

SEMI-QUANTITATIVE RISK ANALYSIS AS A BASIS FOR SUPERVISION OF SPECIALIZED HEALTH SERVICES TO FRAIL ELDERLY PEOPLE

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ABSTRACT

The Norwegian Board of Health Supervision is a governmental authority with responsibility for general supervision of child welfare, health and social services. In 2010, we carried out a risk analysis of hospital treatment for frail elderly people. An expert group consisting of 17 health care professionals working with elderly patients met for a two-day meeting to identify the most important topics, and to range them according to seriousness and frequency. The main conclusion was that organization of health care for elderly people is inadequate. The group identified 13 topics where deficiencies have particularly serious consequences.

The experts were quite frank in talking about their experiences and stating their opinions. The multidisciplinary composition of the group helped to ensure that personal points of view did not have too much influence on the conclusions. However, the composition of the group as a whole, with many geriatricians, only one surgeon and no psychiatrist probably biased the conclusions somewhat towards a geriatric point of view.

A risk analysis performed in this way should not be regarded as an objective, evidence-based description of the services. It is a method for summarizing the knowledge and experience of professionals working in the field.

As the process is transparent, and the analysis itself is performed mostly by health professionals, the results have a high degree of legitimacy. On the other hand, decision processes based on structured risk analyses consume considerably more time and human resources than traditional, unstructured decision making.

Our experience strongly suggests that careful planning of the process is essential.

Keywords: Frail elderly; geriatrics; hospital treatment; inpatients; risk analysis; supervision

INTRODUCTION

The Norwegian Board of Health Supervision (*Statens helsetilsyn*) is a governmental authority with responsibility for general supervision of child welfare, health and social services in the country. In Norway there is comprehensive legislation regarding these services that lays down requirements about which services shall be offered to the population and about the quality of the services, regulates the work of authorized health personnel and gives users of the services specific rights (e.g. the Patients' Rights Act) (Braut 2010).

The Board of Health Supervision independently chooses which areas and aspects of the services to supervise, and how to perform the supervision. This is done in different ways, including supervision of health services through organisational audits and surveys – partly as countrywide supervision decided by the Board, and partly as local supervision decided by the Norwegian Board of Health Supervision in the Counties on the basis of local conditions.

In addition to selecting which areas of the services to supervise, the Board develops guidelines for supervision. The supervision is done at the county level by the Norwegian Board of Health Supervision in the Counties.

A number of different criteria have been used for selecting specific areas of the health services for countrywide supervision (Table 1) (Ot.prop.105(2001-2002), Hanssen and Braut 2007).

Table 1. Criteria for choosing specific areas of the health services for supervision

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| <ul style="list-style-type: none">- areas with high risk of deficiencies- areas with many complaints- areas with many reports of errors and accidents- areas where other information indicates that the providers do not run the services according to the health legislation- areas with high political interest- services to especially vulnerable groups |
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As the resources available for supervision are limited, there is a need for a systematic and transparent approach to how these resources should be used. Ideally, decisions should be based on definitive information obtained from thorough knowledge of local conditions and scientifically sound research. In practice, this is often not possible.

The criteria listed in table 1 are useful for selecting areas to supervise, but in-depth knowledge of the field is often necessary to design supervisions that can identify substandard service provision. The Board of Health Supervision usually recruits experts working in the field to help with this.

Expert opinion can be consulted on an *ad hoc* basis or in a number of more formal, systematic ways. Formal consensus methods have been used as tools for solving problems in health and medicine for many years. Unsystematic consensus conferences were popular in the 1970s and 1980s. The Delphi method, which is an attempt to obtain expert opinion in a systematic manner, originated shortly after the Second World War (Linstone and Turoff 1975).

Risk has been defined as 'a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence' (Royal Society 1992). Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat (also called hazard). *Quantitative risk assessment* requires calculations of two components of risk: the magnitude of the potential loss and the probability that the loss will occur.

A number of different hazard identification techniques have been used. Gould *et al.* identified 40 such techniques in their review (2000). Among these the HAZOP (Hazard and Operability) method is among the best documented. After identification of specific portions of the process to be investigated called 'nodes', a team of individuals with relevant backgrounds and expertise is brought together for a collective brainstorming effort coordinated by an experienced team leader. The method concentrates on identifying hazards as well as operability problems (Dunjó *et al.* 2010).

A complete risk assessment should include both a risk analysis, the systematic use of available information to determine how often specified events may occur and the magnitude of their consequences, and a risk evaluation, the process used to determine risk management priorities by comparing the level of risk against predetermined standards, target risk levels or other criteria.

In 2009, the Board used structured risk analyses for the first time as a tool to identify aspects of the health services that should be supervised. Cancer treatment was analyzed according to the protocol for risk assessment (NS 5814 2008) of Standards Norway. The most important types of adverse events and conditions were related to: investigation logistics (late diagnosis), information flow, lack of continuity in patient care and monitoring of complications (Hannisdal *et al.* 2011).

The Board of Health Supervision decided to carry out countrywide supervision of specialist health care for frail elderly people in 2011. Part of the planning process for such an investigation is to select specific topics for investigation. The Board chose to carry out a risk analysis of hospital treatment for frail elderly people to aid this process.

