergic reaction or an adverse reaction to dental or medical materials or drugs? If so,</b>	<b>II</b>
Was it during a dental visit?	III
What are you allergic to?.....	
<b>12. Do you have diabetes? If so,</b>	<b>II</b>
Are you on insulin?	II
Is your diabetes poorly controlled at present?	III
<b>13. Do you suffer from thyroid disease? If so,</b>	<b>II</b>
Is your thyroid gland overactive?	III
<b>14. Do you suffer from liver disease?</b>	<b>II</b>
<b>15. Do you have a kidney disease? If so,</b>	<b>II</b>
Are you undergoing haemodialysis?	III
Have you had a kidney transplant?	IV
<b>16. Have you ever had a malignant disease of leukaemia? If so,</b>	<b>II</b>
Have you ever had drug therapy or bone marrow transplant?	III
Have you ever had x-ray treatment for a tumour or growth	

in the head or neck? IV

**17. Are you suffering from an infectious disease at this moment?** II

**18. Do you suffer from hyperventilation?** II

**19. Have you ever fainted during dental or medical treatment?** II

**20. Do you need antibiotic prophylaxis before dental treatment?** II

**21. Are on medication at present?** II

for a heart complaint?

Anticoagulants?

for high blood pressure?

aspirin or other pain-killers?

for an allergy?

for diabetes?

Prednison, corticosteroids (systemic or topical)?

drugs against transplant rejection?

drugs against skin, bowel or rheumatic diseases?

for cancer or blood disease?

penicillin, antibiotics or antimicrobials?

for sleeping disorder, depressive condition or anxiety state?

have you ever used recreational drugs?

other medication (prescribed or otherwise)?

**22. Are you pregnant?** II

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