



## Research and Best Practice

# Handling Clinical Health Promotion in the HPH DATA Model:

## Basic Documentation of Health Determinants in Medical Records of tobacco, malnutrition, overweight, physical inactivity & alcohol

Hanne Tønnesen<sup>1</sup>, Jeff K. Svane<sup>1</sup>, Lorenza Lenzi<sup>2</sup>, Jiri Kopecky<sup>3</sup>, Lagle Suurorg<sup>4</sup>, Ida Rashida Khan Bukholm<sup>5</sup>, Shih-Tien Hsu<sup>6</sup>, Martin Hübner<sup>7</sup>, Sinikka Krogerus<sup>8</sup>, Sophie Kellner-Rechberger<sup>9</sup>, Matthew G. Masiello<sup>10</sup> and the HPH Network in Tuscany, Italy; Spain; Ontario, Canada and Germany

### About the AUTHORS

- 1 WHO-CC, Clinical Health Promotion Centre: Alcohol/ Drugs, Tobacco, Nutrition, Physical Activity and Co-morbidity, Bispebjerg University Hospital, Denmark & Health Sciences, Lund University, Sweden
- 2 Rovereto Hospital, Trentino, Italy
- 3 Sumperk Hospital, Czech Republic
- 4 Tallinn Children's Hospital, Estonia
- 5 Akershus University Hospital, Norway
- 6 Taiwan Landseed Hospital, Taiwan
- 7 Centre Hospitalier Universitaire Vaudois, Switzerland
- 8 Hospital District of Central Finland, Finland
- 9 Krankenhaus der Stadt Wien Hietzing, Austria
- 10 Windber Research Institute, Pennsylvania, USA

**Contact:**

Hanne Tønnesen  
hanne.tonnesen@bbh.regionh.dk

### Abstract

**Background** Clinical Health Promotion activities contribute to the reduction of disease and treatment, and improve outcomes and prognosis. Accordingly, major health determinants such as smoking, physical inactivity, risk of malnutrition, overweight and hazardous drinking should be easily identified in the medical records. To that end, this study evaluates a simple 9 question health documentation model (HPH DATA Model) to be used in the medical records of patients in need of health promotion.

**Methods** The multi-national study took place in 78 pilot centres from 12 nations / regions. First, the HPH DATA Model was pilot tested by clinical specialists in a standardised manner for control under international conditions (A). Then it was tested under local conditions (B). After gaining familiarity with the model, the clinical specialists evaluated whether the model was understandable, applicable and sufficient (C). They were also invited to give comments.

**Results** The response rate was 87-100%; the missing data among responders were 0 - 2.6%. The inter-rater agreement in documenting the 5 risk factors using the HPH DATA Model was substantial to nearly perfect across the pilot centres at International Conditions (A); Kappa value 0.85 (0.65 - 0.99). The clinical specialists categorized 66% (29 - 94%) of the patients from their own clinical practice regarding the need for health promotion (B). Except for waist measurements, the clinical specialists found the model understandable, applicable and sufficient. It was also determined that the clinical specialists were in need of a more comprehensive definition of the term "severe illness" (C).

**Conclusions** The simple HPH DATA Model for systematic registration of 5 significant health determinants was found to be understandable, applicable and sufficient in different clinical settings.

### Introduction

It is well established that the burden of the clinical pathway is closely related to individual health, diagnosis, treatment, and organization of the health service (1). Of these, focus has historically been on improving the latter three. Recently, however, more evidence has been gathered on the effect of improving individual

health through health promotion (HP) as an integrated part of the clinical pathway. Good examples can be found in for instance the area of surgery (2). Better health gain influences treatment, outcome and prognosis on both short and long-term. In the systematic implementation of health promotion in clinical pathways, there is also an additional benefit of



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reducing inequity in lifestyle related health.

