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Assessment of risk in radiology using malpractice RVU

Massimo Cristofaro [a,*], Giuseppe Bellandi [b,1], Salvatore Squarcione [c,2], Antonella Petecchia [c,2], Assunta Mammarella [c,2], Corrado Bibbolino [a,3]

[a] *U.O. di Diagnostica per Immagini, Istituto Nazionale per le Malattie Infettive IRCCS, L. Spallanzani Via Portuense, 292, 00149 Rome, Italy*
[b] *Servizio di Radiologia ASL 3 Ospedale di Pescia, Via Battisti 2, 51017 Pescia (PT), Italy*
[c] *Direzione Sanitaria Istituto Istituto Nazionale per le Malattie Infettive IRCCS, L. Spallanzani, Via Portuense 292, 00149 Rome, Italy*

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Abstract

Introduction: Analysis on the causes and remedies needed to reduce the incidence of malpractice has been under continual studies, although limited data is available regarding quantitative evaluation of the risk.
Objectives: To determine radiological risk in a preventive and quantitative manner and verify if the malpractice relative value units (MP-RVU) are a good indicator of associated risk factors.
Materials and methods: Radiological examinations executed by our Radiology Department in 2000–2004 have been codified according to nomenclature HCPCS (Healthcare Common Procedure Coding System) used by United States of America Centers for Medicare and Medicaid Services (CMS).

For every examination was calculated the annual weight of malpractice.

The data has been groupped in macroaggregates by methodology.

The ratio MP-RVU/no. examinations has been considered as an index of insurance risk (MP index)
Results: A total of 133,005 examinations were performed, which produced 25,252 MP-RVU points, the total mp index was 0.193.

Traditional radiology represents 38% of the examinations, accounting for 8% of MP-RVU with a MP index = 0.039.

Ultrasound represents 35% of the examinations, accounting for 23% of MP-RVU with a MP index = 0.125.

CT represents 13% of the examinations, accounting for 28% of MP-RVU with a MP index = 0.434.

MR represents 11% of the examinations, accounting for 39% of MP-RVU with a MP index = 0.667.
Conclusions: Malpractice relative value units (MP-RVU) are indicative of the risk considered globally and when subgrouped. MP index correlates this risk with number of exams carried out divided by methodology.

This model providing quantitative data for projects concerning risk management and in allowing the correlation between data obtained in different departments.

Keywords: Radiology; Malpractice; RVU

1. Introduction

Being a fundamental part of clinical administration, risk management is now the center of attention for health care experts, administrative officers, and operators, as well as representatives of various international groups that have an interest in public health [1].

Researchers from the United States have maintained that reform of statutes for responsibility in civil medicine would have a beneficial effect on the health care system. Such benefits would include a reduction in the burden of insurance on

* Corresponding author. Tel.: +39 0655170225; fax: +39 06 55170312.
E-mail addresses: mcristofar@srm.org (M. Cristofaro), g.bellandi@mail.vdn.usl3.toscana.it (G. Bellandi), squarcione@inmi.it (S. Squarcione), petecchia@inmi.it (A. Petecchia), mammarella@inmi.it (A. Mammarella), bibbolino@inmi.it (C. Bibbolino).
[1] Tel.: +39 0573 352357; fax +39 0573 353113.
[2] Tel.: +39 0655171; fax: +39 0655171.
[3] Tel.: +39 0655170225; fax: +39 0655170312.

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physicians and hospitals in both financial (payment of an average reimbursement instead of on a case-by-case basis, determination of a maximum reimbursement) and non-financial terms (intervention regarding the physical presence of physicians in court, determination of a maximum period of legal proceedings).

It would also have a positive effect on the speed with which compensations are paid and reduce medical expenses by decreasing the number of estimates needed for various medical practices. Legal expenses would also decrease accordingly with an estimated 2.8–6.2% reduction in health care expenses without relevant effects on mortality [2].

Technological innovations in health care can also influence the risk of malpractice when evaluated according to the number of formal complaints registered.

Such innovations can be divided into two groups: those that reduce (e.g. diagnostic laboratory or radiology) or increase risk (e.g. surgery). Risk is also lower for hospitals that have large volumes of activity [3].

