

Commentary

Toward a Moral Grounding of Pain Medicine: Consideration of Neuroscience, Reverence, Beneficence, and Autonomy

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In the Hippocratic tradition, medicine has historically and pragmatically been devoted to the alleviation of suffering, a major emphasis of which has focused upon the treatment of pain (1). In recognizing the relationship of pain to suffering, and the impact of suffering upon the human condition, the moral obligation to relieve pain has been viewed as a fundamental ethical canon of medicine. It has been posited that the guiding principles of pain medicine are respect for patients' autonomy and non-harm (2). While we acknowledge the importance of these principles, in this essay we argue that the underlying imperative to treat pain is grounded upon the maxim of beneficence (i. e. achieving the "good"), and that such benevolent care 1) arises from reverent consideration of other beings as sentient and painient, 2) recognizes the relationship between sentient beings, 3) must regard multiple dimensions of knowledge of self and others to appreciate the need for pain care, and 4) in attempting to render such good, axiomatically seeks to avoid and/or reduce harm(s).

In providing this account, we posit that treatment of pain must be afforded to all those who are capable of feeling and experiencing pain (i. e. the painient), and rely upon contemporary neuroscientific knowledge to compel and sustain a philosophy and ethics of pain care that must be provided to any and all patients (at all points throughout the lifespan), as moral subjects of medical responsibility. In this way, we argue for the concretized necessity and more expansive role for pain medicine.

PROGRESS IN SCIENCE AND MEDICINE: IMPLICATIONS FOR PAIN CARE

The imperative to address and treat pain and suffering has been a major incentive for the development of new medical techniques and technologies (3). To be sure, the advent of general and local anesthesia in the latter part of the nineteenth century represents a major success in relieving pain. However, the actual utility of such approaches have until quite recently been limited to operative and peri-operative theaters (4). The progressive use of interventional anesthesiology to afford non-operative analgesia represented an important stride in advancing the practical and moral responsibilities of pain care. Yet, as Blacksher notes, despite the validity and effectiveness of these (and other) approaches, "... pain of all sorts... [still] goes ... undertreated" (5).

There is no doubt that the technological advances of recent decades have increased medical awareness of, and the capability for, effective pain management. But as we move toward the close of the Congressionally-declared Decade of Pain Control and Research in the United States, and seek to expand pain medicine on a global scale, we must ask whether such progress has resulted in any meaningful impact upon the epidemiology of pain, and/or enabled an equally meaningful reconsideration of the issues surrounding patients' subjective pain experiences. In other words, have technological developments in medicine fostered an advanced consideration of what pain is, its universality as an experience, and the medical obligation to provide pain treatment in acknowledgment of such universality? Science and technology have allowed a more thorough understanding of neural systems, pain, brain-mind, and concepts of "self," and we are forced to confront the burdens, as well as the benefits, that arise from the use of such knowledge and technology.

Scientific advancements cannot be divorced from the responsibilities to use these developments and information in ways that are both technically right and morally sound (6-8). We opine that there is a close relation between developments in scientific technology and the potential to both induce and relieve pain and suffering. As medical technology is being increasingly used to sustain or prolong life in pre-natal, neo-natal, pediatric, adult, and geriatric patients, we must consider what we know of persons' existential experience at each of these points in the lifespan. We cannot "know" what another person feels, only what is related about their first-person experiences (which we envision relative to our own) (9). In this way, we cannot "feel" another being's pain, as we cannot know what it is like to be an "other" (9-11). In light of this, we emphatically cannot know what it is like to be a pre-nate, neonate, severely demented, or vegetative individual, as we cannot relate these states to our own first-person experience, nor can such states be directly communicated to us (12).

STRENGTHS AND LIMITATIONS OF THE NEUROCENTRIC APPROACH

At best, we must use some objective method to explain the putative capacity for experience in these states, and whether sentience is possible or what characteristics it may assume. Current neuroscience affords

the most complete account of "how" the sensorium is assembled into perceptions, how brain gives rise to mind, and "what" is necessary for, and constitutes that nature of, consciousness and the self. Yet neuroscientific knowledge informs that the relationship between brain, mind, and subjective self is not linear or wholly deterministic, and we must recognize the limits of neuroscientific understanding (13-15). As a matter of fact, we really do not know how much brain substrate is required to evoke mind and a sense of self (16). Even if we employ all of the possibilities offered by contemporary neuroscience, at best we are left to consider the adage that if some (non-vestigial) structure is present (e. g. some viable network component of the neural substrate) then the function (e. g. pain, cognition, mentation, etc.) is likely.