Clinical HP includes patient-centered HP, prevention and rehabilitation; all characterized by empowered and active patients playing a leading role. Clinical HP covers programmes for chronic care patients (3), rehabilitation for patients with mental disorders, and other HP activities. In surgery, for example, four to eight weeks peri-operative smoking and alcohol cessation programmes have been shown to halve the postoperative complication rates, and likewise, intensive prehabilitation training programmes prior to surgery significantly reduces reconvalescence, reduces hospital stay and increases patient satisfaction (2;4;5).

In order to implement HP in daily practice, however, it is crucial that HP needs and HP activities are visible in the medical records. To that end, HP needs of and HP activities for patients with major health determinants such as physical inactivity, malnutrition, overweight, smoking and harmful drinking, must be systematically and easily documented in the medical records.

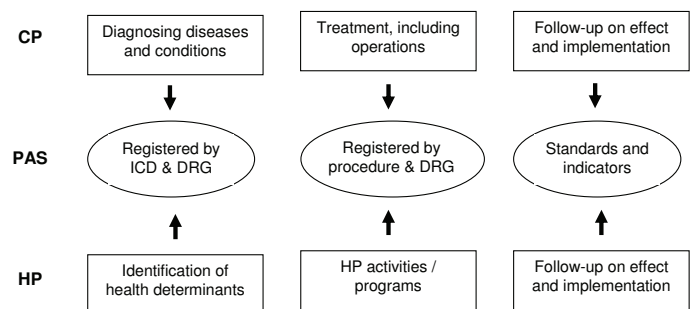
On the side of improving visibility and documentation of the HP activities, the International Network of Health Promoting Hospitals and Health Services (HPH) has previously developed and successfully evaluated a simple HPH model for systematic documentation of hospital-based HP activities (HPH Doc-Act) (6). Today, these activities can thus be quantified and related to relevant parameters such as diagnose at individual patient level, hospital or national level - in line with operations, number of beds, hospital stay and discharges. Furthermore, there are no technical barriers for integration of HP in the different reimbursement systems used in Europe, United States and Canada (7). During this evaluation of the HPH Doc-Act Model, we became aware that there was also a clinical need for a corresponding model on the side of HP needs. A model which could handle the basic documentation of major health determinants, such as malnutrition, overweight, physical inactivity, tobacco and alcohol, in the medical records (6) (Figure 1).

The ideal basic documentation model should be understandable, applicable and sufficient for ensuing the clinical decision process on recommendation and referral - or no recommendation and referral - to clinical HP activities. It should be relatively independent of the identification procedures and follow international recommendations and guidelines for intervention.

On this background, the aim of the present multi-national study on a simple documentation model for HP needs was:

- A. to compare the inter-rater agreement in a standardised international setting and
- B. to assess the model in local clinical practices
- C. to evaluate the understanding, applicability and sufficiency experienced by clinical specialists

**Figure 1** The HPH DATA Model, HPH Doc-Act (7) and the WHO Standards for HP in hospitals (36) are integrated parts of the existing patient administrative systems (PAS) related to the traditional clinical pathways (CP)



### Methods

The study was performed in steps. First the HPH Model was pilot tested by clinical specialists under international conditions and secondly under local conditions. After they had become familiar with the Model, they were asked to evaluate if it was understandable, applicable and sufficient. They were also invited to give comments throughout the study.

### Participants

The multi-centre project involved 78 clinical specialists represented by 78 pilot centres from 12 regions / countries (17 from Trentino and Tuscany in Italy; 10 Czech Republic, 10 Estonia, 8 Spain, 8 Norway, 8 Switzerland, 6 Taiwan RoC, 5 Canada (Ontario), 3 Germany, 2 Finland and 1 Austria). A centre could consist of a major department or a hospital. In all but one centre, the clinical specialists were the local senior physicians responsible for and familiar with the documentation, registration and coding in their department or hospital. In the last centre, the responsibility was placed in a specific documentation group referring to the chief nurse. The pilot centres represented minor and major hospitals as well as university hospitals, involving in-patients and out-patients from internal medicine, cardiology, nephrology, oncology, geriatrics, family care, surgery, orthopaedics, urology, obstetrics, gynaecology, emergency settings and intensive care units.

