

Curriculum for Teaching Bioethics to Neurosurgery Residents

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EXPLANATORY NOTES ABOUT THE CURRICULUM

1. These sessions will be incorporated into the Curriculum of the Neurosurgery Post-graduate Residency Program which is a 3-year course for neurosurgery residents at the University of Toronto (which repeats with revisions as changes in knowledge/practice occur). The sessions are held on Friday mornings 09:00 a.m. –12:00 p.m.
2. In some cases two sessions from the enclosed curriculum may be combined together and/or one may be expanded into two.
3. The timing is such that the sessions can be given: 1) weekly during a 2-3 month time period in one year; 2) weekly during one specific month in each of three years (eg. “October is Bioethics month”); or 3) distributed regularly throughout the 3-year rotor. Option #2 is probably the preferred model but this has not been decided definitively.
4. Every session will be led by the primary teacher (MB) but will have at least one other expert in the field to help the teaching. All of these teachers have been approached and have agreed to participate (assuming they are available when their session arises).
5. For every session, pre-selected residents (probably two) will be assigned to read one of the key articles and present the contents to the other residents and the teachers. Discussion of the papers by the group will then follow.
6. Debate format may be incorporated as a teaching tool for some sessions. I have not definitively decided upon this or upon which sessions might be appropriate for this modality.
7. Sessions may be modified as new knowledge and/or laws become available, for example, and references will be updated to represent as contemporary readings as possible.

LITERATURE SEARCH AND OTHER RESEARCH DONE IN PREPARATION

The literature was searched using appropriate modern methodology. Relatively little was found on teaching bioethics to surgery residents. Nothing was found on teaching ethics to Neurosurgery residents. **Most of the articles discuss philosophical and moral aspects of approaches to teaching bioethics to surgeons. Some examples are:**

1. Angelos P, DaRosa DA, Derossis AM, Kim B: Medical ethics curriculum for surgical residents: results of a pilot project. *Surgery* 126:701-705, 1999
2. Axelrod DA, Goold SD: Maintaining trust in the surgeon-patient relationship: challenges for the new millennium. *Arch Surg* 135:55-61, 2000

3. Baldwin DC, Bunch WH: Moral reasoning, professionalism, and the teaching of ethics to orthopedic surgeons. Clin Orthop Rel Res 378:97-103, 103, 2000
4. McKneally MF: Teaching bioethics to surgical residents. Semin Thorac Cardiovasc Surg 10:188-189, 1998
5. Peterson LH: Human values in the care of the surgical patient. Arch Surg 135:46-50, 2000
6. Sade RM, Williams TH, Perlman DJ, Haney CL, Stroud MR: Ethics gap in surgery. Ann Thorac Surg 69:326-329, 2000
7. Sanders M: The forgotten curriculum: an argument for medical ethics education. JAMA 274:768-769, 1995
8. World Federation of Neurosurgical Societies, European Association of Neurosurgical Societies: Good practice: a guide for neurosurgeons. Br J Neurosurg 14:400-406, 2000

Very few actually offer instruction to surgeons on bioethics training:

9. Arumugam PJ, Harikrishnan AB, Carr ND, Morgan AR, Beynon J: A study on surgical knowledge of house officers and their role in consent. Hosp Med 64:108-110, 2003
10. Royal College of Physicians and Surgeons of Canada Bioethics Education Project. Surgery Curriculum. find at:
<http://rcpsc.medical.org/english/ethics/surgery/index/php3>
11. www.ama-assn.org/ama/pub/category/2732.html

A number of web-based ethics instructional modules, some of which are interactive exist, and are worth exploring for those wishing further on-line ethics education and for those temperamentally suited to this type of learning format.

12. <http://eduserv.hscer.washington.edu/bioethics/resource/readings.html>
13. <http://www.ama-assn.org/ama/pub/category/9418.html>
14. <http://www.imc.gsm.com/demos/dddemo/start/default/htm>
15. <http://www.research.umn.edu/consent/>

Finally and importantly, input was sought from all Staff, Fellows, and Residents in the University of Toronto Neurosurgery Division (over 50 people) by a survey questionnaire, and all suggestions received were incorporated into the Curriculum.

