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Litigation and radiology: medicolegal cases involving diagnostic radiology in South Africa

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Litigation and Radiology: Medicolegal cases involving diagnostic radiology in South Africa

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Medicine in Diagnostic Radiology

Johannesburg, 2014.

Declaration

I, Aobakwe Segwe, declare that this research report is my own work. It is being submitted for the degree of MMed (Diagnostic Radiology) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Dr Aobakwe Segwe

On this the 29th day of November 2013.

I dedicate this work to my loving husband, Lungile Mdlazi, and our beautiful daughter, Lathitha Zizwe Oreneile. To my mom and sister, thank you for all your support.

Publications and presentations

This work has never been published nor presented at any local or international congresses.

Abstract

INTRODUCTION: Litigation may involve radiology personnel radiological reports and imaging studies as evidence and therefore influences clinical practice. Litigation is implicated in defensive radiology practices. There are no publications addressing litigation and radiology specifically for South Africa.

AIM: To determine the number of legal cases involving radiological personnel and radiological investigations in South Africa and frequency of citing of these within the law reports.

METHOD: The search engine attached to The Southern African Legal Information Institute (SAFLII) website was searched systematically for the period 2001 to 2010 with keywords relating to radiologists, radiographers and equipment / imaging modalities using a frequency 'citation' score.

RESULTS: 114 legal cases involving radiological personnel and radiological investigations in South Africa were identified (0.5% of all cases reported). Few radiologists have been sued in medicolegal lawsuits, but nearly a quarter of all radiology medicolegal reports, involved radiologists providing expert opinion and reports.

In addition to being the commonest imaging investigation to feature in medicolegal reports (in over two thirds), plain X-rays also had the highest citation scores.

CONCLUSIONS: Very few radiologists have been the accused in medicolegal suits, yet radiologists were involved in nearly a quarter of reports, predominantly providing expert opinion and reports.

Plain X-rays were the commonest imaging investigation to feature but CT scanning featured in 20% of reports. This is of particular concern because this is considered an advanced technology, not widely available in South Africa.

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1. Introduction

1.1 Motivation and rationale for this study

Litigation may involve radiology personnel and radiological imaging modalities in a number of ways. These include the use of radiological reports and imaging studies as evidence in lawsuits involving medical practitioners, medical practices, radiologic personnel themselves and in legal proceedings that involve medical diagnoses. Litigation therefore influences clinical practice and is also implicated in defensive radiology practices, which include unjustifiable procedures that carry a radiation burden (1).

Radiologists currently face an increasing trend of being taken to court and therefore face an increasing risk of legal consequences (2,3). In the USA some estimate that just under half of radiologists get taken to court on average once every 5 years. The number of cases of radiologists sued for malpractice accounts for 10-15% of all charges against doctors for negligence or inability (2). Medicolegal litigation is also a growing concern for the South African physician. Very little research however, has been performed in this regard in Southern Africa, and there are no publications addressing litigation and radiology specifically.

Within the field of Radiology, all modalities are involved in litigation. It also appears that some radiology subspecialties, such as breast imaging for example, face litigation more frequently than others.

All specialties in various countries face an upward trend in the number of medicolegal lawsuits. Medical practitioners need to understand that the court is not a medical disciplinary board. The court will hold them accountable to a standard different from that of the medical disciplinary board. The required standard of care in South Africa is further defined in Appendix C. It is therefore important for radiologists to understand how legal tests will be applied to their actions in daily practice (4). Radiology also presents a number of unique features (2). Radiological data, for example, remains available for future assessment by multiple interpreters and for comparison of interpretations (5,6).

1.1.1 International Trends in Radiological Medicolegal Practice

In the United States of America (USA) surgery has the highest risk of medicolegal litigation with diagnostic radiology noted to come second. Diagnostic radiology departments are included in the departments with the highest number of claims because of oversights in diagnosis. Furthermore, monetary compensation for erroneous radiological diagnoses is high in USA hospitals (1).

In Italy there has been a noticeable increase in radiologists insured for malpractice claims. One malpractice insurer recorded an enrollment growth of 286% between the years 1993 and 2004 - membership number grew from 1,400 to 4,007. This group of radiologists represented 53% of SIRM (Italian Society of Medical Radiology) affiliates and hence is an ideal sample of radiologists in Italy (2).

In Italy there is a growing interest in radiological malpractice, which has led to an increase in the amount of research and presentations done in this unique field of

litigation and radiology. This was in response to a need to better understand the epidemiology of medicolegal litigation, and to try and define the best ways of managing its risk (2). A similar process is warranted to address the need in South Africa.

In England it is reported that the number of claims against doctors between 1950 and 1970 grew slowly. This was then followed by more accelerated growth. The Pearson Report states that in 1978 only 500 claims were brought against the NHS annually. In 2006, this number had grown by an alarming 1200%. In 2005, information from the National Audit Office showed that £423 million was paid out for medical law suits and £2 billion was reserved for outstanding suits (7).

Despite these figures it has been shown that, comparative to the number of suits, not many medical negligence lawsuits are successful in court. The Royal Commission on Civil Liability and Compensation for Personal Injury state that claims are successful in approximately only 35%. This is compared to 60-80% success with other negligence claims that reach court. For many years the aforementioned discrepancy caused much academic debate within the legal profession. Lawyers seek to redress this perceived imbalance in order to help more patients receive compensation from physicians (7). The imbalance probably exists because the law always requires causation. This means a direct and absolute connection between the failure of duty and the harm caused (7). The challenge in medicine is to exclude other innate causes of harm. For example: A patient demised after removal of their healthy kidney instead of the pathological

one. The court found the surgeon not guilty of manslaughter because of a weak casual link. The patient's final cause of death was pneumonia and not renal failure. Therefore the link between the incorrect surgery and the patient's ultimate death was deemed not strong enough (7).