### Material

The material consisted of two parts. Part A included ten anonymous standardized medical records from ten adult patients coded by the 78 clinical specialists. These international medical records were translated into Eng-



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lish and used by all pilots. The total number of tests was 7,020 (10 medical records x 9 questions in the HPH Data Model x 78 specialists). Part B included 20 local consecutive medical records (electronic or hard copy) from adult patients. Thereby 68 clinical specialists from 68 of the 78 pilot centres in 11 of the 12 nations/regions also tested the HPH Data Model in their local setting; (12,240 tests = 20 X 68 X 9).

### HPH DATA Model

The HPH Data Model consisted of 9 documentation questions, which categorized risk of malnutrition (8-11), overweight (12-14), physical inactivity (15;16), smoking (17-19) and hazardous alcohol intake (20-24). The questions could be answered with “Yes / No” or “Unknown” (Table 1). “Unknown” was used, when the clinical specialists could not answer the question based on information in the medical record due to insufficient, incomplete or lack of information. “Yes” and “No” meant that the question could be used for categorising whether the risk factor was present (“Yes”) or not present (“No”).

### Common test for International Conditions

The Part A material was delivered by mail to the national/regional coordinators, who further distributed it to the pilot centres. The clinical specialists then tested the HPH Data Model in the standardized medical records. A short instruction video showed how to use the HPH DATA Model on the standardized medical records.

Subsequently, the material was returned, through the national/regional coordinator or directly, to the WHO Collaborating Centre.

### Individual test for local conditions

Upon receipt of the material from Part A, Part B material was dispatched to the national/regional coordinators. The pilot-implementation test was then repeated with Part B, but this time using local medical records. The local records were collected consecutive. They could be chosen during the hospital stay, in the outpatient clinic or when the patient left the hospital according to the local routines for documentation – as long as they were consecutive.

### Specialist evaluation

Finally, the specialists evaluated whether the model was understandable (defined as an experienced immediate understanding of the wording and content of the questions), applicable (defined as the practical usability of the tool) and sufficient (defined as each health determinant being covered to an adequate level). During the whole test period, the specialists were invited to give their comments.

### Analysis

The data were analysed as Part A and Part B, and the results were presented per patient. Kappa statistics were used to calculate the agreement of registration among

**Table 1** HPH Data Model: The 9-Question Documentation Model and the results on categories from local medical records; Part B

	Cat (%)		Not Cat (%)	Total (%)
	High risk patients	Low risk patients		
<b>A: MALNUTRITION</b>				
A1) Is the patient's BMI below 20,5?	12	56	32	100
A2) Has the patient lost weight in the past three months?	15	44	41	100
A3) Has the patient had reduced appetite in the past week?	16	43	41	100
A4) Is the patient severely ill? (i.e. stress-metabolic)	31	63	6	100
<b>B: OVERWEIGHT</b>				
B1) Is the patient's BMI above 25?	31	35	34	100
B2) Has the patient's waist exceeded 80 cm (W) or 94 cm (M)	12	17	71	100
<b>C: PHYSICAL INACTIVITY</b>				
C1) Is the patient active less than 30 min/day? (Moderate intensity with pulse increase, e.g. walking, cycling, training)	17	37	46	100
<b>D: DAILY TOBACCO USE</b>				
D1) Does the patient smoke daily?	22	64	14	100
<b>E: HAZARDOUS ALCOHOL INTAKE</b>				
E1) Does the patient's drinking exceed the recommended limits? (W = 14 per week, M = 21 per week)	9	62	29	100

Cat = Categorizable



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the specialists, the inter-rater reliability (25), in the Part A material. A moderate agreement corresponded to a Kappa value of 0.41 - 0.60, a substantial agreement to 0.61 - 0.80 and a near perfect agreement to 0.81 - 1.0 (26). The data from part C were presented in percentage of all participants. A phenomenological analysis was planned for the qualitative data from part C.