CURRICULUM OUTLINE

<u>Session</u>	<u>Topic</u>	<u>Areas to be covered</u>
1	Fundamentals of bioethics	Definitions Principles and Theories Existing codes (eg. CMA)
2	Informed consent	Consent Capacity Substitute decision making
3	End of life issues	Futility of care Withdrawal of care Organ procurement Euthanasia
4	Resource allocation	Critical care beds Expensive technology OR time
5	Error and patient safety	Definitions and incidence Causes Disclosure Prevention
6	Ethics of teaching surgery	Graded responsibility Ghost surgery Meeting patients pre-operatively Staff-resident disagreements
7	Physician competence	Monitoring/reporting of colleagues Surgical innovation Substance abuse
8	Research ethics	Ethical frameworks for research Placebo controlled trials Conflict of interest/industry relations Payment of research subjects Research with animals
9	Genetic ethics	Privacy of genetic information Gene therapy Stem cells Biotechnology

Session 1 Fundamentals of bioethics**Definitions
Principles and Theories
Existing codes (eg. CMA)****Suggested Readings:**

1. American Association of Neurological Surgeons Code of Ethics (find at www.aans.org, go to About AANS and then go to Code of Ethics)
2. American Medical Association Code of Ethics (find at www.ama-assn.org, go to Site map, then go to Ethics, then go to Code of Medical Ethics, then go to Using the Code's Major Sections)
3. Canadian Medical Association Code of Ethics (find at www.cma.ca, go to Site map and then go to Code of Ethics)
4. Unpublished essay on Assisted Suicide (hard copies will be provided)

Teachers: Mark Bernstein

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, definitions of morals and ethics will be explained. 2) The four Principles constituting the so-called "Georgetown mantra" will be discussed. 3) Theories used in bioethical analysis will be briefly described focusing on the two main theories - Kant's deontology and Utilitarianism of Mill and Bentham. 4) Existing codes of bioethics such as those articulated by the Canadian Medical Association and the American Association of Neurological Surgeons will be outlined.

Example cases:

1. Forced sterilization of the mentally incompetent.
2. Assisted suicide/euthanasia.
3. You take and wish to use an intra-operative photograph of a person in the knee-chest position for lumbar discectomy for use in a talk you are giving on complications of positioning in neurosurgery. He is not identifiable. Do you need consent?

Session 2 Informed consent**Consent
Capacity
Substitute decision making****Suggested readings:**

1. Arumugam PJ, Harikrishnan AB, Carr ND, Morgan AR, Beynon J: A study on surgical knowledge of house officers and their role in consent. *Hosp Med* 64:108-110, 2003
2. Etchells EE, Sharpe G, Walsh P, Williams JR, Singer PA: Bioethics for clinicians: 1. Consent. *Can Med Assoc J* 155:177-180, 1996
3. Meisel A, Kuczewski M: Legal and ethical myths about informed consent. *Arch Intern Med* 156:2521-2526, 1996

Teachers: Mark Bernstein, Ed Etchells

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, the salient features of informed consent will be discussed. 2) The concepts of capacity and substitute decision making will be described.

Example cases:

1. A young man with Down syndrome presents with a seizure and MRI shows a glioblastoma. His parents refuse to consent for treatment. Are they within their rights and even if they are, is this the “right” thing?
2. You have a mature 13 year old boy with intractable sciatica from a lumbar disc herniation who absolutely refuses surgical intervention. His parents demand that you do it so he can get on with his studies and his soccer which he loves. What do you do?
3. A patient with a large AVM which cannot be coiled or radiated has intractable headaches and seizures and requires surgery. She is a Jehovah’s Witness who feels she needs treatment but is clear in her rejection of any blood transfusion. The estimated risk of surgery without blood transfusion is 50%. What to do?

Session 3 End of life issues**Futility of care
Withdrawal of care
Organ procurement
Euthanasia****Suggested readings:**

1. Dickens BM: When terminally ill patients request death: Assisted suicide before Canadian courts. *J Palliative Care* 10:52-56, 1994
2. Hawryluck LA, Harvey WRC: Analgesia, virtue, and the principle of double effect. *J Palliative Care Supplement* 16:S24-S30, 2000
3. Kluge EH: Elective non-therapeutic ventilation: a reply to Browne et al., "The ethics of elective (non-therapeutic ventilation)". *Bioethics* 14:240-247, 2000
4. Singer PA, Martin DK, Kelner M: Quality end-of-life care. Patients' perspectives. *JAMA* 281:163-168, 1999

Teachers: Mark Bernstein, Laura Hawryluck

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, end of life issues will be presented. 2) The concepts of futility of care and appropriate withdrawal of care will be discussed. 3) Organ procurement, and conflicting responsibility to existing patients and patients unmet will be discussed. 4) Active and passive euthanasia and "double effect" will be discussed from both a practical and a theoretical point of view.

