

Index

- AANS. *See* American Association of Neurological Surgeons
- absolute truth, 22–3
- absolute values, 23–4
- accelerometer data, 85–7
 current collection and use of, 87–8, 89
- ethical issues in, 92
 case illustration of, 93
- access
 to brain machine-interface technology, 230
 to neurosurgical care, 234, 235–6
- active data, 86
- acts, in withholding and withdrawal of treatment, 48–9
- administrators,
 healthcare, 80–1
- adult stem cells, 214–15
 ethics of using, 215–16
 processing and manufacturing of, 216–17
- advance directives, treatment refusal and, 39–40
- age, surgeon. *See* surgeon aging
- Age Discrimination in Employment Act of 1967, 68
- agency, brain machine-interface technology and, 225–7
- Aging Surgeon program, 70–1
- ALS. *See* amyotrophic lateral sclerosis
- AMA. *See* American Medical Association
- American Association of Neurological Surgeons (AANS), neurosurgical code of ethics, 98–9
- American Medical Association (AMA), Code of Ethics, 96
- American Society of Bioethics and Humanities (ASBH), standards and best practices in ethics consultation, 16
- A-MI. *See* ante mortem interventions
- amyotrophic lateral sclerosis (ALS), 228–9
- aneurysmal subarachnoid haemorrhage (aSAH), 145, 152
- background information, 145–6
- current evidence
 BRAT, 147–8
 ISAT, 147
 Kuopio trial, 146–7
- ethical issues, 148
 conflicts of interest, 149–50
 randomized controlled trial limitations, 148–9
- future directions
 ISAT II, 150
 service development implications, 152
- training implications, 150–1
- animal models, of stem cell interventions, 217
- anosognosia, surgeon, 69
- ante mortem interventions (A-MI), 198–9
- apnoea test, 197
- applied ethics, 5
- Aristotle, 7–8
- aSAH. *See* aneurysmal subarachnoid haemorrhage
- ASBH. *See* American Society of Bioethics and Humanities
- augmentation, brain machine-interface technology for, 230–1
- autonomy, 12, 13, 20–1, 22
- beneficence at expense of, 23–4
- brain machine-interface technology and, 225, 226
- consent protection of, 29–30
- economic issues and, 78–9
- relational, 30, 36–7
- treatment refusal and, 39–40
- Barrow Ruptured Aneurysm Trial (BRAT), 147–8
- BCI. *See* brain computer interface
- BCI illiteracy, 229–30
- beneficence, 12, 13, 20–1, 22
 at expense of
 autonomy, 23–4
- benefit
 of brain machine-interface technology, 228–9
 of psychosurgery, 180
- benevolent donation, 236
- Bentham, Jeremy, 7, 241
- best interests standard, 42–3
- bias, passive data use causing, 91
- bioethics, 97–8. *See also* ethics
 clinical decision-making challenges and, 1–2
 definition of, 98
 early neurosurgical, 97–8
- bionic vision devices, 225, 229
- Bland, Anthony, 43–4, 47, 48
- bone marrow transplant, 36
- brain computer interface (BCI), 224–5, 231–2
- background
 current evidence, 225
 history, 225
- enhancement and
 augmentation using, 230–1
- ethical issues
 agency and identity, 225–7
 informed consent, 227–30
 privacy and security, 227
- future directions, 231