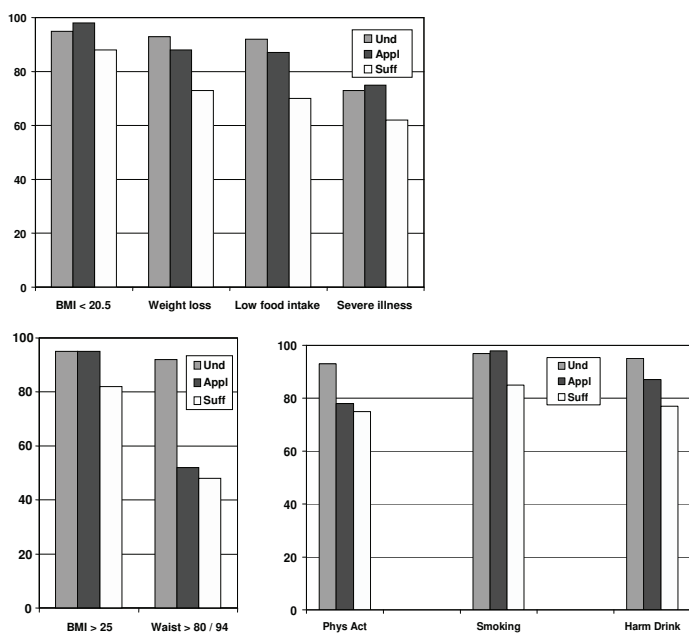
### Ethical Considerations

No patients have been involved or contacted. Neither would it be possible to recognise any individual patient, as all data was collected and reported in a completely anonymous fashion. In the anonymous collection of the data, there was no relationship between original data and data in the documentation model form, and it was not possible to go back to the medical records in case of missing data. In accordance with the Danish Research Policy, registration only concerning doctors and organisations did not require patient consent. The Ethical Committee for Bispebjerg Hospital, Copenhagen approved the project.

### Results

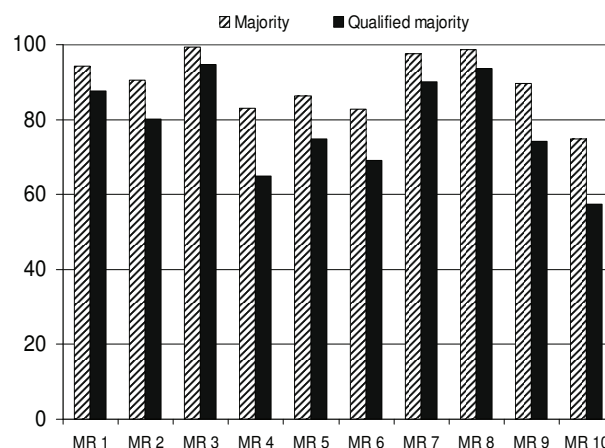
The response rate was high, 100% in Part A and 87% (68/78) in Part B. The amount of missing data among the responders was low; ranging from 0 - 2.6% (35/1360). Except for the waist measurement, the evaluation of usefulness showed a high degree of understanding, applicability and sufficiency for the health determinants (Figure 2).

**Figure 2** Evaluation of the HPH DATA Model by clinical specialists (The results are given in %; understanding in light grey bars, applicability in dark grey and sufficiency in white bars) Part C



The clinical specialists in Part A reported a relatively high agreement, when using the HPH DATA Model for documentation in the ten standardised medical records (Figure 3). The Kappa value was 0.85 in median (ranging 0.65 - 0.99), which corresponded to a substantial to nearly perfect agreement.