1.1.2 Malpractice Risk, Public Perception and Medicolegal Costs

Increasing medicolegal concerns drive health care costs. This is evidenced by an increase in medical malpractice premiums, claims from malpractice insurance, and compensations paid. These costs are described in the Joint Economic Committee document *Liability for Medical Malpractice: Issues and Evidence* (5). One can deduce that the risk of litigation will increase as the number of examinations and images produced increases (2). In the USA, many physicians are of the opinion that the medicolegal component of healthcare contributes to the exorbitant cost of medical care. The threat of litigation leads to the adoption of defensive clinical practices that seek to protect oneself as the doctor. Unfortunately this comes at a high price as billions of dollars are then spent unnecessarily. It also important to note that unjustifiable radiological examinations carry a radiation burden and hence place patients at avoidable radiation exposure (5).

The public perceives doctors as faultless. This view is counterproductive. For example: if a patient has a radiological examination that is erroneously reported as within normal limits, then the patient is falsely reassured and thus may ignore any symptoms and signs of early disease, even early cancer. Radiologists are particularly at risk of making such perceptual errors in their daily practice (7).

Interestingly, in practice the risk of litigation seems to be independent of patient characteristics, or complexity of the patient's disease, or the treating doctors' abilities. Risk is related to patients' dissatisfaction with the doctors' ability to establish rapport, communicate effectively and give care and treatment consistent with what the patient expect (8). Patient dissatisfaction may originate from issues that may be perceived as insignificant. For example: an impolite receptionist or doctor; an inconsiderate technician; poor pain relief; poor bedside manners or an unexplained long wait in the reception room. This dissatisfaction gradually grows into anger and if an injury occurs, anger converts the injury into a lawsuit (4). We should understand that the opposite is also true. There may be significant medical mistakes that do not lead to any lawsuits. The great majority of errors do not lead to litigation for negligence (1,8).

In a survey including radiologists and radiotherapists, other factors influencing malpractice litigation were identified: the attitude of the mass media (negative towards physicians), the possibility of receiving considerable compensation and statements made by other physicians. The majority of respondents agreed that a poor relationship between the patient and the doctor, as well as increased demands from the patient both led to an increased risk of malpractice litigation. Below 50% of respondents thought a deteriorating health care system is what had led to an upward trend in lawsuits against physicians. Over 50% of the people who took part in the survey felt that statutory laws needed to be put in place to limit malpractice lawsuits against physicians (1).

1.1.3 Doctors Response to Malpractice Risk - Defensive Medical Practices

The perceived litigation risk for radiologists could potentially cause a shortfall in the number of radiologists in certain subspecialties e.g. in mammography (5,9). Radiologists tend to avoid subspecialties and procedures that they feel expose them to greater risks of malpractice litigation and areas where they have less control (1,10). Although it may be overestimated, the perceived risk, in addition to affecting behaviour, also has an impact on clinical decision-making (5,11).

One survey showed that being faced with a lawsuit for suspected malpractice led to profound behavioural alterations by physicians. This was both in the steps taken to safeguard themselves as well as their perception of the problem of litigation. Physicians would adopt certain behavioural patterns in an attempt to safeguard themselves from litigation. For example: not wanting to care for seriously ill patients or patients perceived as “dangerous”. They would also have reduced empathy to these patients (1). A total of 39% of respondents said they had changed their professional behaviour as a result (1).

Many radiologists become overtly cautious in reporting each radiological finding. This can lead to obsessive behaviour. Alternatively, the radiologist adopts a habit of routinely ordering more investigations (1). As a direct effect of this defensive practice, in various countries, there is an unnecessary increase in the money spent on healthcare (1,11).

1.1.4 Stress Associated with Litigation

In most instances cases are settled out of court. This is because there is not enough evidence to hold the radiologist liable. Despite this fact, each case undoubtedly costs the radiologist a significant amount of worry, legal expenses and time. The stress connected to legal action is believed to lead to various changes in the radiologist. These include: physical, psychological and behavioural changes. These changes cause the radiologist to practice “defensive medicine” or an “aggressive defensive” approach (2).

One study recorded anxiety and anger as the most common reaction to alleged malpractice. Many radiologists further expressed helplessness, disappointment, distress and humiliation. Some radiologists described that they felt guilty whilst others objectively experienced physical harm (1).

Lawsuits against physicians lead to multiple undesirable psychological consequences. Physicians tend to feel that the lawsuit is an attack on their integrity as an individual and subsequently react in a dysfunctional manner, regardless of the final results of the suit. The physician goes through feelings of isolation, panic attacks, apathy and changes in appetite.(1). These symptoms are placed under the umbrella term “malpractice stress syndrome”. This can cause a disruption in family relations (1). Because these symptoms closely resemble those seen in persons who have been physically assaulted, they are considered a form of post-traumatic stress disorder (1).

1.1.5 Common Pathologies Resulting in Malpractice Claims

A study performed in Italy noted that, the most common **anatomical system** resulting in diagnostic error was the musculoskeletal system, followed by the breast, chest and lastly the abdomen. A misdiagnosis or radiological miss of a lesion in the musculoskeletal system was the most frequent **cause** of error (2).

A study performed in England over a 10-year-period (1995/6 to 2005/6) looked at what caused claims against radiologists. This study found the leading pathological cause was a delayed diagnosis or a radiological miss of cancer. This study also noted the most common site of missed / delayed diagnosis of cancer was the breast, followed by the bronchi and abdomen. This trend is similar to what was seen in Italy, where the breast was the most common organ of lawsuits related to cancer (64% of all cancers), followed by the lungs. It was also noted that over time there has been a growth in the proportion of claims related to breast cancer (2). The second most common cause for claims against radiologists was that related to musculoskeletal imaging, secondary to missed fractures and dislocations (7). Another study showed that approximately a tenth of claims were related to mistakes in radiological technique and procedures, almost 50% of these were related to technique in interventional radiology (2).

According to data from the National Health Service Litigation Authority (NHSLA) of the United Kingdom, some radiological subspecialities are more at risk for litigation (7). Mammography in Cardiff, for example, accounts for 1.4% of radiological work, however the NHSLA statistics demonstrate that breast imaging represents 16% of claims brought against radiologists. The percentage of claims involving musculoskeletal radiology was as high as 28%. However this number was found to be proportional to the amount of musculoskeletal examinations undertaken. Breast cancer and lung cancer had similar frequency of claims, however a delayed diagnosis in breast cancer had more claims versus a delayed bronchial cancer diagnosis. It seems unjust, in this light, that physicians of one subspeciality should have higher legal accountability than their peers in the same department, undertaking comparable work and executing this work with comparable meticulousness (7).