Example cases:

1. Should euthanasia or assisted suicide be legalized (eg. the Sue Rodriguez case). What are the ethical arguments? An example is the case of an elderly gentleman with a biopsy proven glioblastoma of the brainstem who has swallowing and speech difficulties and a left hemiparesis. He will die a horrible death with or without treatment. How should his request for euthanasia be treated?
2. An 18 year old Oriental man is brain dead after a fall from a balcony at a party. His parents refuse withdrawal of care and in fact, demand a full "code" be called when/if his heart stops. What is your response?
3. A young man sustains a severe subarachnoid hemorrhage and is not quite brain dead but is felt that there is no hope of recovery. He is ventilated and maintained with medications until brain death ensues so that his organs can be secured for transplantation. His wife agrees. What are the ethical issues in this case?

Session 4 Resource allocation**Critical care beds
Expensive technology
OR time****Suggested readings:**

1. Daniels N: Accountability for reasonableness. Br Med J 321:1300-1301, 2000
2. Martin DK, Singer PA, Bernstein M: Access to ICU beds for neurosurgery patients: A qualitative case study. J Neurol Neurosurg Psychiatr (in press)
3. Singer PA, Martin DK, Giacomini M, Purdy L: Priority setting for new technologies in medicine: qualitative case study. Br Med J 321:1316-1319, 2000

Teachers: Mark Bernstein, Martin McKneally

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, the concepts of priority setting (ie. resource allocation) will be discussed. The ethical framework “accountability for reasonableness” will be presented. 2) These principles will be applied to such important priority setting examples in Neurosurgery such as expensive technology, OR time, and Critical Care (ie. ICU) beds.

Example cases:

1. An ICU has 23 beds – supposedly 10 for Neurosurgery cases, 9 for MedSurg, and 4 for cardiology. Who manages who gets in and how should this be monitored and overseen.
2. A 10- person Neurosurgical group has 20 OR-surgeon days per week. The administration has to cut it to 16 because of budgets cuts and nursing shortages. How does one decide how to implement the cuts?
3. There is enough money in the capital budget this year for the Neurosurgery Division to purchase 2 Image-guidance systems, or 2 microscopes, or an intraoperative MRI, or pay for 10 new experimental implants for intractable epilepsy. Who makes the decision and how?

Session 5 Error and patient safety**Definitions and incidence****Causes****Disclosure****Prevention****Suggested readings:**

1. Bernstein M: Wrong-side surgery: systems for prevention. Can J Surg 46:144-146, 2003
2. Bernstein M, Hebert PC, Etchells E: Patient safety in neurosurgery: Detection of errors, prevention of errors, and disclosure of errors. Neurosurgery Quarterly (in press June 2003 issue)
3. Bernstein M, Massicotte EM: Is recording error in neurosurgery feasible and useful? A prospective study of error in 500 consecutive elective surgical cases. J Neurol Neurosurg Psychiatr (in press)
4. Hebert PC, Levin AV, Robertson G: Bioethics for clinicians: 23. Disclosure of medical error. Can med Assoc J 164:509-513, 2001
5. Gawande AA, Thomas EJ, Zinner MJH, Brennan TA: The incidence and nature of surgical adverse events in Colorado and Utah in 1992. Surgery 126:66-75, 1999

Teachers: Mark Bernstein, Phil Hebert

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, definitions of error, methods of detection, and causes will be presented. 2) Methods to decrease or prevent errors and/or preventing them from producing harm to patients will be discussed, emphasizing the systems approach. 3) The current ethical and legal position on disclosure of errors will be presented.

Examples cases:

1. During craniotomy for a frontal glioma, the resident plunges with the drill producing a major brain contusion. The mess is cleaned up and the tumour removed and the patient does very well. What would you tell the patient? How would the team do a “post-mortem” to learn from the mistake to identify causes and ensure it doesn’t happen again?
2. What factors might contribute to a wrong-side error and what mechanisms are there to make a wrong-sided craniotomy almost impossible to?