In this way, we must acknowledge that if the organism has the (neural) capacity to feel pain, then it is probable that it does, and therefore we are obligated to address and treat such pain (17,18). Our knowledge of the nervous systems of various organisms (and of the human organism at various stages and states of existence) allows, or perhaps more accurately compels, consideration that particular organisms can feel pain. Therefore, in those situations in which direct communication of an organism's pain is not possible, we must posit that it is the organism's capacity to feel pain that sustains (our third person belief) that pain is experienced (in the absence of any mitigating influences).

Neuroscientific knowledge informs us what organisms have the capacity to be painient, however, epistemic and philosophical orientations give rise to particular assumptions about the existential and/or experiential nature of pain (19,20). The conundrum of objective appreciation of pain is complicated by the fact that no 2 nervous systems are structurally or functionally identical (21). In light of this, no experience including pain (as a sensory event to the most intricate cognition) can ever be entirely the same in any 2 organisms (22). So in reality, neuroscience informs that pain can (and likely does) occur in any being with the requisite neuroanatomy and physiology to sustain this process. Is this neuroscientific orientation sufficient to ground an overarching need to treat pain? Because we scientifically know that something (negative) occurs, does that offer complete reason to seek to rectify this occurrence? We argue that while neuroscientific appreciation of the fact(s) of pain occurring in various organisms is necessary to initiate and direct medical

approaches to pain relief, such theoretical knowledge does not sufficiently describe or sustain the moral imperatives for such care.

Thus, while a neuroscientific approach to pain may allow for an objective understanding of the function of various elements in a hierarchical neuraxis, and may even allow for a conceptualization of the cognitive self and the uniqueness of the individual, it cannot depict or reveal the experience of pain in another being. The sophisticated technology of modern medicine remains relatively impotent to define, describe, or communicate the first-person phenomenon of pain, which is subjective and is refractory to completely objective assessment (23,24). The depth of this subjectivity is such that pain often eludes even semantic description; frequently, language must resort to metaphor to explain the experience of pain (23-26). Might this elusiveness be the impetus that drives the progressive specialization of pain medicine?

Herein lies the paradox. The more we know about pain, the more enigmatic it becomes; our understanding of the neural functions of the very young, obtunded, and very old have afforded new insights into the need to develop more effective pain therapeutics in these patients, but the technological imperatives of much of contemporary society (including science and medicine) have given rise to a consumerist mindset and have commodified much of medical practice (27). This has led to both a decrease in multi-disciplinary pain care, and the inequitable, restricted provision of pain treatment, despite the (pragmatic and ethical) recognition that it is necessary to provide such care more broadly and justly (28-30). Therefore, it seems that neuroscientific understanding, while solidifying "that" and "how" pain must be treated, must be wedded to moral consideration in order to determine "why" care must be rendered as completely as possible to all who are painient, in order to most ethically enable, empower, and enact pain medicine as an individual and social good.

Just as the imperative to ameliorate pain has been present throughout much of the history of medicine, the nature, extent, and character of pain care has been equally prominent as a focus of moral and ethical debate. This discourse has been advanced, at least in part, by developments in neuroscience, as discussed above, which may have contributed to more encompassing theoretical and philosophical perspectives of pain. However, equally influential has been the rise of bioethics, which has spawned frank criticism of pa-

ternalistic medicine, and a clear call for more patient-centered, inter-subjective forms of care (31-34).

TOWARD A MORAL GROUNDING OF PAIN CARE

The principle of respect for autonomy has played a central role in much of contemporary bioethical thought (35). Yet, the meaning and implications of autonomy are often taken out of context, which has allowed for "fuzzy" definitions of autonomy to be circumstantially employed. In the strictest sense, autonomy can be understood to be 1) a particular kind of potentiality of being, 2) the ability of such a being to make independent decisions and actions, and 3) the negative right of refusal (36). Autonomy in the first sense (i. e. a being as an autonomous moral subject) is in some ways related to the manifestations of a being's independent decisions and actions.

But what of those circumstances in which a being becomes unable to act autonomously? This often occurs because of individuals' immaturity (e. g. neonates, young children), not being fully conscious, or being mentally impaired. Very often, these individuals also cannot express their sentience or pain. Because of this, should we not regard pain in the very young, very old, and the very sick? And what of non-human pain? Probably, like never before, an understanding of animal nervous systems has allowed a consideration of the possibility of pain equivalence in animals, if not of animal minds more broadly, and this latter possibility has initiated dispute about previously held notions of consciousness, mentation, autonomy, and moral worth (37-39).