1.1.6 Probable Causes of Litigation

A number of claims arise because the public seems to think that a radiologist should be able to see and report on all pathology detected on imaging. This is especially noted when the pathology is “obvious” and can be seen retrospectively by an untrained eye. Clinical error is frequently at the heart of malpractice lawsuits. However it is important to remember that serious clinical errors may occur and not lead to litigation while successful litigation may arise from relatively small errors (1).

A factor influencing accurate analysis of the malpractice in a region is what is termed ‘latency period’. This is the period of time between the alleged error and the filing of a medicolegal claim. This latency period complicates the accurate evaluation of the incidence of risk. This is because the total amount of claims in a study period is usually not complete. Some claims can be filed up to 3 years after the event, as is seen in some claims related to the failure of making a cancer diagnosis (2).

Incorrect and delayed diagnosis

In Italy, the radiological miss of a cancer is becoming the primary reason why claims are lodged, followed by the radiological miss of a fracture (2). Alleged misdiagnosis is the reason for most of the claims in the miscellaneous group where the radiologist is invariably involved with all the other treating physicians due to “objective responsibility”. This occurs, for example, when a critically ill patient enters the emergency department and requires radiological investigations. Radiologists in the USA and France faced such a dramatic increase in malpractice lawsuits because of “objective responsibility”, that changes in legislation in both these countries were deemed necessary (2).

There is an association between the risk of litigation for a delayed diagnosis and the increasing number of screening programs. An example is screening for breast carcinoma. Viewing previous radiographs retrospectively often allows diagnosis of disease without appreciating how hard it was to make the right diagnosis at that initial visit and examination (2).

Radiological investigations like computed tomography (CT) also lend themselves to litigation as raw data may be reconstructed or viewed differently, in retrospect. This becomes problematic for radiologist especially when a lesion is sought outside the original clinical setting or when a lesion has become apparent in subsequent scans or clinical examinations (2).

Failing to order further imaging investigations

The clinician is held accountable for requesting imaging tests from a radiologist and for communicating all appropriate clinical details to the radiologist in an unambiguous and relevant way. In turn the radiologist should choose the correct investigation for the patient based on the clinical findings provided (2). Any breakdown in this communication may result in the wrong investigation or no investigation being performed or in investigation being performed incorrectly (e.g. angiogram of the incorrect limb), and may lead to litigation. Medicolegal litigation claims for not ordering further investigations are uncommon in Italy and are broadly linked to a missed diagnosis of cancer. This differentiates Italy from the USA, where there is an increase in this type of litigation. Previously radiologists faced litigation for making an error, now they often face litigation for not having done something correctly i.e. request further investigations where necessary (2). There is an increase in medicolegal claims lodged against doctors for not ordering further radiological investigations. Radiologists also face an increasing amount of claims for not requesting further imaging investigations (12). As advances in technology and radiology occur, it is expected that claims leveled against

radiologists will include the failure to make use of modern techniques such as computer-assisted-detection and teleradiology, or for not requesting the opinion of a peer who is an expert in that particular field (2).

Errors related to procedures

One research paper attributed only a tenth of claims to complications secondary to radiological investigations e.g. adverse reactions from contrast medium administration and visceral injury from barium enemas (2). These situations often led to the patient's demise or severe consequences for the patient. The precipitating factor for this issue could be an increased use of interventional radiology and the need to give patients contrast media or drugs when undergoing diagnostic examinations (2). This has resulted in interventional radiology being a subspeciality with an increased risk of lawsuits in all countries. The Medmarx Data Report in the USA was established using information from 314 hospitals. Radiology errors that happened in these hospitals between the years 2000 and 2004 were voluntarily reported. The frequency of harm to the patient was seven times higher in radiology than in other departments. The American College of Radiology (ACR) challenged the outcomes of the report. The ACR stated that this conclusion unduly distressed patients and that the 2030 errors should be seen in the context of the 2.5 million radiological investigations carried out (2).

The characteristics of radiologists and their work environment

As early as 1959, there was documentation regarding the accuracy of diagnostic procedures. Even though there is increased litigation in radiology, the error rate is

not reported to have changed significantly over the last 50 years (7). The fact remains that, if a radiologist views the same film for the second time, they will issue a report different to the initial report 20% of the time and the new report would lead to a marked alteration in the patients clinical management (7). Discrepancy rates between different radiologists average even higher at 30%. Robinson once summarized this situation aptly: ‘‘although technology has made enormous progress in the last century, there is no evidence for similar improvement in the performance of the human eye and brain” (7).

As a starting point, however, it should also be understood by the radiological profession, and the public, that under no circumstances should the law fraternity allow a blanket defense of ‘‘common perceptual error” because this could give an imprudent doctor freedom to continue practicing haphazardly (7).

Possible factors influencing the radiologist’s error associated with malpractice litigation include the radiologist's age. Often ageing comes with visual and cognitive deterioration. The association of litigation with radiologist age alone implies that ageing can influence the radiologist’s capacity to analyze imaging findings. This variable is thought to result in an increase in mistakes and therefore medicolegal lawsuits. This hypothesis has not been verified (1).

Theoretically, the risk of clinical error in radiology can be reduced by optimizing workload, having adequate time, addressing staff shortages and providing appropriate imaging tools (1). One study demonstrated a widespread atmosphere

of distress secondary to: increased patient volumes, hasty reporting and inadequate time to develop management. Substandard organization of work and a tense work environment were also implicated in causing distress (1). The same study also showed that staff shortages, outdated imaging tools and being unable to keep abreast with current professional trends played a significant role as well (1). A different study has shown that radiologists working in busy practices with a heavy patient burden tend to desire shorter work hours (13). In South Africa, a study conducted in two academic hospitals in Johannesburg showed that an increased workload led to an increased error rate amongst radiology registrars. The study therefore highlighted workload as having an impact on the disparity between the radiology registrar's report and the radiology consultant's reviewed report (14).

