FRONTLINE PERSPECTIVES

Core Strategies for the Development of a Clinical Neuroethics Education Program for Medical Residents in the Clinical Neurosciences

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Abstract

Advances in clinical neuroscience have created an unprecedented need for medical residents in the clinical neurosciences to discuss and learn pragmatic approaches to ethics. The challenges of ethics in the clinical neurosciences involve a wide range of issues that span acute interventions in the neurosurgical theatre to long-term care for individuals living with mental illness in the community. Often, these challenges involve difficult treatment and end-of-life decision-making, and have become even more significant in the face of rapid scientific progress. Past research suggests that physician proficiency in clinical ethics is limited largely to experiential learning with little formal training or exposure to scholarly material. Furthermore, knowledge of ethical issues relating specifically to the brain sciences is unknown. This paper is an invited follow-up to the first presentation of a pilot educational program designed to bring neuroethics to the forefront of medical training and practice for medical residents in Neurology, Neurosurgery, and Psychiatry, presented at the Brain Matters Conference held in Halifax, Nova Scotia in September 2009. We describe core components of the program here, including journal clubs on tough neuro-clinical cases, seminars on cutting edge topics in neuroethics, and opportunities for residents to innovate in research. We compare and contrast the relative strengths and limitations of the strategies implemented, and present a vision for next steps based on what we have learned to date.

Key words: clinical neuroethics; clinical neuroscience; education; medical residents.

Introduction

In this paper we describe a new education program in ethics for medical residents in the clinical neurosciences – Clinical Neuroethics – that integrates teaching material from medicine, neuroscience, and biomedical ethics. Our approach to the initiative is characterized by interdisciplinary engagement, learner-centered curricula and inquiry-based learning. The emergent field of neuroethics in which we ground our efforts lies at the intersection of novel developments in neurotechnology and the implications of those developments for society, in the laboratory, the home, the courthouse, the classroom, and the clinic. Neuroethics integrates research ethics in the biomedical sciences and public health ethics with brain science and neuro- and moral philosophy. Scholars in neuroethics study the relevant ethical, legal, social, cultural, policy, and clinical challenges associated with new ways to think about, maintain and manipulate brain function.

In this context, (1) we explore the importance of ethics education and training in the clinical neurosciences; and (2) we describe our approach to complementing existing ethics requirements established for example, in Canada, by professional organizations such as the Royal College of Physicians and Surgeons of Canada (RCPSC) and the British Columbia College of Physicians and Surgeons (BCCPS). The

program is still in its nascent phases and evolves with continual input and evaluation by participating residents from Neurology, Neurosurgery and Psychiatry.

Ethics Education in Clinical Neuroscience Training

Ethics in clinical medicine has enjoyed a long history since Hellenistic and Roman times. Modern landmark cases in both medical research and clinical practice, such as the infamous Nuremburg trials, Tuskegee Syphilis experiments and The Willowbrook Study, brought issues in medical ethics to a greater public awareness than ever before. Clinical ethics, as a formalized discipline, emerged as a branch of applied biomedical ethics in the early 1970s to proactively address complex ethical issues that arise in healthcare settings.

Within the last thirty years, teaching the foundations of medical ethics has emerged as a priority within the medical establishment, and all North American medical schools now require that ethics be incorporated into the curriculum. The integration of ethics activities at the resident level is a more recent phenomenon as, up through the early 1980s, many residency directors, at least in the United States, did not consider ethics to be a valuable asset to resident education (Perkins, 1989).

Despite the Accreditation Council for Graduate Medical Education requirements for bioethics training for Neurology residents (ACGME, 2008), efforts have been made only recently to increase the availability of ethics education for residents in the clinical neurosciences. The American Academy of Neurology (AAN) has developed an Ethics Section on its website (AAN, 2008), in addition to offering a Neurology elective in clinical ethics. In Canada, the RCPSC requires residency training programs to teach biomedical ethics as a condition of accreditation (RCPSC, 2004) and maintains a well-developed online Bioethics Education Project that includes cases, primers in areas such as moral theory and research ethics, educational objectives, and the opportunity to participate in interactive modules. Despite these significant strides in North American residency training and accreditation, it is unclear whether residents effectively, efficiently, and appropriately address ethical issues as they arise, either generally or in the specific domain of neuroscience and emerging neurotechnologies for diagnosis, prediction of disease and intervention. In one past study, Schuh and Burdette (2004) evaluated a case-based ethics curriculum for Neurology residents developed by the American Academy of Neurology's Ethics, Law and Humanities Committee. Post-survey satisfaction scores improved over pre-participation scores by 19%. Many residents reported that the course increased their confidence in understanding and addressing ethical issues in practice, and that the time commitment required was acceptable. Another study for neurology residents was performed by Watling and Brown (2007) who were concerned with the limited communication training available to residents. Neurology residents participated in six case-based pilot workshops that emphasized skills and ethically reflective practice. In post-test evaluations of this program, residents rated the workshops as effective and relevant.