**Figure 3** Agreement (in %) amongst the clinical specialists on documentation of health determinants by using the HPH Data Model in a standardized set of 10 medical records (MR). Majority: >50% agreement on all 9 questions; Qualified majority: >67%. Part A



When the clinical specialists evaluated the model in their own clinical practice (Part B), they were able to categorise 66% (29 - 94%) of the patients regarding need for health promotion; 31% of the patients were overweight and 22% daily smokers (Table 1).

The general comments were sparse and short. Therefore it was not meaningful to perform the planned phenomenological analysis. The specific comments were grouped into three areas; the documentation details, the waist measurement and the term 'severe illness'. Several of the clinical specialists indicated the need for more detailed patient health promotion documentation for their records. One pilot centre found the model too complicated for daily practice. Some wanted the given alcohol limits replaced by their lower national/regional guidelines and some asked for a shorter and a more specific definition of severe illness or stress-metabolism, in relation to the risk of malnutrition. Nearly all commented on the waist measurement. They did not find it relevant for identification of overweight amongst their specific patients, and therefore not relevant in the documentation model. Furthermore, they questioned the additional benefit compared to BMI alone.

Several participants reflected on poor access to evidence-based health promotion activities for patients in their local hospital and community.





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### Discussion

This study defined a model for documentation of five important health determinants in a clinical setting. The model is independent of how the health determinants are identified or diagnosed, and it was evaluated in the clinical settings independent of the usual large variety in clinical routines across and within countries, regions, hospitals, specialities, wards and clinicians. The consistent and widespread use of the model would allow for the systematic documentation of health indicators. The International agreement on how to use the HPH DATA Model for documentation was high across regions and nations. With the exception of waist measurement, the clinical specialists found it understandable, applicable and sufficient for their own groups of medical and surgical patients.

The clinical specialists did, however, ask for clarification of the term 'severe illness' or 'stress-metabolism' as an element in identifying potential risk for malnutrition. The risk of malnutrition is significantly increased for patients with severe endocrine stress-metabolic response to major trauma, such as severe burns, open scalp fracture, sepsis, or similar conditions. These patients often need intensive care management, requiring hyper-alimentary nutrition, and therefore "severe illness" is included in the international guidelines for clinical nutrition (8-11).

Also, the clinical specialists had questions regarding overweight (14). Overweight is usually defined by BMI. About half of the clinicians did not find measurement of the waist circumference relevant for their patients, and they requested more evidence and further clarification on this data point. The literature published hitherto cannot give a clear answer to the question raised by the clinicians, thereby the inclusion of waist measurement in the HPH DATA Model should be considered until more evidence has been gathered.

The overall high levels of agreement and usefulness of this study are similar to the results of a minor pilot study from Denmark on a draft model (27), and is in line with the previously piloted documentation model for HP activities in hospitals (HPH Doc-Act) (6). The results of this study (and the one in Denmark) stand in contrast to the often negative reaction by clinicians when presented with the request for new or further documentation. The positive response by clinicians in this study could be related to a general interest in simple documentation models for use in the busy clinical day-to-day life, and the involvement of the clinicians and their influence on the final product of a clinical pathway. It may also be related to the fulfilment of a need for visibility and

documentation of clinical HP in accordance with the evidence-based health promotion interventions, which was required in the previous study (HPH Doc-Act) (6). The results could be biased by the participation of pilot centres that also took part in the previous study, however, only a few pilots from three (Italy, Canada, Estonia) of the twelve regions/nations participated in both studies. The strength of the evaluation is that it covered the most common patient groups in hospitals, and that it was tested in a clinical setting including active medical records by those responsible for actual local implementation. The HPH DATA Model was evaluated for adults, exclusively, and extra care should be taken when implementing the model with regards to mentally ill patients, groups not similar to the test group, as well as in other countries and cultures.

