Professional Norms Regarding How Radiologists Handle Incidental Findings

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The author reviews the dilemmas posed by incidental radiologic findings and provides an analysis of factors that underlie how radiologists handle them. Particular attention is paid to professional standards that mediate clinical decision making and communication in the setting of risk. The author concludes that individual radiologists should report the incidental findings they detect and use existing evidence-based recommendations when possible. Such recommendations, however, face their own challenge in maintaining consistency with norms around risk-related decision making in other clinical realms.

Key Words: Incidental findings, practice guidelines, recommendations, incidentaloma, ethics

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INTRODUCTION

Incidental radiologic findings are commonplace in research and clinical practice. With the dramatic rise in cross-sectional imaging, radiologists and nonradiologists are finding incidental findings increasingly problematic. In this paper, I describe the professional norms that underlie radiologists' management of incidental radiologic findings in the clinical arena. First, I briefly review the general scope of incidental findings in radiology and why they are a problem. Second, I discuss why radiologists diagnose incidental findings and the norms that underlie the practice. Finally, I argue that radiologists' actions regarding incidental findings ultimately reflect conflicting norms that pervade modern medical culture.

THE SCOPE

Incidental findings have long been a fact of clinical radiology, regardless of imaging modality. They are commonly diagnosed more frequently than the diagnostic entities for which studies are primarily targeted. In one study of CT angiography for pulmonary embolism, for example, incidental findings requiring follow-up were nearly 3 times more common than emboli [1]. It is interesting to note that incidental findings have changed disease incidence. Because of the increasing use of thyroid ultrasound and the high rate of incidental nodules, thyroid cancer incidence more than doubled over 30 years [2,3]. Similarly, a 61% increased incidence of renal cell carcinomas has been attributed to their incidental detection on CT scans performed for other reasons [4]. As these examples illustrate, incidental findings have become substantially more prevalent with the increasing use of cross-sectional imaging, particularly CT [4-6].

THE PROBLEM

Incidental findings are a challenging problem for radiologists, treating physicians, and patients. The potential harms to patients are multifaceted. Some patients may experience considerable harm from clinically important incidental findings that go unrecognized or unreported. Even when likely benign, unreported incidental findings may create confusion and anxiety when a radiologist encounters such a finding for a particular patient on new study, but no report of the finding exists for that patient on a similar past study. Patients may be harmed by the report of indeterminate incidental findings that lead to a "mega-workup" but eventually prove benign [4,5,7]. Most vexing, perhaps, are common incidentally diagnosed cancers, such as thyroid papillary and renal cell cancer, that are often quiescent [2-5, 7]. All of these possibilities in combination may outnumber, if not outweigh, incidental findings that lead to clinical benefit. Furthermore, management of incidental findings commonly entails additional tests and interventions that inflate costs, radiation exposure, and potential morbidity associated with medical care [3-11]. Dealing with these findings inevitably requires time, creates substantial anxiety for patients and providers, and distracts them from their primary concerns [3-11].

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Problems also arise because radiologists are inconsistent in how they handle incidental findings [12,13]. Inconsistent reporting patterns around incidental findings may exacerbate inconsistencies in documentation and clinical care already endemic to medicine [4,5,14]. Ultimately, this inconsistency may diminish radiologists' credibility and perceived value [11].

WHY DO RADIOLOGISTS CALL SO MANY INCIDENTAL FINDINGS?

Few data are available to suggest what drives clinical radiologists' handling of incidental findings. Some posit that radiologists' age and experience may be important factors [5]. Compared with their more experienced colleagues, younger radiologists are more likely to recommend additional imaging examinations [15]. An evaluation of radiologists' compliance with Fleischner Society recommendations, however, found that the least experienced radiologists (<5 years) had among the highest rates of concordance with the guidelines, perhaps because of greater familiarity with them [13]. Thus, it remains unclear how age and experience affect radiologists' handling of incidental findings.

Amid increased awareness about remunerative self-referral among both radiologists and nonradiologists [16-19], some outside radiology have questioned whether financial incentives may entice radiologists to diagnose incidental findings that require further imaging [11,20,21]. Without direct data on how financial incentives mediate radiologists' behaviors around incidental findings, one proxy may be the percentage of overall examinations that derive from radiologists' recommendations for additional imaging. One large study found that radiologists' direct recommendations for additional imaging accounted for about 5% of high-cost imaging examinations [22]. The proportion that related to incidental findings is unknown; nevertheless, financial rewards of diagnosing incidental findings would seem unlikely to account for a large proportion of radiologists' overall compensation. Although the possibility cannot be excluded, other factors likely contribute.