1.1.7 Permanence of a Radiological Record as opposed to Clinical Findings

Radiologists are particularly susceptible to malpractice suits because radiological images remain available for future re-evaluation (15,16). This feature allows objective re-assessment of radiological images by numerous readers and comparison of the findings (5). Two key points challenge the defendant radiologist: final outcome and hindsight bias. These factors allow reviewing radiologists to criticize incidents more harshly once they are aware of an unfavourable patient outcome and the confirmed diagnosis (7). This highlights the psychological power of hindsight. In one example, the diagnosis of breast cancer was missed after two or three doctors saw the patient and did not clinically identify a lump. Mammography showed micro-calcifications that were either missed or

misinterpreted as non suspicious. However, when the patient returned with an advanced malignancy and a large breast lump, only the radiological examination was available for retrospective examination (7). The clinician's judgement could not be questioned, because there was no evidence that a lump was previously palpable. The radiologist's decision was permanently recorded and imaging was available for re-interpretation. A panel of experts could show the abnormality with relative ease and suggest that such an abnormality is congruent with cancer, because they would be aware of the final patient outcome (7).

1.1.8 Radiologists as expert witnesses and minimizing bias

It is of crucial importance for radiologists to understand their role in legal proceedings, when called upon to provide their opinion as expert witnesses. Radiologists need to also be aware of the various steps that can be taken to reduce the bias of expert witnesses. The role of radiologists as expert witnesses and the measures to minimize bias are discussed below.

Role of Radiologists as expert witnesses:

Based on the judgments of the Supreme Court of Appeal in *Van Wyk v Lewis* 1924 AD 438 at 444 and 448 and *Charter Hi (Pty) Ltd and Others v Minister of Transport* 2011 JDR 0545 (SCA) 1 at para.[32], the expected standard of care, skill and diligence expected of a defendant radiologist is the general level of skill and diligence possessed and exercised by professionals in the field of radiology. The more specialised a radiologist is, the greater the general level of expected care and skill will be.

The Courts are entitled to call on expert testimony of fellow radiologists for assistance in determining the radiology-specific negligence standard. Based on the judgment of the Supreme Court of Appeal in *Michael & another v Linksfield Park Clinic (Pty) Ltd & another* 2001 (3) SA 1188 (SCA) paras.[35]-[40], the role of radiologists as expert witnesses can be summarised as follows:

Although it is often said in South Africa that the governing test for professional negligence applicable to medical practitioners, which includes radiologists, is the standard of conduct of the reasonable practitioner in the particular professional field, that criterion is not always itself a helpful guide to finding the answer, especially where the Court has to establish the conduct and views of the notional reasonable radiologist without a collective or representative opinion. This is especially so where the primary function of the experts called is to teach, with the opportunity only for part-time practice as radiologists.

The point to emphasise here is that the determination of professional negligence by a radiologist ultimately rests with the Court and not with expert witnesses. Yet that determination is bound to be informed by the opinions of experts in the field of radiology, which are often in conflict, as it often happens in practice. In that event the Court's determination must depend on an analysis of the cogency of the underlying reasoning which led the experts to their conflicting opinions. In other words, what is required in the evaluation of the evidence of radiologists as expert witnesses is to determine whether and to what extent their opinions advanced are founded on logical reasoning.

Measures to eliminate bias:

Standard of care in lawsuits is often defined by using medical expert witnesses who are remunerated. However, a study showed that 100% of radiologists who were blinded to the final patient outcome or lawsuit did not concur with the report given by the expert witness (5). This therefore suggests that using radiologists who are unaware of the clinical outcome may be a more objective way of assessing legal cases (5,16). Various steps can be taken to try and minimize the above bias. These steps include not disclosing that the case is a medicolegal case, submitting a control case, three arbitrary cases, a case of a similar type and submitting numerous cases simultaneously to mimic day-to-day radiological work (5). To further eliminate bias, the panel of radiologists interpreting these should be unaware of the reason for litigation and the patient outcome. These commensurate reports would form the expert opinion, and would determine if the finding is perceivable. The significance of the finding should be determined in this manner as well (5).

An article from Australia recommends implementation of similar protocols when there is disagreement amongst expert witnesses in lawsuits involving mammography (17). For example, if one expert feels that a lesion was clearly visible (radiological miss) and another expert feels that the lesion was radiologically occult (interval cancer having developed between visits). Using a panel of 5 expert readers blinded to the case and reading the case together with

nine others, can aid to reduce bias. Taking the opinion of the majority of experts in the panel would represent what is expected of the reasonable radiologist.

1.1.9 Recommendations for Radiological Practice to Minimise Litigation

Radiologists need to heighten their awareness of the cognitive and psychological mechanisms that occur when reporting radiological examinations. Unfortunately in reality, training programs teach these processes poorly. Therefore, educating our radiology peers, the legal fraternity and the public about the challenges of radiological interpretation is essential.

Publishing the number of errors made in everyday radiological practice may give the public some insight into the inherent routine errors made (7).

There is evidence that allegations of negligence can be avoided by the use of a robust quality control mechanism. It has been recommended that radiologists create a revalidation archive, comprising of peer review of their reports over time. These would form a database of cases that have been verified demonstrating the radiologist's maintenance of knowledge and skills. Many radiologists already take part in peer review, however not all formalize the results of the peer review. With regard to breast screening, national audit programs are in place in England. External peer review is also a mechanism for avoiding allegations of collaboration between colleagues (7).

A mechanism for revalidation started in 2012 through the General Medical Council in the United Kingdom and peer review of radiology reports is soon to become compulsory. The majority of radiologists are expected to be performing at an average level and where radiologists are shown to be performing inadequately they will be forced to undergo retraining or be placed into alternative areas. Discrepancy in the level of error rate amongst specialities is also expected, with mammography expected to have a higher error rate (7).