The education program in Clinical Neuroethics that we discuss here builds upon such past efforts and on the strong foundation for ethical awareness and practice established by the AAN and RCPSC. The Program provides a scaffold for ethics content about specific clinical neuroscience contexts and encourages residents to inform their own ethics training by identifying cases and issues that are most relevant to their practice. In this regard, this program serves the dual purpose of providing an educational platform to medical residents specifically about ethical challenges in the neurosciences, and creating a forum for active dialogue.

Foundations of an Educational Model

It has been suggested that knowledge dissemination in the sciences is most effective when it places person-centered, experiential knowledge and situational analysis on par with factual findings (Miles, Lane, Bickel, Walker, & Cassel, 1989; Kothari, et al., 2005). Understanding the dynamics of interpersonal connections and decision-making therefore must be at the centre of curriculum and instruction. As we have discussed elsewhere (Buchman, Lombera, Venkatachary, Tairyan, & Illes, forthcoming), learning simultaneously transforms what one knows and what one practices when this is achieved. Like Gagne (1980) who believed that "the central point of education is to teach people to think, to use their rational powers and to become better problem solvers" (p. 85), our conceptual framework for clinical neuroethics education reflects communication, responsiveness and non-hierarchical relationships between the constituencies of researchers, clinical practitioners and ultimately the translators of the knowledge of these relationships to clinical practice. Indeed, our goal is to reduce the gap between 'know what' and 'know how'.

Vygotsky (1978) argued that education is a matter of engaging learners within their zone of proximal development. This zone is the space that falls between what learners can do on their own and what they can do with expert guidance. In alignment with this view, the humanities have historically embraced a developmental approach to education under the premise that learning is a personal search for meaning. In such a developmental approach, teachers and programs support the learners through dialogue and questioning. We embody these principles in two key related features of our Clinical Neuroethics education program:

(1) A commitment to exploring the foundations of biomedical ethics deeply with resident physicians and to translate these foundations into practice in the clinical neurosciences.

(2) A focus on the process of addressing ethical issues through dialogue and reflection.

The second feature has been highlighted before by others as a *hidden curriculum* (Hafferty & Franks, 1994; Miles, Lane, Bickel, Walker, & Cassel, 1989), one that implicitly fosters collaboration, communication, problem solving, and critical and creative thinking as fundamental competencies. Our approach to program design, development, implementation and evaluation takes the learners on board in such a partnership role.

Clinical Neuroethics for Medical Residents in the Clinical Neurosciences

Foundational Principles

In Jonsen, Siegler and Winslade's (1998) seminal work, *Clinical Ethics*, the authors define clinical ethics as "a practical discipline that provides a structured approach for identifying, analyzing, and resolving ethical issues in clinical medicine" (p. 1). The authors note that medicine – and by extension all healthcare – is a process of engagement and exchange between human beings and thus resides within a moral context. Scholarly engagement and skill development in neuroethics, like bioethics, is not an innate skill and requires specialized training. Singer, Pellegrino and Siegler (2001) conceive of the process of *being ethical* as a series of professional skills. Learning and developing professional skills and traits – practical wisdom – reflects an agent-based virtue ethic that places the integrity of the clinician, and virtues such as trust, benevolence, and compassion, at the core of clinical medicine (Lakhan, Hamlet, Mcnamee, Laird, 2009; Pelligrino, 2002). This notion of practical wisdom is reflected in the Aristotelian virtue of *phronesis*. To possess phronesis is to develop capacity to consider the method and action to promote change, particularly in improving quality of life (Aristotle, 1999). Indeed, competency in ethics is associated with increased quality of patient care (Goold & Stern, 2006),

A Pragmatic Approach

There is considerable debate about whether teaching the "virtues of medical professionalism" is too vague of a mandate for medical education. Some scholars argue that medical professionalism may not be a value than can be taught, particularly if taught by ethicists (Buyx, Maxwell, & Schöne-Seifer, 2008). Indeed, practical wisdom may be best absorbed experientially through bedside work and interactions with physician mentors. Accordingly, the Clinical Neuroethics program is intended to be a piece of a bigger puzzle insofar as it is designed to illuminate a path for medical residents to adapt themselves to the challenges of the bedside and to develop the ability to translate ethical reasoning into medical action.