Session 6 Ethics of teaching surgery**Graded responsibility
Ghost surgery
Meeting patients pre-operatively
Staff-resident disagreements****Suggested readings:**

1. Bernstein M: Surgical teaching: How should neurosurgeons handle the conflict of duty to today's patients with the duty to tomorrow's? Br J Neurosurg (in press)
2. Coates KW, Kuehl TJ, Bachofen CG, Shull BL: Analysis of surgical complications and patient outcomes in a residency training program. Am J Obstet Gynecol 184:1380-1383, 2001
3. Edelman A, Nichols MD, Jensen J: Comparison of pain and time of procedures with two first-trimester abortion techniques performed by residents and faculty. Am J Obstet Gynecol 184:1564-1567, 2001
4. Hicks LK, Lin Y, Robertson DW, Robinson DL, Woodrow SI: Understanding the clinical dilemmas that shape medical students' ethical development: questionnaire survey and focus group study. Br Med J 322:709-710, 2001
5. Kocher MS: Ghost surgery: the ethical and legal implications of who does the operation. J Bone Joint Surg 84-A, 148-149, 2002

Teachers: Mark Bernstein, Alex Levin

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, the ethical tensions in teaching high-technology, high-morbidity surgical specialties like neurosurgery are presented. Ghost surgery is described and discussed in this context. 2) Staff-resident disagreements and how best to handle them are discussed.

Example cases:

1. A staff asks a resident to do a case he/she is not really comfortable doing. What action should be taken?
2. A staff is taking on a case the residents feel he is not capable of doing as his real area of specialty and expertise is in another area. What to do?
3. A resident detests a staff for how he treats him and because he doesn't let him do any of his surgeries? What action can the resident take?

Session 7 Physician competence**Monitoring/reporting of colleagues
Surgical innovation
Substance abuse****Suggested readings:**

1. Hughes PH, Storr CL, Brandenburg NA, Baldwin DC, Anthony JC, Sheehan DV: Physician substance use by medical specialty. J Addict Dis 18:23-37, 1999
2. Meakins JL: Innovation in surgery: the rules of evidence. Am J Surg 183:399-405, 2002
3. McKneally MF: Ethical problems in surgery: Innovation leading to unforeseen complications. World J Surg 23:786-788, 1999
4. Reitsma AM, Moreno JD: Ethical regulations for innovative surgery: the last frontier? J Am Coll Surg 194:792-801, 2002

Teachers: Mark Bernstein, John Carlisle (CPSO)

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, how the profession can best monitor itself is discussed. The problem of substance abuse will be included in the discussion. 2) Surgical innovation and how best to introduce it from an ethical and safety standpoint will be discussed.

Example cases:

1. You've just finished your training at the University of Toronto and are in private practice in the mid-western United States. One of your first patients presents with a grade I subarachnoid hemorrhage from a basilar tip aneurysm and there are no interventional radiologist at your hospital. What would you do?
2. You have a neat idea on a new way to fix a ruptured berry aneurysm – coating it with liquid epoxy to “entomb” it in a solid cast. How would you go about introducing this innovative treatment as an acceptable option for patient care?
3. You are 90% sure one of your partners has a major drinking problem. You've seen him come in on call in the evening appearing inebriated and you frequently smell alcohol on this breath at 2:00 p.m. in the afternoon on weekdays. What would you do?

Session 8 Research ethics

**Ethical frameworks for research
 Placebo controlled trials
 Conflict of interest/industry relations
 Payment of research subjects
 Research with animals**

Suggested readings:

1. Tri Council Policy Statement (find at www.mrc.gc.ca/publications/publications.html)
2. World Medical Association Declaration of Helsinki (find at www.wma.net/ and go to The Declaration of Helsinki)
3. The Nuremberg Code (find at ohsr.od.nih.gov/nuremberg.php3)
4. Council for International Organizations of Medical Sciences (CIOMS) (find at www.cioms.ch/frame_guidelines_nov_2002.htm)
5. Bernstein M, Upshur REG: Bioethical framework for assessing an article on therapy. J Neurosurg 98:485-490, 2003
6. Emanuel EJ, Wendler D, Grady C: What makes clinical research ethical? JAMA 283-2701-2711, 2000

Teachers: Mark Bernstein, Ross Upshur

Lesson plan:

1. Using numerous examples relevant to the specialty of Neurosurgery, research ethics will be discussed. Published ethical frameworks will be discussed.
2. Placebo-controlled trials will be discussed vis a vis the conflict between scientific “perfection” vs ethical acceptability.
3. The rising problem of conflict of interest will be discussed. This includes both financial and non-financial conflict of interest for the clinician/investigator.
4. Financially or otherwise reimbursing/rewarding research subjects will also be addressed.
5. Research with animals, including alternatives to animal research will be discussed.

Example cases:

1. You are invited to a “think tank” to help talk about surgical navigation. The sponsor has organized an event at a luxury hotel in Puerto Rico in February with side-trips for golfers and fishermen planned. Should you go?
2. You explain a randomized gene therapy study you are conducting to a 35 year old woman with a newly diagnosed glioblastoma. It is comparing standard therapy vs standard therapy plus gene therapy. She is not interested in the trial but demands to have the gene therapy. What is your response?