According to Immanuel Kant "...autonomy is the basis of ...dignity" (40). Admittedly, a purely Kantian account of autonomy and dignity might be anachronistic, if not restrictive, in light of our current knowledge and worldviews. So if a modern worldview and epistemology (inclusive of neuroscientific progress) is to inform philosophy and ethics, a more contemporary definition of such basic, intrinsic dignity might be grounded in the moral value that is derived from respect for any being that possesses the potential for sentience (17,18). But we must also recognize that while others have dignity, our relationship to any and all other (human and even non-human) beings is not uniform. Asymmetries exist in our relationships with others based upon the relative capacities to exert autonomous action, level of dependence, and vulnerabilities. And, pro Kant (and other, more modern

philosophical and ethical perspectives, i. e. feminist and/or care ethics), there is a moral responsibility to acknowledge this relational asymmetry and tend to those who are vulnerable (39-43). Thus, the existential vulnerability of the pre-nate, neonate, young, infirm, obtunded/vegetative, and aged (as well as non-human sentient beings) places them as subjects of our moral responsibility and care.

It is noxiousness that defines pain qua "pain" (i. e. as hurtful, and "bad"), and in disease, injury, or the absence of some meaningful positive context (e. g. childbirth), severe and/or persistent pain creates (physical and psychological) debility even in those who are most capable. Clearly then, pain can only incur greater harm(s) to those who are most vulnerable. In this way, the moral imperative to treat pain and alleviate suffering is not directed at pain as an object, but rather is focal to a regard for the impact and effects of pain in and upon a vulnerable, sentient being who is the subject of our respect (17,18,39-43).

To go a step further, we argue that such respect reflects a reverence for the experience and value of life in both oneself and others (44,45). We have opined that reverence in this way becomes a fundamental characteristic of medicine (46,47), in that it upholds a regard for the "...power of nature, enigma of life, health, pain, suffering, and death," and in so doing, provides a basis to appreciate both what has the potential to harm, as well as what is good "...and as such, direct...good intentions and actions" (47). It is this latter dimension of reverence that gives rise to and directs beneficence—the intentions and actions toward achieving and/or enhancing the "good" of life and life experiences.

When enacted within medicine — as a "practice" — beneficence becomes definitive in striving toward the ends of providing right and "good" care to those who enter the medical relationship as patients (48). For the practice of pain medicine, this entails the intent and ability to treat persons in pain, using a knowledge of the pathology of pain, available treatments as possibilities for mitigating the harm(s) incurred by pain, and the being who is the pain patient, so as to discern (a) the nature and extent of such harms, (b) the relative and appropriate "goodness" of potential interventions, in order to (c) resolve clinical equipoise and determine what care should be rendered (49-51).

Still, defining what is "good" in a pluralized

population can be problematic, and this has been a source of the tension (if not occasional conflict) between physicians' benevolent intentions and actions, and the probity of respect for (both patients' and physicians') autonomy. Such scenarios tend to occur when beneficence and autonomy (as well as other mid-level principles) are regarded *prima facie*, that is, at face value. The diversity of patients' and physicians' values, various exigencies, and general uncertainties that are the reality of the medical relationship and clinical encounter are such that rarely (if ever) do circumstances allow for consideration or use of any given principle with "all things being equal" (52).

Therefore, "operational beneficence" must enable or empower sufficient latitude to appraise the multi-dimensionality of patients' best interests, situational variables, and allow equity of both patient and physician autonomy (within and in light of their respective roles in the medical relationship). Frankena's conceptualization of multi-leveled beneficence (ranging from the obligatory to the supererogatory) (53), coupled to Pellegrino and Thomasma's appreciation for how the acts of medicine affect the good for each individual patient as an autonomous being, allows for a broader, more useful understanding of "good," and how it could and should be medically enacted (48). Taken together, this illustrates and sustains beneficence as 1) based upon reverence, 2) encompassing non-harm through a reverent regard for each individual that should direct the provision of good, and thereby 3) encompassing respect for each individual's autonomy and intrinsic dignity.

We argue that reverence gives rise to the imperative for actively appreciating the moral value of each patient as a sentient and painient being, how various harms (including pain) affect the patient, what the "good" entails for each patient, and how the capacities of medicine can render such "good" and lessen harm(s) in each specific case. Such consideration would compel the use of the most current scientific knowledge to expand and sustain the need for, and provision of safe, effective, and equitable pain care throughout the lifespan. As a field and practice, pain medicine (in all of its constituent forms and disciplines) must continue to progress to meet the challenges posed by advances in scientific understanding, and the ever-widening philosophical and ethical issues and imperatives that arise thereupon.

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