Concern for malpractice suits is commonly perceived as foremost among these other factors. Indeed, malpractice considerations surrounding incidental findings present a major dilemma for practicing radiologists. Radiologic judgment is fallible regarding the substantial overlap between what is and is not normal or benign. It is unknown how many clinically important incidental imaging findings go unreported. Retrospective studies reveal that up to 90% of diagnosed lung cancers and 75% of breast cancers were, in retrospect, visible—but not reported—on prior imaging [9,23]. The omission of visible findings that lie outside the normal spectrum may create a perception of sloppy or even negligent work. Furthermore, some plaintiffs' attorneys have effectively dismissed radiologists' prerogative to call findings benign. Plaintiffs have argued successfully that "benign" is a pathologic rather than radiologic diagnosis [9]. For any undiagnosed incidental finding that proves later to be clinically significant, the post hoc analysis is likely to be confounded by hindsight and outcome biases [9,23]. Skilled plaintiffs' lawyers are adept at exploiting jury members' susceptibility to these biases. Once introduced, such biases may be difficult to ignore, notwithstanding judicial instructions [9]. Many radiologists likely remain apprehensive about such matters, despite the fact that the actual probability of a radiologist's being sued for missing an incidental finding is very low and constitutes a tiny fraction of current lawsuits.

No data currently exist on how malpractice concerns affect radiologists' handling of incidental findings. Recent reports are mixed on how malpractice fears influence imaging examination ordering patterns of other physician groups. One recent survey of orthopedic surgeons demonstrated that malpractice fears underlie a sizable percentage of their requests for ultrasound, CT, and MRI examinations [24]. In contrast, a recent study of emergency department physicians found that malpractice fears were not associated with ordering behaviors for head CT scans [25]. Perhaps surprisingly, one study of radiologists' behaviors around error disclosure found that reluctance to make full disclosure did not correlate with malpractice concerns or experiences [26]. Thus, as with error disclosure, although malpractice liability may loom large for many radiologists who encounter incidental findings, still more factors likely influence how radiologists handle them.

Some of these factors are intrinsic to radiologic examinations and training. Despite the specificity of any provided clinical indication, many commonly ordered imaging studies are "large-bandwidth tests" that assess not for a single possibility or even a single organ but potentially the entire body. In essence, they represent the worst sort of screening examinations: low-sensitivity and low-specificity probes for disease in low-risk populations. This is well recognized for widely marketed CT screening studies [27].

It is less well recognized that many general radiologic examinations are also essentially screening examinations, despite the specificity of their clinical indications. Thousands of routine whole-spine imaging examinations, for example, are requested each year to assess for scoliosis. Like many clinical physicians who routinely use imaging, orthopedic surgeons ordering scoliosis films often do not need a radiologist's input about findings related to their primary clinical question. Yet, each examination spans the entire thorax and abdomen. Incidental findings are inevitable, provided enough patients. Knowing this, most radiologists perceive that their added value lies in detecting occasional abnormalities that may escape the treating physician's attention. Much radiologic training focuses on developing skills to step away from what im-

mediately grabs one's attention and to detect what lays elsewhere—an incidental mediastinal mass, for example, on a scoliosis film. It would be difficult, and dangerous, for radiologists to blunt these skills.

PROFESSIONAL NORMS REGARDING RISK-RELATED CLINICAL DECISION MAKING

Given that incidental findings are intrinsic by-products of radiologic practice and training, it would seem reasonable to ask individual radiologists to calibrate their sensitivities to reduce the number of reported indeterminate incidental findings. Herein lies a major conundrum: defining what the threshold should be for reporting any given radiologic finding or describing such a finding as benign. The professional norms governing this question are far from clear; indeed, they sometimes conflict.

The theoretical legal norm is that "the radiologist should act as would a reasonable radiologist under the same or similar circumstances" [23] (Berlin, interview). Review of case law regarding informed consent for radiologic risks might suggest that radiologists would be reasonably safe if they were to disclose items that they believe pose a 1% or greater risk for an important clinical outcome and not disclose risks under that threshold [28]. However, as a practical matter, little empirical rationale or precedent exists within clinical medicine to support any such threshold for risk-related decision making across the full range of possible disease conditions with their specific associated benefits and risks of preclinical detection.

Indeed, using any given risk level as a normative threshold for clinical decision making remains highly divisive in a society that remains reluctant to ration health care according to such a formula [29]. As a result, commonly used professional standards regarding risk-related decision making are variable and inconsistent. Pediatric management standards for febrile urinary tract infections sanction certain clinical actions only for risks above 1% [30]. Many other clinical practice norms allow wide latitude for decision making at probabilities far below 1%. In accordance with established practice norms, for example, women commonly choose to undergo amniocenteses for risks of fetal aneuploidy under 1 in 300 (0.33%) [31,32]. The Fleischner Society recommends against follow-up for incidental pulmonary nodules that carry a 0.2% malignancy risk and at least one follow-up for lesions above that threshold [33]. Despite considerable disagreement regarding standards for screening mammography between the ACR and the U.S. Preventive Services Task Force, both organizations adopt thresholds of under 1 in 1,000 (0.1%) to define how many at-risk women should be offered screening examinations to prevent 1 cancer death [34,35]. The groups' differences around this metric reflect divergent thresholds regarding the costs, morbidity, and anxiety associated with imaging findings that ultimately prove insignificant. These are among the very issues that complicate incidental radiologic findings.