Radiologists themselves must carefully take note of the information a patient provides prior to performing a study. A signed informed consent form should also be obtained (18). This is particularly important in cases where contrast will be administered or procedures that are invasive. Patients must be monitored during the examination and even after its completion and clinicians must be informed of any problems encountered (2). Communication between clinician and the radiologist is crucial and should be appropriately timed and of sufficient detail (3,19). Radiologists must focus on careful technique, and give appropriate attention to equipment and the environment, particularly with regard to safety features, especially when they have a role as employer or director (2).

The relationship between the radiologist and the patient should be carefully looked after. This is especially important because many malpractice lawsuits stem from patient dissatisfaction. This dissatisfaction can be due to incomplete communication of the possible diagnostic outcomes and final results. Unfortunately, this component of a radiologist's duty is increasingly ignored as the

need for “productivity” increases in various radiology departments (2).

Based on the judgment of the Supreme Court of Appeal in *Kruger v Coetzee* 1966 (2) SA 428 (A) at 430E-F, a defendant radiologist will be held to be negligent if (i) a reasonable person in the position of a defendant radiologist would have foreseen the reasonable possibility of his conduct injuring a patient and causing loss; (ii) a reasonable person in the position of a defendant radiologist would have taken reasonable steps to guard against that loss; and (iii) a defendant radiologist failed to take those steps. Therefore, if radiologists want to persuade others that they are not negligent, then there has to be evidence that they use cautious and meticulous methods. This underlines the importance of well-written reports and transparent publication of evidence for peers and patients to read (7).

In this research paper we aim to quantify and characterize the process of litigation involving radiologists and radiology in general that is taking place in South Africa, through retrospective analysis of legal reports.

1.2 Aims and Objectives

1.2.1 Aim

To determine the number of legal cases involving radiologic personnel and radiological investigations in South Africa and to assess the frequency of citing of radiological personnel or imaging modalities within the law reports.

1.2.2 Objectives

1. To determine the number of legal cases over a period of 10 years involving radiologic personnel and radiological investigations in South Africa, and to determine what proportion these form of all legal cases.
2. To determine how many cases involved radiologists as defendants or expert witnesses.
3. To identify legal cases which involve medical imaging studies and characterise the type of imaging study.
4. To assess the degree of involvement of radiology investigations according to the frequency that these were mentioned, using a ‘citation’ score.

2. Materials and Methods

2.1 Study Design

A retrospective descriptive data analysis was performed of South African law reports accessed from The Southern African Legal Information Institute (SAFLII) website (URL: http://www.saflii.org/). The time period evaluated was from the year 2001 to 2010.

2.2 Study Sample

The search engine attached to this website was used by systematically searching with keywords relating to radiologists, radiographers and imaging modalities (see Appendix B) to yield a database of case judgements that involved radiology personnel, equipment or imaging investigations. This number was then divided by the total number of cases on the SAFLII website to determine the proportion that cases involving radiology make up.

The yielded case judgements were then searched individually and the automatically highlighted keywords were collected and categorised according to:

- Whether the radiologist was the defendant or the expert witness.
- The type of imaging study referred to.
- Frequency of citing of the above in each report and overall.

2.3 Inclusion Criteria

- Law reports yielded from SAFLII website using predefined keywords were included (see Appendix B for keywords)

2.4 Exclusion Criteria

- All Acts of Government.
- Government Gazettes.
- Illegible law reports (where they were hand-written and scanned).
- Duplicated or incomplete law reports.
- Law reports from outside South Africa.

2.5 Data analysis

Data handling and statistics:

Data was used to calculate frequencies and proportions. A citation frequency score (i.e. the number of times the radiology personnel, investigation or equipment was cited in each report and overall) was used as an objective (but arbitrary) indicator of the importance of radiology in the case.

Sample Size:

This was limited by the available archived data to 10 years of cases reported.

2.6 Statistical analysis

Results were expressed as frequencies and percentages for all categorical variables and for the continuous variable (citation score).

3. Results

A total of 114 case reports were extracted using the search terms. The SAFLII website contained 23 800 reports in total (as per communication from SAFLII). The 114 medicolegal reports involving radiology therefore represent 0.5 % of the total SAFLII reports with an average of 11.4 cases per year.

Of the 114 case reports, 27 (23.7%) reports contained the word ‘radiologist’ and only 4 (3.5%) reports contained the word ‘radiographer’. No case report contained both the words ‘radiologist’ and ‘radiographer’ simultaneously. Of the extracted law reports, 28 had radiologists as expert witnesses and/or involved in providing expert reports (24.6%). Only 2 cases involved the radiologist as the appellant or defendant (1.8%). There were a total of 5 cost orders awarded, with 2 being in favour of the defendant.

Pertaining to imaging modalities, a total of 74 (64.9%) reports contained the word ‘X-Ray’ whereas CT was contained in 22 (19.3%) reports (i.e. cases with either the search term ‘CT Scan’ or ‘CAT Scan’). Reports containing ‘MRI’ were 13 (11.4%) in total. The unqualified term ‘scan’ was contained in 3 (2.6%) cases. A total of 5 (4.4%) case reports contained the term ultrasound. These findings are summarised adjacent to the score calculated for each category in table 3.1.

Table 3.1: Summary of staff and modality mentions and citation scores in South African medicolegal case reports on SAFLII 2001 - 2010

Staff / Modality	**Instances = number of reports containing the term (%), *n* = 114**	**Total Citation Score = sum of individual mentions from within all case reports (range)**	**Average Citation Score = number of individual mentions of the term / number of reports containing the term**
Staff			
Radiologist	27 (23.7%)	87 (1-26)	3.2 (87/27)
Radiographer	4 (3.5%)	17 (1-8)	4.25 (17/4)
Total for staff	**31 (27.2%)**	**104 (1-26)**	**3.3 (104/31)**
Modality			
X-Ray	**74** (64.9%)	**304** (1-112)	**4.1 (304/74)**
Ultrasound	5 (4.4%)	**41** (1-35)	**8.2 (41/5)**
CT (CAT Scan + CT)	**22** (19.3%)	**34** (1-4)	1.6 (34/22)
MRI	13 (11.4%)	26 (1-9)	2 (26/13)
Mammography	1 (0.9%)	1 (1)	1 (1/1)
Scan	3 (2.6%)	**60** (9-36)	20 (60/3)
Total for imaging modality		**466 (1-112)**	**4.1 (466/114)**

