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The Emotional Nature of Rescue Medicine Assessments

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Dr. Garrett opens his article with an eloquent description of a very emotional reaction: “Few situations capture attention and compel action, in medicine and elsewhere, like opportunities to rescue people in dire predicaments.” He goes on to explore, quite well in my opinion, why is it problematic and incomplete to consider the issue of whether genetic incidental findings should be returned to research participants solely from a ‘rescue’ perspective without addressing the broader social considerations. He does not, however, explicitly acknowledge the emotional nature of the rescue impulse. Emotion and reason have traditionally been conceptualized in ‘dual process theory’ as distinct and even competing faculties, with emotion being associated with flawed and irrational choices. The goal of much discourse has been to remove the impact of emotion from reasoning (reviewed in (Roeser, 2012) and (Brosch et al., 2013)). Research on the relationship between cognition and emotion, however, is making clear the interdependent and necessary relationship between emotional and cognitive processes (well-reviewed in (Brosch et al., 2013)). Acknowledging the emotional nature of rescue impulses expands Garrett’s argument by examining the impact, both constructive and destructive, of emotion on decision making around incidental findings in research. In this commentary, I will briefly review current research on emotion and cognitive processes and then apply this to the case of incidental findings in MRI research, which has even stronger parallels to the rescue paradigm than the issue of returning genetic results.

As Brosch et al note, Donald Hebb, an early and influential neuropsychologist, described man as “*the most emotional of all animals*, referring to the fact that the degree of emotionality increases across species with the development of more sophisticated nervous systems.” They theorize that emotions allow for more flexible and adaptable responding to circumstances by replacing reflexive responses with an emotional response that allows the organism to prepare to respond while further evaluating the situation (Brosch et al., 2013). Note that this is somewhat at odds with the lay experience of responding in an emotional manner, which is often perceived as a reflexive sort of responding, lacking reflection. Indeed, emotions do function to mobilize the organism for action by identifying motivationally relevant stimuli. If I am hungry and see my office mate’s lunch on his desk, the food will attract my attention as a motivationally relevant stimulus and will arouse desire in me. However, I am unlikely to reflexively consume my office mate’s lunch because my emotional reaction, while rightly drawing attention to an appropriate stimulus and creating

an urge to action, has also created a space in which I can evaluate my impulse to take my office mate's food. After my emotions have interacted with my cognitive systems to direct my attention to the available food on my office mate's desk, my emotions will continue to interact with other cognitive systems as I evaluate my options. Emotions will influence what memories I recall to consider in my decision. Higher social emotions will be called upon to help me appreciate the effect on my office mate if I should steal his food and the value of our relationship. The strength of my urge will vary with the direness of my situation. If I'm about to pass out from low blood sugar, the urge to snatch my office mate's food will be strong. If I'm just starting to get hungry, I will easily resist his food and go get my own lunch. After taking action, my emotions will evaluate the decision and affect how it gets remembered. I may feel guilty or embarrassed if I snatch his food or proud of myself if I take a more socially appropriate course of action. Further underscoring the importance of appropriate emotional input for day-to-day decision making, patients with damage to emotional regions of the brain can have essentially intact cognitive functioning but be unable to manage their everyday lives, repeatedly making disastrous financial and interpersonal decisions due to an inability to integrate appropriate emotional assessments into their decision making. Recognizing and acknowledging the role of emotions throughout the decision making process provides an important perspective for understanding the response to incidental findings in research.

Incidental findings in MRI research, unlike genetic incidental findings which indicate some future risk, can appear as alarming abnormalities in the scan of a seemingly healthy individual and raise the spectre of immediate risk. They typically elicit a response of, "Oh [*expletive of choice*]!!" from a researcher who notices one. This is quickly followed by an intense urge to "do something" for this poor, unsuspecting person who could die at any moment from this apparent [tumor, aneurysm, arteriovenous malformation, etc]. Emotional responses involving death are particularly strong; think of fear of flying. Asymptomatic participants have been sent straight to the emergency room when a potential finding is noted. This is the alerting function of emotions calling attention to something potentially important in the environment. It is very similar to noticing a drowning child. In keeping with the role of emotions in allowing time for deliberation, both responses should, however, be followed with further evaluation of the situation. Perhaps that child is filming a scene for a movie and only appears to be drowning, or is a competent swimmer playing an ill-advised practical joke, or is being used to lure an unsuspecting person into a trap. Further evaluation incorporating cognitive functions is warranted before 'jumping into the water'. A potentially serious incidental finding on an MRI scan, while admittedly alarming to the researcher finding one, is even more alarming to the participant being told he/she may have an abnormality in their brain. Foisting this information immediately onto the participant may help the researcher feel better, knowing he/she has 'done something', but may cause significant and possibly unnecessary anxiety in the participant. Numerous factors should be considered before deciding on a course of action. Is the researcher skilled enough at reading MRIs to be sure of what he/she is seeing? What is known about the potential finding in terms of possible benefits from early treatment versus risks of over treating?