Our working hypothesis is that by engaging medical residents in clinical neuroethics their ability to care for patients and families will improve through heightened critical reflection on the ethical underpinnings of their work. Our approach is pragmatic. We focus on challenging clinical ethics issues that exist in real-world settings and embrace different points of view. To achieve real, work-able solutions, we use a methodology that supports inquiry, discussion, negotiation, and reflection (Fins, Bacchetta & Miller, 2003) about the many contextual variables at play in any particular case (e.g., religious views of the patient, family structure, socioeconomic status, legal parameters of the jurisdiction). The approach relies on a loose principle-based framework that guides deliberation in diverse scenarios rather than on fixed ethical principles. It is entirely in keeping with the four pragmatic objectives of the ethics education program for Neurologists at the American Academy of Neurology (Fryer-Edwards, 2009) to:

- foster trainee professional development
- provide knowledge, skills, attitudes that will lead to improved patient care

- integrate multidisciplinarity with relevance to clinical practice
- pursue rigorous standards and clear expectations and benchmarks for achievements.

The Program

Program Launch

The Clinical Neuroethics program is designed to expand critical thinking skills with regard to clinical ethics and to fortify cutting-edge clinical neuroscience and technology research with ethics knowledge. At this stage, delivery of the program is executed in discipline-specific groups: ¬ Neurology, Neurosurgery, and Psychiatry. Content and discussion are tailored to each group's particular interests. Consider, for example, different views on answers to questions such as: Will advances in neuroscience shed light on issues of decision-making capacity in individuals who experience symptoms of psychosis? How will psychiatry use this knowledge to respond to issues of autonomy and shared medical decision-making? What ought a resident in neurosurgery consider when obtaining consent from an individual for deep brain stimulation when all other treatment efforts for depression have failed? What discussions are needed with families who, through the exuberance of the media, hear of hopeful treatment for conditions such as minimal states of consciousness but for which research is not ready to be applied clinically? What are the obligations for the ethical management and allocation of medical resources for brain diseases for which there are no cures in a public health system? The opportunity to engage residents in joint, cross-disciplinary sessions that can bring greater breadth to these vital discussions in ethics is a goal for the future.

To establish a baseline of substantive ethics content, we provide a primer in biomedical ethics during initial sessions based largely on the "four principles": respect for autonomy, beneficence, non-maleficence, and justice (Beauchamp & Childress, 2001). Given our pragmatic approach and residents' previous exposure to foundational concepts in biomedical ethics, our ethics education model quickly moves beyond consideration of these principles and focuses on resident-generated tough case discussions. Here the emphasis is on didactic teaching where the residents inform the pedagogical output upstream (Reimschisel, 2009). For instance, during initial brainstorming sessions, residents in neurosurgery indicated that they were interested in learning about the current state of the bioethics literature with regard to deep brain stimulation to treat symptoms of Parkinson's disease and treatment-resistant depression. To meet the need, we engaged the residents in a journal club based on a case study of a patient who revoked consent during awake craniotomy for the implantation of deep brain stimulation electrodes (Ford et al., 2007). This case stimulated considerable discussion on issues of capacity, consent, safety and autonomy, and prompted an evaluation of a risk-benefit calculus for this type of procedure as compared to other less non-invasive neurosurgical operations. Several neurosurgery residents discussed the possibility that the patient may have incurred more harm by demanding that the procedure be stopped. Others suggested that the patient's expressed wishes at the time of the surgery must be honored in consideration of autonomy, irrespective of any possible future benefit that the surgeons believed might result from the

intervention. By contrast, one resident challenged the autonomy position altogether, arguing that the patient lacked capacity to make a decision as serious as to revoke consent.