Session 9 Genetic ethics**Privacy of genetic information
Gene therapy
Stem cells
Biotechnology****Suggested readings:**

1. Daar AS, Bampoe J, Bernstein M: Ethical issues in molecular medicine: An outline and relevance to neurosurgery. Neurosurgery (in press)
2. Daar AS, Thorsteinsdottir H, Martin DK, Smith AC, Nast S, Singer PA: Top ten biotechnologies for improving health in developing countries. Nat Genet 32: 229-232, 2002
3. Deschenes M, Cardinal G, Knoppers BM, Glass KC: Human genetic research, DNA banking and consent: a question of "form"? Clin Genet 59:221-239, 2001

Teachers: Mark Bernstein, Abdallah Daar

Lesson plan:

1) Using numerous examples relevant to the specialty of Neurosurgery, issues relevant to genetic ethics will be discussed. Privacy of information has a new dimension with the advent of genetic diagnostics and banking of tissue. 2) The current status of gene therapy and previous problems with it will be presented. 3) Stem cells in research and application will be discussed, especially as they pertain to neurosurgical research and practice.

Example cases:

1. You run a brain tumour tissue bank at your hospital for research purposes. Analysis of one of the patient's samples leads to a major discovery which leads to a patent which makes you a lot of money. What is your obligation to the patient whose tissue it was?
2. In the same scenario, a patient's tissue contains some markers which you and other researchers have come to realize is highly predictive for the occurrence at a young age of breast cancer in any female children of the subject. What should you tell the patient, who happens to have 3 daughters?

CURRICULUM EVALUATION – EVALUATION OF LECTURES

This will likely consist of forms to be filled out by every resident at the end of every session and 10 minutes will purposely be protected for this task. There are a number of instruments available. The enclosed evaluation form (next page) is the instrument currently in use in the Division of Neurosurgery Post-graduate Curriculum and it is probably adequate for the purposes of the Bioethics curriculum.

Main features to be evaluated are: relevance and importance of material covered;
 whether it was interesting;
 whether the resident feels that it will be of use;
 what more should be covered in that session.

Lecture/Instructor Evaluation Questionnaire

Complete one of these for each instructor

Enter the title of the session: _____

Enter the date of the session: _____

Enter the name of the instructor: _____

1. Were the learning outcome objectives defined:
2. Were the learning objectives met:
3. Organization and clarity of presentation:
4. Instructor's knowledge of subject matter:
5. Use of audiovisual aids to contribute to effectiveness of presentation:
6. Suitability of hand outs (if applicable):
7. Amount of time allocated for discussion:
8. Degree of relevance of this session to the course as a whole:
9. Relevance to the practice of neurosurgery
10. Relevance to passing the RCPC exam
11. Availability of instructor for consultation and help (if applicable):
12. To what degree did the presentation stimulate you to want to learn more about this topic
13. Suitability of reference list
14. Overall rating:

	Poor					Excellent	
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
N/A	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
N/A	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7
	1	2	3	4	5	6	7

Should this session be included in next year's course (circle)? Yes No

What level resident are you? PGY- _____

What was the most significant piece of information obtained from this session?

Indicate how this session could be improved for the "next time"

Enter any comments or suggestions in the space provided below.

CURRICULUM EVALUATION – EVALUATION OF RESIDENTS

The ethical status of the residents will be assessed using two major tools, with pre-curriculum, intra-curriculum, and post-curriculum assessments.

1. OSCE Exams

Each May the University Neurosurgery Division conducts a Mock Oral OSCE Examination of all the residents. We will add a dedicated Bioethics station with two scenarios and score the resident's performance. This May, 2003 will represent the pre-Curriculum baseline assessment.

2. ITER

The ITER's which are filled out at the end of every hospital-based rotation include sections on the resident's professional and ethical behaviour based on observations by staff, other residents, and allied health care professionals. These are not uniform or consistent as the evaluators change with each rotation but this method is certainly effective at identifying "out-liers". These forms could also stand to have the ethical conduct portion expanded somewhat.

3. Other possible evaluations

The residents could be asked to write a paper on a bioethics subject either during their clinical rotations and/or their research rotations. MB would be pleased to evaluate them (perhaps with the help of another member of the University Bioethics Community (ie. The Joint Center for Bioethics) depending on the specific topic of the piece. If the resident wished it, the manuscript evaluator(s) could help the resident prepare the piece for publication, with no obligation of including the evaluator(s) as co-author(s).