4. Discussion

4.1 Results in context:

4.1.1 The number of legal cases within 10 years involving radiologic personnel and radiological investigations in South Africa:

Of the 23 800 cases available on the SAFLII website over 10 years of reporting (personal communication with SAFLII), only 114 medicolegal cases involving radiological personnel or imaging modalities could be found. This represents 0.5% of all cases available on SAFLII (114/23 800). The average number of radiological cases involving radiology per year calculates to 11.4 cases per annum. The annual percentage in South Africa calculated at 0.005% (11/23800) is much smaller than the percentage quoted in Italy and other European countries where the yearly incidence ranges between 3.6 to 12.6% (20).

This study found that only 27 cases involved a radiologist (2.7 per year) and in the majority of these the radiologists were involved as expert witnesses. Only 2 cases involved the radiologist as the appellant or defendant. This is contrary to what was noted in the USA where radiology has the second highest risk of litigation. In the USA diagnostic radiology departments are included in the departments with the highest number of claims because of oversights in diagnosis (1).

There are many reasons that could explain these trends in South Africa:

The relatively small number of radiologists accused could be a reflection of our population's perception the radiologist's place in the medical team and his/her responsibility for any failures in the system involved in their management. The small number may also be reflective of our population demographics, with particular reference to the poor socioeconomic status of the majority of our population who may be unaware of their rights or their access to legal help.

As the trend changes and a larger educated middle class population emerges, firmer demands and expectations may emerge. Another practical consideration is that medicolegal cases may also be settled out of court more frequently than those eventually reaching court. It is difficult to obtain data from various medical insurance companies to assess the number of cases settled out of court due to concerns of confidentiality of their clientele. This difficulty was not unique to this study; it was also noted in Cook County where they performed a study over a 20-year-period. They reviewed each lawsuit listing in the *Verdict Reporter* and were also unable to gain access to exact details of the final outcome of the lawsuits (21).

In our country, the very small number of radiologists sued for malpractice does not lend itself to stratification.

4.1.2 The frequency of citing of radiological personnel or imaging modalities in the law reports:

Of the total reports included, 27 cases (23.7% of total) involved radiologists and only 4 cases (3.5 of total) involved radiographers. This probably reflects the relative expertise attributed to each profession with regard to diagnostic care.

Using the scoring system as the reference, mammography remarkably does not represent a large proportion of medicolegal cases in South Africa, compared to what was seen in a study performed in England. Over a 10-year-period (1995/6 to 2005/6) it was demonstrated in England that a delayed or missed diagnosis of a breast tumour was the primary pathological cause of litigation against radiologists (2). This disparity may either reflect that our South African patients do not see the link between the diagnosis of cancer and the radiologist duty to detect the cancer on mammography. It may also reflect the demographics of our population i.e. the cancer is already quite visible at first presentation because of non-existent screening programs. It is interesting to also note that in the Cook County study, the number of medicolegal cases for alleged missed breast cancer showed a remarkable increase over time. It was noted that whereas only 4 cases were recorded between 1975-1979, 53 cases were recorded between 1990-1994 (21). Follow up studies will need to be done in South Africa to develop this type of longitudinal statistic.

X-rays represented 65% of the total modalities in our study. This may reflect our current clinical and radiology practice, as X-rays are more readily available than

other imaging modalities and are commonly utilised in clinical practice. This increases the likelihood of medicolegal cases involving X-rays.

Of note is that CT is on the ascendancy, both because of increased use and because of the better diagnostic information provided for supporting medicolegal cases. MRI is also on the increase for supporting medical litigation because of its excellent imaging detail. MRI in children can be requested for specific medicolegal cases because the modality does not carry a radiation burden.

4.1.3 Complaints against Radiologists logged at HPCSA

The HPCSA (Health Professionals Council of South Africa) is the governing body for all medical practitioners in South Africa and complaints against doctors may be channelled to this body, which then has the right to revoke the practitioner's licence to practice or impose other punishment. This is not a medicolegal process however, and takes the form of disciplinary action. The most complaints logged against Radiologists registered with HPCSA reportedly relate to competence, followed by failure to pay fees, incorrect accounts and fraud (personal communication with the HPCSA). These are summarised for the period 2002 - 2012 in Table 4.1 but do not form part of this research into medical litigation.

Table 4.1 Summary of Complaints against Radiologists logged at HPCSA 2002 - 2012

Sum of Count			Yr_Received											
Reg_Code	Speciality	Complaint_Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Grand Total
MP	DIAGNOSTIC RADIOLOGY	ACCOUNTS - INCORRECT ETC		1	2		2	2	1	4	4	2	8	26
		ADVERTISING									2			2
		BAD COMMUNICATION		1	1	1		1		1	3	1		9
		BREACH OF CONTRACT						1						1
		CERTIFICATES			1									1
		COMPETENCE	6	5	7	7	10	4	9	8	8	2	4	70
		CONSULTING ROOMS		1										1
		CONTRAVENTION ACT 56/1974	3				1					3		7
		FEES	1		1	1	1		5	6	7	10	3	35
		FRAUD					2			8		1		11
		INSUFFICIENT CARE/TREATMENT		2										2
		KICK BACKS	1	2			4			1				8
		OPERATION WITHOUT CONSENT		3	1									4
		REFUSE ASSISTANCE					1			3	1	1	1	7
		REPORTS				1			2		3		3	9
		REPUTATION COLLEAGUE	1											1
		RULES SPEC CONTRAVENE				2								2
		SECRECY					1						1	2
		UNREGISTERED				2								2
		(blank)									2			2
	DIAGNOSTIC RADIOLOGY Total		12	15	13	14	22	8	17	31	30	20	20	202
MP Total			12	15	13	14	22	8	17	31	30	20	20	202
Grand Total			12	15	13	14	22	8	17	31	30	20	20	202

4.2 Current applications

The results of this research give us an idea of the activity of medicolegal litigation involving radiologists in South Africa, in terms of cases eventually reaching court. Medicolegal litigation appears to involve radiology mainly in supporting the litigation against other practitioners.