A different but noteworthy experience emerged in a session with the psychiatry residents. When planning a journal club, the residents in psychiatry suggested another approach - they preferred to discuss a tough case that was drawn from our files. For this particular journal club, we developed "The Case of the Model HIV Patient, Parts I & II" (Box 1). Through the course of the discussion, and drawing upon the methodology of casuistry (Jonsen, 1991), we offered prompts and parallels so that the psychiatry residents had opportunity to consider many facets of the case, possible ethical analytical approaches, and similarities to other classic and contemporary cases. The psychiatry residents were able to refer to bioethical principles and values such as autonomy, beneficence/nonmaleficence, and the duty to care, and drew heavily upon their own experiential knowledge and learning. Accordingly, they informed the content of this session in a different but equally valuable way than the residents in neurosurgery: the psychiatry residents molded a didactic experience to best address their learning needs.

We have also developed a tough case template that residents can use to report or create, real or fictional, challenging ethics-related cases. We use those submissions to directly inform content of future interactive sessions. The design and structure of the template has undergone several iterations informed by feedback from the residents themselves, culminating in a format that primarily accommodates narrative descriptions about the details and concerns about a case. In addition to substantial room for case description, the template features baseline questions such as, "Are other services involved?" "Does the patient have contributing co-morbidities?" "Capacity to make decisions?" "An advance directive?" "Surrogate decision-maker?". The template has inspired significant documentation of tough clinical cases, and requests have been made from various departments for electronic access and wide accessibility.

Initial "tough case" submissions served as a means for residents to frame and transmit their first learning needs. For one early Neurology resident journal club, we chose two provocatively titled cases – the "Case of the Life Not Worth Living" and the "Case of the Life Not Worth Saving" (Box 2) – that could be informed by the same ethics frameworks and concepts. We worked through them in the following three-step format:

1. presentation of the cases and ethical concerns
2. presentation of fundamental ethical frameworks, concepts, and/or "classic" cases to inform ethical analysis
3. in-depth, interactive discussion of the cases

The cases of the 'lives not worth living and saving' were mapped onto a background of models of patient-physician relationships and concepts of respect for persons (what it does and does not mean), quality of life (what it means and who defines it), and medical futility. The deliberation was stimulating, if not cathartic – residents postulated how they might beneficially handle similar cases and questions in future practice, and reflected on past cases in a meaningful way.

Program Evaluation

Formal measurements of the strengths and weaknesses of the program over the long-term will be critical to its ensuring success. To date, we can report on preliminary evaluations by neurosurgery, psychiatry, and neurology residents about their respective clinical neuroethics sessions that are largely positive and constructive. The evaluations are provided using a standardized Likert-scale questionnaire (1: strongly agree – 5: strongly disagree), with an optional comments section. Each resident group evaluated their most recent session, for instance psychiatry evaluated the discussion of "The Case of the Model HIV Patient" (Box 1), and neurology and neurosurgery on tough cases in medical futility. Across all resident groups (n = 34), 97% of residents reported that their respective session was relevant to their practice and 85% agreed that they learned something new. Of the 5 evaluators who did not agree that they learned something new, 3 were neutral and 2 disagreed.

Next Steps

Encouraged by the positive response to the program to date, we will continue on the trajectory described here and, in addition, expand the program in several new directions: resource materials, electronic newsletter, and community engagement. One arm of the new resource materials is a glossary of useful terms, literature and cornerstone cases in Clinical Neuroethics that we are developing in response to resident requests for relevant background in basic terminology, seminal texts, and practical resources. The glossary is designed to be concise rather than encyclopedic, with rapid access to front-line information and links to extensive readings. The second arm of the resources initiative is a Clinical Neuroethics Resource Guide with listings of local clinical ethics consultant and committee contact information, relevant journals, and texts that highlight and support the clinical ethics structures already established within our local community represented by the Vancouver Coastal Health Authority.

The electronic newsletter is intended to keep busy residents up-to-date with relevant readings, activities, and case analyses. It will also be made widely available in print and online to faculty and allied health professionals in the community. Inspired by the international network of successful science cafes (www.cafescientifique.com), we look forward to piloting and evaluating a community engagement initiative we are calling "Café Neuroethique." Characterized by its informal setting, open invitation to the local medical, academic, and public communities, and cooperative approach, the forum aims to stimulate discourse around issues relevant to neuroethics, to provide information in an accessible manner, and to inspire further consideration, collaboration, and research in the community.