In myriad such clinical examples, many patients will opt to test for low-probability conditions despite attendant costs, anxiety, and physical risks. Their decisions commonly receive strong support from their physicians. These decisions are dependent on multifactorial risk assessments that vary for each individual. The calculus may depend not only on the likelihood of a particular event but also the perceived severity and significance of the consequences. Such decisions are often informed by intractable personal values and unique experiences. Data are scant on patients' preferences, and societal consensus is elusive. Thus, radiologists are left with little firm normative grounding to establish practical risk thresholds for reporting or ignoring identified incidental findings.

PROFESSIONAL NORMS REGARDING RADIOLOGISTS' ROLE IN REPORTING INCIDENTAL FINDINGS

Do individual radiologists have ethical standing to make such risk-related decisions unilaterally on behalf of patients? Here, too, radiologists, like all physicians, are caught between competing standards regarding physicians' roles in patient decision making. Contemporary professional norms have moved strongly away from autocratic physician ownership of medical decisions. Beneficence today is best expressed not through paternalism but rather by enhancing autonomy through the promotion of patient-centered care and shared decision making [36-38]. Under prevailing norms, physicians ideally collaborate with patients to achieve decisions that are well informed and consonant with patients' values and preferences. This paradigm for the physician-patient relationship obligates physicians to discuss risk with patients in a straightforward and transparent manner, unless patients specify that they do not want the information. Such a role for physicians includes reporting and discussing low-risk findings.

Even strong proponents of the shared decision-making model caution that information provision may sometimes be detrimental. They point specifically to benign incidental radiologic findings to assert that, at times, potential harm to the patient of divulging extraneous information outweighs the benefit of providing it [39]. Perhaps, as some suggest, withholding information about a benign liver cyst on a CT scan will improve a patient's ability to focus on more important matters, such as a suspicious lung nodule [39]. In this case, constraining the patient's autonomy may optimize the patient's decision making.

Commonly, though, benign and low-risk incidental findings force physicians to navigate uncomfortably between competing demands of beneficence and autonomy. The information may be confusing or distressing, but many patients may nonetheless want it or act upon it.

Navigating such tempestuous waters may be a daunting challenge, particularly when some patients may sue (even if unsuccessfully) if a condition arises for which any preexisting indication of "increased risk" is not prospectively revealed. The challenge is confounded by imprecision in deriving benignity from probability. The actual risk for many incidental findings can often be described only in broader qualitative ranges. The beneficence of withholding information seems tenuous when many reasonable patients would refrain from action on "certainly benign" findings but will act decisively to further evaluate, or at least follow up, findings that are "probably benign." Therefore, to help patients make the best decisions for themselves regarding incidental findings, radiologists should explain their rationale for equivocal impressions, render confident reports for findings they consider inconsequential or benign, and refer to evidence-based recommendations whenever applicable.

CONCLUSIONS

Incidental radiologic findings are unavoidable. In a culture in which patient autonomy is valued, standards are inconsistent, and malpractice fears abound, little room exists for individual physicians to decide unilaterally whether reporting or disclosing incidental findings will result in better or worse decisions for any given patient. This is ultimately for patients to decide, in the absence of societally established parameters for how much health-related risk individuals should tolerate. Radiologists have limited ethical, if not practical, discretion to ignore incidental findings they identify on imaging studies, despite the knowledge that reporting many such findings may provide little benefit to patients and expose them to considerable psychological distress and physical harms.

Individuals' decisions regarding their health care are often more tethered to emotions and values than to available evidence. It is up to society to determine whether evidence-based thresholds should be established to place boundaries on such decisions. Nonetheless, radiologists retain a vital role in determining how incidental findings are managed and in educating patients and treating physicians about them. As with guidelines for mammographic screening, evidence-based recommendations regarding incidental radiologic findings may benefit radiologists, treating physicians, and patients alike by rigorously defining and quantifying the associated risks and by offering strategies for effective communication around them. Radiologists' adherence to such guidelines would enhance informed decision making and consistency in patient care, which are critically important objectives. Consistent adherence to these recommendations may also help reduce costs and morbidity, although deaths will sometimes result from recommendations for no action on incidental findings that prove clinically significant. This raises the bar for articulating coherent policies around incidental findings. Perhaps most important, the rationale, metrics, and risk tolerance thresholds underlying radiologic recommendations around incidental findings must be consistent with those for radiologic guidelines in other realms of risk-related clinical decision making, with any variability in calculus or conclusions cleanly explained, if the profession is to enlighten broader societal discourse over risk-related norms in health care.

TAKE-HOME POINTS

- Despite the potential harms, radiologists should report incidental imaging findings and frame reports to help patients make optimal decisions about them.
- Radiologists' recommendations around incidental findings fall within the larger context of clinical decision making in the setting of risk.
- Standards and practices regarding risk-related decision making in medicine are variable and inconsistent.
- Radiologists should adhere to evidence-based recommendations regarding incidental radiological findings, where available.
- Such recommendations should be consistent with radiologic guidelines addressing risk-related decision making in other clinical arenas.

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