Today, the participating hospitals and departments report information on health determinants in about 2/3 of the local medical records, though not necessarily in a coordinated, easy manner. They identify daily smoking or non-daily smoking for more than four out of five patients, they identify about two of three patients regarding risk of malnutrition, overweight and alcohol, and they identify about half of the patients regarding physical activity. Thus, the strategy for quality improvement should include identifying other health determinants in addition to the most frequent one; smoking. Implementation of this model should be monitored and evaluated through the existing quality management in hospitals. This systematic approach to health determinant documentation would positively impact patients who previously were not exposed to such documentation, thus allowing for a reduction of inequity in health. However, documentation of health determinants alone is not necessarily followed by more HP activities or by improved health gain. Thus, there is still a large untapped potential waiting to be utilised, and such utilization would improve patient pathways, outcomes and prognosis. Therefore, implementation should be followed by strategic action-taking adapted to the local needs and conditions.

As shown in Figure 1 and demonstrated in this study, the HPH DATA Model and the previously piloted documentation model for HP activities (HPH Doc-Act) (6), improves the clinical pathway of the patient. Both models can be applied to the five WHO Standards for HP in hospitals. The models are especially tailored for Standard II regarding systematic assessment of needs for HP activities and Standard III regarding information and health promotion intervention in the clinical pathway. The models also support the fulfilment of Standard V concerning continuity and collaboration across institutions and sectors (28). The WHO Standards have been



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developed in accordance with The International Society for Quality in Health Care (ISQUA) criteria, and evaluated and followed-up in health promoting hospitals as well as in other hospitals (29;30).

Furthermore, the HPH DATA Model can also be used to generate systematically collected data for health planning and research. A few pilot sites commented on this; however, the model is meant for basic documentation in clinical practice. It can easily be expanded with more details, as some hospitals may require.

New studies should evaluate the HPH DATA Model for use among patients outside the hospital setting, mentally ill patients and parents of hospitalised children and adolescents with the possibility of developing similar models for these groups. Further, more studies are needed on the HPH DATA Model regarding the applicability and usefulness of re-categorising the high risk patients according to the effect of HP activities.

### Conclusions

In conclusion, the HPH DATA Model for systematic registration of 5 significant health determinants of major importance for the clinical outcome was found to be understandable, applicable and sufficient in different clinical settings.

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#### *Austria*

Sophie Kellner-Rechberger, Krankenhaus der Stadt Wien Hietzing.

### Details of contributors

Conception and design: HT

Acquisition of data: SK, JK, LS, SK, LL, IRKB, MH, SH

Analysis and interpretation of data: HT, MM, JKS

Drafting the article: HT

Revising the article critically for important intellectual content: MM, JKS, SK, JK, LS, SK, LL, IRKB, MH, SH

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### Competing Interests

All authors have completed the Unified Competing Interest form at [www.icmje.org/col\\_disclosure.pdf](http://www.icmje.org/col_disclosure.pdf) (available on request from the corresponding author), all declared not having received support for the submitted work; HT has consultancy relationships with the Danish National Board of Health and LS has employment relationships with Tallinn Children's Hospital that both might have an interest in the submitted work during the previous 3 years; their spouses, partners, or children have no financial relationships that may be relevant to the submitted work; and authors have no non-financial interests that may be relevant to the submitted work.

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## Upcoming WHO-HPH Schools

The WHO-HPH Schools are yearly recurring events (usually both summer, autumn and winter) and they target National / Regional HPH Coordinators, HPH Hospital / Health Service Coordinators, HPH Task Force Leaders & Members as well as other interested health care providers and administrators.

The WHO-HPH Schools are great opportunities to gain practical insight into the field of Health Promotion in Hospitals & Health Services.

The next school is the WHO-HPH Summer School in Gothenburg, Sweden (May 20-21, 2013)

You can read more about the schools and register for participation at [hphnet.org](http://hphnet.org), where information, programs etc. will be updated continuously.

To participate contact Jeff Kirk Svane from The International HPH Secretariat. Email: [jsva0004@bbh.regionh.dk](mailto:jsva0004@bbh.regionh.dk)