We as radiologists need to understand that it is only a matter of time before patients realise that the responsibility for their suboptimal patient care is shared between the referring physician and the radiologist. It is important to note that radiologists can also be held responsible for missing pathology when performing 'screening' procedures e.g. mammography, hip ultrasound, obstetric ultrasound.

Radiologists need to learn to carefully prepare radiological reports realizing that in future, not only will more and more radiologists be involved as expert witnesses, but also that radiological reports will continue to be submitted and used as evidence. We, as radiologists, need to also track trends related to our use of equipment and modify training platforms not only in the skill of report writing but also with regard to sub-speciality expertise.

4.3 Limitations of the current study

This research presents data only of legal cases that have gone to court and been published as law reports on a specific website. It is very difficult to obtain law reports of cases settled out of court. In addition the courts may mark a case as 'not reportable' and hence not archive it. Such cases would not be found on electronic databases or bound copies – i.e. information is lost.

The manner in which cases are archived also poses a limitation where some cases can be seen at High Court and then again on appeal or taken to Supreme Court of Appeal and Constitutional court. Hence the same case would be duplicated.

For this research an artificially generated 'citation' score was used, based on the number of citations of specific key words, as there is no real way to determine how important the radiology played in the court decision. An assumption was made that a higher number of citations equated to an increased level of importance that the radiology played in the litigation.

Another limitation to be considered is the search terms used were phrased in English, which may have excluded those written in other languages e.g. Afrikaans.

Because of the limited numbers yielded as data it is not clear how to advise radiologists to behave – we can only show the current trend and extrapolate that this will increase, as patients become more sophisticated/educated, as international trends filter into local behaviour and into the discipline of radiology and as the radiologist role in the medical team evolves.

One recommendation is to institute sub-specialist facilities and posts where expert radiologists perform the procedures and reporting for their colleagues as well as train more subspecialists. Furthermore it is imperative that there be motivation for report writing to be part of specialist training in radiology and for radiologists to understand that radiology reports are legal documents.

4.4 Future applications

Further research has to be done in terms of medicolegal litigation in South Africa in order to define accurate trends and current practice. For this more extensive and accurate data is required. This would entail the participation of malpractice insurers, review of complete cases (not just the summaries of those reported) and participation of the courts by archiving their data more rigorously.

Radiology training programmes need to also incorporate the medicolegal aspect of clinical practise in their training programmes to equip radiologists for practice locally and abroad. This must include the introduction of subspeciality areas, the

application of ‘morbidity and mortality’ meetings for trainees to identify the effects of their diagnostic errors and specific training in legalese report writing. These programs need to be audited and the results should be published.

5. Conclusion

The number of legal cases involving radiologic personnel and radiological investigations in South Africa that have been documented on the SAFLII database for the 10 years studied is relatively small (114), and makes up only 0.5% of all the legal cases reported on the site. Very few radiologists have been the defendants in medicolegal suits, yet radiologists were involved in nearly a quarter of all radiology medicolegal reports, predominantly providing expert opinion and reports.

The frequency of citing of radiological imaging modalities in the law reports was assessed using an artificially generated score. These reveal that in addition to being the commonest imaging investigation to feature in medicolegal reports (in over two thirds), plain X-rays also had the highest citation scores. This is not surprising considering the availability of this modality in South Africa. More concerning is the emergence of CT scanning in medicolegal proceedings, featuring in 20% of medicolegal reports on the SAFLII database, with the second highest citation score, followed by MRI. This is important firstly because this is considered advanced technology, that is not as widely available as plain radiographs in South Africa and secondly because CT has the highest radiation dose with a significant public awareness internationally. Mammography, in contrast to international trends, featured very low in this analysis. Trends in medicolegal proceedings are difficult to predict but in the scenario of a growing educated middle class population, South African radiologists may not only be called on to offer expert opinion in more cases, they may also be held responsible for their imaging procedures and reports in the future. This should motivate the

radiological community to concentrate on their reporting skills, to train new radiologists to report imaging with a concise method and to gain expertise in their chosen field through subspecialisation.

Appendix A: Ethics Clearance Certificate

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Ref: W-CJ-120928-1 (Duplicate) 14/03/2014

TO WHOM IT MAY CONCERN:

Waiver: This certifies that the following research does not require clearance from the Human Research Ethics Committee (Medical).

Investigator: **Dr A Segwe.**

Project title: **Litigation and radiology: medicolegal cases involving radiology in South Africa.**

Reason: This is a review and analysis of medicolegal cases in the public domain, no humans are involved.

UNIVERSITY OF THE WITWATERSRAND
PROF PE CLEATON - JONES
HREC (MEDICAL)
2014 -03- 14
JOHANNESBURG

Professor Peter Cleaton-Jones

Chair: Human Research Ethics Committee (Medical)

Copy - HREC(Medical) Secretariat : Anisa Keshav, Zanele Ndlovu.

Appendix B: List of Search Terms used on SAFLII

Radiologist

Radiographer

X-ray

CT Scan

Cat Scan

CT

MRI

Mammography

Ultrasound

Sonar

Scan

Appendix C: Description of Legal Concepts

The obligation to inform the patient

As the trend changes and a larger educated middle class population emerges, firmer demands and expectations may emerge. For example, local radiologists may not only be called on to offer expert opinion in more cases, they may also be held responsible for their imaging procedures and reports more often in the future. However, the current lack of sophistication and the vulnerability by majority of patients in both the public and private sectors do not mean that such patient can be simply ignored by radiologists. They are entitled to be treated in the same way as patients who can afford private medical assistance. That is part of their dignity and rights as patients. That means that they should be fully informed and should be as involved as possible in their own treatment. This is according to the judgment of the Supreme Court of Appeal in *Premier, Kwazulu-Natal v Sonny and Another* 2011 (3) SA 424 (SCA) at para.[33] where it was held that:

"*In our country poverty and a lack of literacy abound. Masses of our people attend public health facilities. Their lack of sophistication and the vulnerability that accompanies poverty are factors that cannot be ignored. They are entitled to be treated in the same way as patients who can afford private medical assistance. That means that they should be fully informed and should be as involved as possible in their own treatment. This does not require a drain on public resource. … What is required is a public health delivery system that recognises the dignity and rights of those who are compelled to use its facilities. It is that basic sensitivity that the Constitution demands*."