Conclusions

Training in ethics that has both roots in bioethics and is up to date with clinical neuroscience promises to positively impact quality of care at the bedside. Competency in ethics, like practical wisdom, takes time to mature. It requires an examination of the particular

situation at hand, space for dialogue, reflection on decisions made and those in progress, and opportunity for collaboration.

In reflecting upon the guiding principles for the Clinical Neuroethics program and pilot experiences, we summarize our approach to shaping education in neuroethics as follows:

➢ We start with the learner's/resident's point of view and use experiential bridges between the learner's experience, ways of knowing, and educational goals.
➢ We continually incorporate resident direction and feedback.
➢ We aim to develop a responsive curriculum that is relevant and meaningful to the residents' own practice and ethical challenges.

Creativity and flexibility are core factors in ensuring a close alignment of ethics instruction, neuroscience advancements, and clinical practice. In an era of constant progress in clinical neuroscience, our ultimate goal mirrors that of medical educators and trainees – parallel progress in clinical neuroethics and quality of care.

Case of the Model HIV Patient – Part I

Mr. Jones is a 40-year-old white male with diagnoses of both bipolar disorder and HIV. He has been HIV positive for approximately 10 years, and his physician describes him as "a model HIV patient" – he is diligent with his treatment, engaged in understanding his disease, and never misses a dose of medication or a check-up. Rigorous maintenance of HIV treatment is, he understands, essential to the mitigation of his viral load and the delay of AIDS onset.

In addition to a physician for HIV, Mr. Jones regularly sees a psychiatrist for treatment of his bipolar disorder. As a young man, he initially accepted treatment for bipolar disorder but later took a prolonged "vacation" from medication until his mid thirties. At the time, he found the vacation "liberating" and believed that it allowed him to "think at his full capacity." His behavior was frenetic, marked by risky sexual promiscuity and drug use. It is likely that Mr. Jones contracted HIV and infected others during his manic states in this period. Following the strong recommendation of his physician, Mr. Jones renewed efforts to treat his bipolar disorder in order to stabilize his mood and behavior.

Today he presents to his psychiatrist's office complaining that – despite several years of attempting different medications and dosages – he still feels "muted" by his bipolar disorder medications, faces uncomfortable side effects, and prefers the way he experiences life off medication. Mr. Jones announces that he intends to stop taking medication for bipolar disorder entirely and asks for advice about weaning.

The psychiatrist believes that Mr. Jones' prognosis without medication is poor at best and fatal at worst. The psychiatrist is also concerned that if Mr. Jones stops his medication he may re-engage in his risky sexual behaviors. It is his professional opinion that medication is directly necessary to manage bipolar disorder and indirectly necessary to manage HIV.

Case of the Model HIV Patient – Part II

As a technologically savvy psychiatrist, you are aware of the hotbed of imaging studies on bipolar disorder as well as the remarkable impact that brain scans have on decision-making. For example, individuals are more likely to accept muddy scientific reasoning if it is illustrated with a scan (McCabe, 2008) and surveyed patients predict an increased willingness to maintain treatment if their mental illness is "legitimized" with an image (Illes, 2008).

You are also aware of the limitations of current imaging technology as it applies to psychiatric diagnosis and treatment.

Would you consider ordering a scan for Mr. Jones, knowing that it could make his disorder "real" to him and convince him to continue treatment (and, indirectly, potentially prolong his life in a significant way)?

Box 1. Example psychiatry cases

Case of a Life Not Worth Living

A 50-year old man is in the ICU. After a lung transplant 20 years earlier, his lung function is now limited such that he is ventilator dependent at night. He is tracheostomised, and he faces recurrent infection with multi-drug resistance. The patient is awake, however, and can still be taken on outings with great effort.

In light of his situation, the ICU staff convinces the patient that his life is not worth living and that he should not use the ventilator any further.

Case of a Life Not Worth Saving

60-year old male was admitted with a right anterior cerebral artery stroke and a right middle cerebral artery stroke. These contributed to an increased risk of herniation. The neurology team felt that a hemicraniotomy would save the patient's life. Neurosurgery felt that it would not save quality of life, however.

Surgery was not done, and the patient died due to herniation.

Box 2. Example neurology "tough cases."

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Competing Interests: *None.*

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