The alarming nature of incidental findings strengthens the initial assumption the something must be done. We all know that a ruptured aneurysm can kill you. But how many of us know that most aneurysms remain asymptomatic for life (Chalouhi et al., 2011) and that the characteristics of those most likely to rupture are still under investigation? Do we know the risks of treating an aneurysm? MRI of the brain has not been evaluated as a screening test in healthy, asymptomatic individuals and several commentators have questioned the wisdom of treating it as one (Al-Shahi Salman et al., 2007; Komotar et al., 2008; Morris et al., 2009). The risks of bad screening tests, however, are well-known, ranging from risky and unnecessary treatment of abnormalities not destined to cause symptoms to robbing a person of healthy time by turning them into a patient before the pathological process would have done so but without increasing their chances of survival. Likely due to the level of alarm they cause and strength of the urge to ‘do something’ (i.e., the emotional response), serious consideration of whether it is actually beneficial to treat an incidental finding is a step in the decision making process that often gets overlooked.

Faced with uncertainty, emotions help us make a decision based on our anecdotal experience and on how we expect to feel if various outcomes unfold. In medicine, that tends to result in a ‘commission bias’ (Rogers, 2014). We tend to overtreat to avoid feeling that a bad outcome resulted from our not having done enough. In the research context, having accepted the assumption that detecting an incidental finding is beneficial, the conversation moves to how best to ensure all research participants get this ‘benefit’ without ever adequately considering if it is, indeed, a benefit. To underscore the emotional nature of this decision making process, consider the response to advertising aimed at healthy individuals. Analogous to Garrett’s ‘smoking and praying’ anecdote, commentators (sometimes the same ones who advocate for a researcher’s responsibility to actively seek out incidental findings) bemoan imagers who prey on the vulnerabilities of people worried about their health by trying to sell them MRI screening scans without evidence to support their usefulness and without properly informing them of the risks (Illes et al., 2004; O’Malley and Taylor, 2004). It’s the same scan; only the emotional context has changed.

Incidental findings rightfully elicit strong emotional reactions and create a duty to follow up based on ‘rescue’; a potentially dangerous finding that ‘jumps out’ at the researcher should not be ignored. However, not knowing if MRI is a helpful or harmful screening test, a duty to respond in the truly incidental situation does not imply a duty to actively search out anomalies in the scans of research participants. Should MRI turn out to be a useful screening test, we are back to Garrett’s analysis: is it a just distribution of resources to offer screening only to those who participate in research?

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References

- Al-Shahi Salman R, Whiteley WN, Warlow C. Screening using whole-body magnetic resonance imaging scanning: who wants an incidentaloma? *Journal of Medical Screening*. 2007; 14:2–4. [PubMed: 17362563]

- Brosch T, Scherer KR, Grandjean D, Sander D. The impact of emotion on perception, attention, memory, and decision-making. *Swiss Medical Weekly*. 2013; 143:w13786. [PubMed: 23740562]
- Chalouhi N, Dumont AS, Randazzo C, Tjoumakaris S, Gonzalez LF, Rosenwasser R, Jabbour P. Management of incidentally discovered intracranial vascular abnormalities. *Neurosurgical Focus*. 2011; 31:E1. [PubMed: 22133178]
- Illes J, Kann D, Karetsky K, Letourneau P, Raffin TA, Schraedley-Desmond P, Koenig BA, Atlas SW. Advertising, patient decision making, and self-referral for computed tomographic and magnetic resonance imaging. *Archives of Internal Medicine*. 2004; 164:2415–2419. [PubMed: 15596630]
- Komotar RJ, Starke RM, Connolly ES. Brain magnetic resonance imaging scans for asymptomatic patients: role in medical screening. *Mayo Clinic Proceedings*. 2008; 83:563–565. [PubMed: 18452687]
- Morris Z, Whiteley WN, Longstreth WT Jr, Weber F, Lee YC, Tsushima Y, Alphas H, Ladd SC, Warlow C, Wardlaw JM, Al-Shahi Salman R. Incidental findings on brain magnetic resonance imaging: systematic review and meta-analysis. *BMJ*. 2009; 339:b3016. [PubMed: 19687093]
- O'Malley PG, Taylor AJ. Unregulated direct-to-consumer marketing and self-referral for screening imaging services: a call to action. *Archives of Internal Medicine*. 2004; 164:2406–2408. [PubMed: 15596628]
- Roeser S. Risk communication, public engagement, and climate change: a role for emotions. *Risk Analysis*. 2012; 32:1033–1040. [PubMed: 22519693]
- Rogers WA. Avoiding the trap of overtreatment. *Medical Education*. 2014; 48:12–14. [PubMed: 24330111]