Required standard of care, skill and diligence

In terms of the law, a patient is entitled to be treated by any radiologist with due and proper care and skill. Based on the judgments of the Supreme Court of Appeal in *Mitchell v Dixon* 1914 AD at 525, *Van Wyk v Lewis* 1924 AD 438 at 444 and 448 and *Charter Hi (Pty) Ltd and Others v Minister of Transport* 2011 JDR 0545 (SCA) 1 at para.[32], the expected standard of of care, skill and diligence that must be exhibited by a radiologist is the general level of care, skill and diligence possessed and exercised by professionals in the field of radiology. The more specialised a radiologist is, the greater the general level of expected care and skill will be. In other words, the negligence standard of the reasonable person is adjusted upwards to that of the reasonable expert in the field of radiology. However, the radiologist possessed of (or professing to be possessed of) specialized skills is not required to display the highest possible degree of professional skill. He or she is only required to display the general level of skill and diligence possessed and exercised at the time by the members of the branch of the radiology profession to which the radiologist belongs. In other words, a radiologist will not be held negligent simply because something went wrong. The test is whether or not a radiologist's conduct fell below the standard of a reasonably skilled/competent and careful practitioner in the particular field and in similar circumstances. If the error is one that a reasonably competent radiologist might have made, it will not amount to negligence. In deciding what is reasonable the Court will have regard to the general level of skill, care and diligence possessed and exercised at the time by *the members of the branch*

of the profession to which the radiologist belongs. The evidence of qualified radiologists is of the greatest assistance in estimating that level. But the decision of what is reasonable under the circumstances is for the Court; it will pay high regard to the views of the profession, but it is not bound to adopt them.

According to the Supreme Court of Appeal judgements in *Kruger v Coetzee* 1966 (2) SA 428 (A) at 430E-F and *Blyth v Van den Heever* 1980 (1) SA 191 (A) at 195E-F, when a radiologist is sued for failure to exercise the requisite care, skill and diligence which he/she is expected to exercise when attending to the patient, the case will resolve itself into three main questions:

a) what factually was the cause of the ultimate condition of the patient complained of;

b) did negligence on the part of the radiologist cause or materially contribute to this condition in the sense that the radiologist by the exercise of reasonable professional care and skill could have prevented it from developing; and

c) if liability on the part of the radiologist be established, what amount should be awarded to the patient by way of damages?

These questions are typically dealt with in the order in which they are posed.

Radiologists as expert witnesses

Based on the judgment of the Supreme Court of Appeal in *Michael & another v Linksfield Park Clinic (Pty) Ltd & another* 2001 (3) SA 1188 (SCA) paras.[35]-[40], the role of radiologists as expert witnesses can be summarised as follows:

Although it is often been said in South African cases that the governing test for professional negligence applicable to medical practitioners, which includes radiologists, is the standard of conduct of the reasonable practitioner in the particular professional field, that criterion is not always itself a helpful guide to finding the answer, especially where the Court has to establish the conduct and views of the notional reasonable radiologist without a collective or representative opinion. This is especially so where the primary function of the experts called is to teach, with the opportunity only for part-time practice as radiologists.

The point to emphasise here is that, the determination of professional negligence by a radiologist ultimately rests with the Court and not with expert witnesses. Yet that determination is bound to be informed by the opinions of experts in the field of radiology, which are often in conflict, as it often happens in practice. In that event the Court's determination must depend on an analysis of the cogency of the underlying reasoning which led the experts to their conflicting opinions. In other words, what is required in the evaluation of the evidence of a radiologist as expert witnesses is to determine whether and to what extent their opinions advanced are founded on logical reasoning.

The focus on the determination of whether and to what extent the opinions of radiologists as expert witnesses are founded on logical reasoning means:

a) The Court is not bound to absolve a defendant radiologist from liability for allegedly negligent medical treatment or diagnosis just because evidence of expert opinion, albeit genuinely held, is that the treatment or diagnosis in issue accorded with sound medical practice. The Court must be satisfied that such opinion has a logical basis, in other words that the expert radiologist has considered comparative risks and benefits and has reached a defensible conclusion.

b) If a body of professional opinion by radiologists overlooks an obvious risk which could have been guarded against it, will not be reasonable, even if almost universally held.

c) A defendant radiologist can properly be held liable, despite the support of a body of professional opinion by fellow radiologists sanctioning the conduct in issue, if that body of opinion is not capable of withstanding logical analysis and is therefore not reasonable. However, it will very seldom be right to conclude that views genuinely held by a competent expert radiologist are unreasonable. The assessment of medical risks and benefits is a matter of clinical judgment which the Court would not normally be able to make without expert evidence and it would be wrong to decide a case by simple preference where there are conflicting views on either side, both capable of logical support. Only where expert opinion by a radiologist cannot be logically supported at all will it fail to provide the benchmark by reference to which the defendant radiologist's conduct falls to be assessed.

d) Finally, it must be borne in mind that radiologists, as expert scientific witnesses, do tend to assess likelihood in terms of scientific certainty. However, the Court may in practice invite radiologists acting as expert witnesses to express the prospects of an event's occurrence, as far as they possibly could, in terms of more practical assistance to the forensic assessment of probability, for example, as a greater or lesser than fifty per cent chance and so on. This essential difference between the scientific and the judicial measure of proof. In other words, the Court will not in practice apply to the expert evidence of a radiologist the standards which the expert radiologist himself or herself will apply to the question whether a particular thesis has been proved or disproved - instead of assessing, as a Court must do, where the balance of probabilities lies on a review of the whole of the evidence.

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