We will present this second analysis and discuss some of the lessons from the two analyses.

METHODS

Because the analysis of cancer care in 2009 had been time-consuming, a simplified approach was adopted, and a preliminary report was to be presented only seven weeks after the decision to make the assessment was taken. The methodology was strongly influenced by the HAZOP method, and focused on the risk analysis part of the assessment, aiming at identifying risky situations at different operability states in the service providing system.

A list of 186 risk areas in medical treatment was produced by the main author, mainly on the basis of the Board's database of reports of adverse events in specialized health services (MedEvent) and a review of recent research on health and social services provided to frail elderly people in Norway (Sørbye *et al.* 2009). The project group extracted a list of 45 topics relevant to hospital treatment for this patient group, which was then presented to the experts.

The expert group consisted of 17 health care professionals working with elderly patients (Table 2). The doctors were contacted directly by the project group, the rest were selected by their professional societies. Geriatricians were well represented, but, in spite of a significant effort by the project group, we were able to recruit only one anaesthetist, and no surgeons or orthopaedic surgeons.

Table 2. The expert group

<ul style="list-style-type: none">- 6 geriatricians- 2 specialists in internal medicine- 1 anaesthetist- 1 specialist in community medicine- 1 specialist in primary care medicine- 2 nurses- 2 physiotherapists- 2 occupational therapists
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The experts met for a two-day meeting to identify the most important topics. Group sessions with 5-6 experts alternated with plenary sessions. Only the experts themselves took part in the group sessions. In the first round they were asked to name the five most important topics, in the second round up to ten more topics. They were then asked to range the topics according to seriousness and frequency. In the last round they were asked to give their opinions about the causes of the 3-5 most important topics. In the plenary sessions the results from the three groups were discussed until the expert group had reached consensus. The plenary sessions were coordinated by an experienced team leader (HA), the rest of the project group was present but did not actively participate in the discussion.

RESULTS

The main conclusion from the expert group was that organisation of health care for elderly people is inadequate. In particular, they questioned whether the regional health authorities had fulfilled their responsibility to provide sufficient and sound health care for elderly people.

The experts identified 13 topics where deficiencies in health care services have particularly serious consequences. These are listed in Table 3 according to order of perceived seriousness and perceived frequency of occurrence.

Table 3. Result of the risk analysis

Seriousness	Frequency	
1	3	Frail elderly people with acute disease or injury do not receive sufficiently rapid and adequate help (waiting time for hospital admission, in the emergency department and during hospital stay. Insufficient multidisciplinary acute geriatric care, suboptimal treatment of stroke, fractures etc.)
2	2	Problems related to medication. Lack of routine evaluation of medication, polypharmacy, over-treatment and under-treatment, treatment with risk of drug interactions, inappropriate use of medication.
3	1	Lack of routines and lack of qualified personnel working in somatic specialist health care for investigation, treatment and follow-up of geriatric patients and patients with dementia. Lack of comprehensive geriatric assessment (CGA).
4	4	Lack of activation, mobilization and rehabilitation during and after hospital stay, causing loss of mental and physical function and reduced ability for self care
5	5	Lack of qualified personnel and capacity for psychiatric care of elderly people
6	6	Down-prioritizing of elderly people on the operating schedule. Postponement of planned surgery, e.g. after hip fracture. Preoperative procedures have to be repeated.
7	10	Lack of assessment of patients' nutritional status
8	12	Communication problems (e.g. inadequate information retrieval systems) - Within the hospital: when patients are transferred from one department to another- Between hospital and primary health care services: when patients are discharged
9	7	Too little emphasis on prevention of complications and adverse events like delirium, nutritional problems, depression, infections including gastroenteritis, pressure sores, falls.
10	11	Acute confusion (delirium) is neither recognized nor treated
11	13	Lack of use of next-of-kin as collaborator during information retrieval and when planning the post-discharge period
12	9	Lack of capacity in stroke units, oldest patients get down-prioritized
13	8	Terminal care: Lack of assessment of patients' preferences and needs at admittance. Unwarranted life-prolonging interventions. Unsatisfactory palliative care.

Acute care is usually tailored to the needs of younger patients, and most patients are admitted to specialised or subspecialised departments. The elderly with acute medical problems sometimes get a low priority because of their age, atypical presentation of disease can make it difficult to arrive at the correct diagnosis, leading to delays that increased mortality and morbidity.

Problems related to medication are common in the elderly. Multimorbidity leads to polypharmacy. Drugs can cause common problems like dizziness, confusion, malnutrition and falls. Four groups of drugs are particularly problematic: Warfarin, antiarrhythmics, diuretics and psychiatric drugs.

Lack of routines and lack of competence among the care-givers about the special needs of the elderly means that no comprehensive geriatric assessment is performed, and common problems get overlooked. This is often the case with depression, dementia, osteoporosis, urinary incontinence and tendency to fall.

Lack of early progressive mobilization leads to unnecessary acute loss of physical and mental function. This increases the risk of complications, prolonged hospitalization and permanent loss of function.