Detailed analysis on the causes and remedies needed to reduce the incidence of malpractice [4,5] has been under continual analysis for some time, although only limited data is available regarding quantitative evaluation of the risk of malpractice.

The possibility of error in radiology has been thoroughly analyzed [6–9]. Robinson and Fitzgerald have defined the interpretation of a radiograph as an "Achilles" heel for the radiologist. Possible sources of error include, in decreasing order of frequency, inadequate technique, lack of perception or erroneous assessment of radiologic indications, insufficient training, and inadequate communication.

Often, radiological error may due to a combination of two or more of the above [8].

As an example, Berlin collected a series of monthly articles that were compiled in a single volume which was used for a simulated malpractice jury trial in the United States during the annual meeting of the Radiological Association of North America in 2004 [10].

In Italy, both insurers (for economic reasons) and judicial sources (due to evolution in legal practices) have been pressuring for the introduction of corrective factors aimed at the introduction of risk management and for the institution of dedicated units for risk management within hospitals [11].

In fact, the Parliament has been moving in this direction as demonstrated by a new bill (number 108) entitled "New legislation in professional responsibility for health care personnel" [12]. Recently, a Technical Commission on clinical risk (by ministerial decree on March 5, 2003), formed in a project initiated by the Health Ministry on the quality of health care jointly with the general direction of Health Care Programming, produced a document targeted towards assessing the prevalence and causes of clinical risk; the commission also provided general indications and technical solutions for reduction and management of the problem [13].

The frequency of formal complaints has grown in a linear fashion, but it cannot be excluded that their growth is occurring more rapidly in an almost exponential manner [14].

At present, the insurance sector in Italy is altering its standards in the absence of detailed, official data on the type and magnitude of insurable risks; the sector is rapidly changing and will undoubtedly condition various insurable risks in a significant manner [14].

The absolute lack of statistically and historically relevant data in Italy, relative to claims against hospitals, has not permitted the individuation of quantitative indicators of risk associated with specific factors. Thus, the need for concrete data is evermore apparent.

2. Objectives

To generate models that are able to relate judicial (e.g. safety obligations and rules for general responsibility) and medical risk factors (e.g. analysis of the complexity of services and incidence of connected risk factors) and elaborate these factors from economic and management viewpoints, in order to provide a safety rating [11].

To determine medical risk, and radiologic risk in particular, in a preventive and quantitative manner and verify if the malpractice relative value units (RVU) used by Medicare in the United States for reimbursement of medical services are a good indicator of associated risk factors.

In this regard, it would need to have the following characteristics: appropriateness, accuracy, discriminating capacity, significance, credibility, measurability, precision, and reproducibility, all of which are required for procedures involving assessment of quality as good indicators.

3. Materials and methods

From January 1, 2000 the "Centers for Medicare and Medicaid Services (CMS)" developed its own system for payment for State Health Assistance based on the use of RVUs [15].

The RVU model is based on a combination of weights with the aim of reimbursement of medical services coded by a single nomenclature (Healthcare Common Procedure Coding System) that associates RVUs for each specific procedure [16,17].

The RVUs are derived from three components, namely professional (intensity and duration of medical intervention, work RVU), insurance-related (malpractice RVU, MP-RVU; Table 1), and professional expenses (direct and indirect costs, PE-RVU).

The MP-RVUs are derived from a complex mathematical analysis, updated annually, that combines average national insur-

Table 1
HCPCS–CPT (HCPS, Healthcare Common Procedure Coding System–CPT [Physicians'] Current Procedural Terminology)

CPT1 HCPCS2	Description	MP RVUs
70470	Ct head/brain w/o and w dye	0.37
71010	Chest X-ray	0.03
73718	MRI lower extremity	0.36
75600	Contrast X-ray exam of aorta	0.56
76091	Mammogram, both breasts	0.09
76700	US exam, abdom, complete	0.13
76805	Ob US>/=14 weeks, sngl fetus	0.14

Each exam was associated with a malpractice relative unit value (MP-RVU).