Lack of access to specialist mental health services leads to treatable problems not being treated or being treated wrongly. This is particularly a problem with depression, that can lead to unnecessary general loss of function, malnutrition and sometimes suicide.

The experts were quite adamant that a position low on the list did not mean that the topic was mild or rare. They regarded all the topics as serious and as every-day occurrences in Norwegian hospitals, so that ranking was difficult and somewhat artificial.

DISCUSSION

Some of the topics indicate that elderly people are discriminated against because of their age (ageism). The panel strongly recommended that whenever priorities have to be made, potential benefits and harm should be taken into consideration, and that the patient's age should not be decisive.

While some of the topics identified by the risk analysis can only be improved by allocation of more resources (e.g. the psychiatric care offered the elderly), most topics can be improved by good clinical governance, including appropriate education and training of doctors, nurses and other health workers.

Most elderly people admitted to hospitals receive care in specialized or sub-specialized departments. These departments are usually equipped to provide high quality care for patients with problems within the specialty. However, elderly people who are hospitalized often have several different medical conditions that must be considered if care is to be optimal.

Frailty has been defined as 'a physiological syndrome, characterized by decreased reserve and diminished resistance to stressors, resulting from cumulative declines across multiple physiologic systems, and causing vulnerability to adverse health outcomes including falls, hospitalization, institutionalization and mortality' (Ferrucci *et al.* 2004). The MedEvent database receives a number of reports every year of serious adverse events happening in hospitals because the patients' frailty is not adequately taken into consideration by the care givers.

The experts were quite frank in talking about their experiences and stating their opinions in the plenary sessions. Understandably, some of the experts tried to promote points of view that were rather obviously coloured by their special interests. The multidisciplinary composition of the expert group helped to ensure that these points of view did not have too much influence on the conclusions. However, the composition of the group as a whole, with many geriatricians, only one surgeon and no psychiatrist probably biased the conclusions somewhat towards a geriatric point of view.

A risk analysis performed in this way should not be regarded as an objective description of the health services, it is a method for summarizing the knowledge and experience of health professionals working in the field. The results should be interpreted with this in mind.

The two risk analyses of cancer treatment and specialized health care for frail elderly people were summarized in internal reports that were regarded as highly useful by the Board. The conclusions will guide the use of resources for supervision of these two important areas of the health services in the future.

There are several advantages of using this kind of process as a basis for the Board's activities. As the process is transparent, and the analysis itself is performed mostly by professionals working in the field, the results have a high degree of legitimacy. This gives increased acceptance of the intrusion into the daily routine that is an

unavoidable part of the actual supervision. It also aids the professionals and the health authorities in their own quality improvement efforts.

On the other hand, decision processes based on structured risk analyses consume considerably more time and human resources than traditional, unstructured processes.

Our experience from these two risk analyses strongly suggests that careful planning of the process is essential. If a structured risk analyses is to be performed, it should be performed according to a predefined protocol, and sufficient time and resources must be allocated. A simplified approach may be nearly as expensive while the advantages may be lost.

In the future, the Board of Health Supervision plans to continue using risk analyses when appropriate in its planning of countrywide activities.

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REFERENCES

- Braut, S.G., 2010. Legal requirements related to governance of health services. *In: Molven, O., Ferkis, J. Healthcare, welfare and law. Health legislation as a mirror of the Norwegian welfare state.* Oslo: Gyldendal, 129-138.
- Dunjó, J., *et al.*, 2010. Hazard and operability (HAZOP) analysis. A literature review. *J Hazard Mater*, 73 (1-3), 19-32.
- Ferrucci, L., *et al* 2004. Interventions on Frailty Working Group. Designing randomized, controlled trials aimed at preventing or delaying functional decline and disability in frail, older persons: a consensus report. *J Am Geriatr Soc*, 52 (4), 625–34
- Gould, J., *et al.*, 2000. *Review of Hazard Identification Techniques.* Sheffield, UK: Health and Safety Laboratory.
- Hannisdal, E., *et al.*, 2011. A risk analysis of Norwegian cancer treatment. Submitted for publication.
- Hanssen, L.E., Braut, G.S, 2007. Tilsyn med risikoperspektiv. *Michael*, 4 (2), 104-110.
- Linstone, H., Turoff, M., eds., 1975. *The Delphi Method: Techniques and Applications.* Reading, MA: Addison-Wesley. Available from: <http://is.njit.edu/pubs/delphibook/> [Accessed 10 December 2010].
- NS 5814 (2008). *Krav til risikovurderinger (Requirements for risk assessment)* Oslo: Standard Norge.
- Ot.prop.105(2001-2002). *Om lov om endringer i lov 30. mars 1984 nr. 15 om statlig tilsyn med helsetjenesten og i enkelte andre lover.* Oslo: Helsedepartementet.
- Sørbye, L. W., Grue, E. V., Vetvik, E., 2009. *Kunnskap om svikt i tjenester til skrøpelige eldre.* Rapport 2009/5. Oslo: Diakonhjemmets Høgskole.
- The Royal Society, 1992. *Risk: Analysis, Perception and Management. Report of a Royal Society Study Group.* London: The Royal Society.