- justice and equity of access to, 230
 placebo effect and efficacy of, 230
 brain death, 193, 194–5, 201–2. *See also* organ donation
 background, 193–4
 diagnosis of, 193–4
 ethical issues
 brain death as form of death, 195
 brain death as irreversible, 195–6
 concept of whole brain death, 196–7
 future directions, 200
 in paediatric patients, 163
 treatment after, 47
 brain nets, 231
 brain repair, in Parkinson's disease, 220–1, 222
 brain tumour management, 112, 116, 120
 background information on, 112–13
 ethical issues in
 case illustrations of, 115–16, 117
 clinical ethics, 114–17
 research ethics, 117
 future directions in, ethics of innovation, 118–19
 passive data use in, 92
 BRAT. *See* Barrow Ruptured Aneurysm Trial
 Brush-Up Seminar of Neuro-Endovascular Therapy (BSNET), 250–1
 Cabot, Richard, 96
 capacity
 in cases of treatment withholding and withdrawal, 42
 for consent, 30
 in consent for brain machine-interface technology, 228
Caraka Samhita, 95–6
 Cardozo, J, 39
 'CASES' method, 16, 18
 casuistry, 15
 categorical imperatives, 6
 cell phone data. *See* smartphone data
 children. *See* paediatric neurosurgery
 classes of evidence, 106–7
 clinical decision-making
 challenges in, 1–2
 cost-effectiveness
 considerations in, 74–5, 79–80
 for decompressive hemicraniectomy for malignant middle cerebral artery infarction, 141–3
 evidence-based, 3–4, 5, 25–6
 evidence-based neurosurgery and, 104–6
 clinical ethics, brain tumour management, 114–17
 clinical ethics consultation, standards and best practices in, 16–18
 clinical practice
 changes in, 65–6
 value of ethics to, 10–11
 clinical trials, of stem cell interventions, 217–18
 code of ethics
 AANS, 98–9
 AMA, 96
 coercion, 23
 cognitive decline, surgeon, 64–5
 COIs. *See* conflicts of interest
 collection, data, 87–90
 committed partnership, 236
 communitarianism, 14, 15, 242
 competence, assessment of surgeon, 69, 70–1
 competency, 55–6, 60–1
 conflicts
 in decisions to withhold or withdraw treatment, 51, 52
 value, 23–4
 conflicts of interest (COIs)
 in aSAH management, 149–50
 consent and, 37
 in neurosurgical innovation, 208–9
 in organ donation, 199–200
 in psychosurgery, 183–4
 in spinal neurosurgery, 169–70
 consent. *See also* informed consent
 assumption
 underlying, 30–2
 for brain machine-interface technology, 227–30
 capacity for, 30
 for decompressive hemicraniectomy, 140, 141
 ethical values of, 29–30
 identity in, 31
 innovation, vulnerability and therapeutic misconception considerations in, 35
 mental illness considerations in, 34, 182–3
 as necessary, ethical component to neurosurgery, 37
 neurosurgery special considerations for, 34–6
 neurosurgical innovation and, 210–11
 for organ donation, 197–8
 in paediatric neurosurgery, 163–4
 for passive data collection, 88–90
 permissive function of, 29, 32–3
 personality and identity change considerations in, 34
 public interest and, 32
 relational function of, 29, 36–7
 retrospective, 141
 risk function of, 29, 33–4
 specificity of, 31
 for spinal neurosurgery, 168–9
 for stem cell research, 215–16
 substitute decision-making in, 31
 surgical training issues and, 59
 in televised live surgery, 246
 therapeutic ambivalence considerations in, 36
 treatment refusal and, 39–40
 voluntariness of, 31

- consequentialist theories, 7, 13
 consultation, ethics, 16–18
 contextual futility, 44, 45
 continental philosophy, 8–9
 continuing professional development, age-related regulations in, 68
 contracatarianism, 241
Convention of the Rights of People with Disabilities, 42
 Corticosteroid-Randomization-after-Significant-Head injury (CRASH), 1–2, 129, 130, 131
 cost-effectiveness, in clinical decision-making, 74–5, 79–80
 costs, healthcare, 73–4
 Council of Medical Education, age-related codes of ethics, 69
 CRASH. *See* Corticosteroid-Randomization-after-Significant-Head injury
 critical appraisal, in evidence-based neurosurgery, 108–9
 cultural context, of psychosurgery, 185–6
 cultural norms, 242
 cultural sensitivity, 238
 cultural values, 22–3
 curriculum ethics training in, 56–7, 61
 professionalism in, 56, 61
 Cushing, Harvey, 97
 cyborgs, 230–1
 Dandy, Walter, 97
 data background on, 85–7
 in brain machine-interface technology, 227
 current collection and use of, 87–8, 89
 ethical issues in, 88 case illustrations of, 92, 93
 collection, 88–90
 ownership, 90–1
 storage, 91
 use, 91–2
 future directions in, 93
 generation of, 86–7
 types of, 85
 DBS. *See* deep brain stimulation
 DCD. *See* donation after circulatory death
 dead donor rule (DDR), 193, 194–5, 196–7, 200, 202
 death. *See also* brain death brain death as form of, 195
 diagnosis of, 193–4
 DECIMAL trial, 136
 decision-making. *See* clinical decision-making; surgical decision-making
 decision-makers, for incapacitated patients, 41–2
 decision-making standard, for incapacitated patients, 42
 decompressive craniectomy, 1–2
 prediction of long-term outcomes after, 129, 130–2
 for severe TBI, 1–2, 123–4
 decompressive hemicraniectomy, for malignant middle cerebral artery infarction, 143
 background information, 134
 case illustrations, 139–40
 current evidence, 136–7
 ethical issues, 137–40
 evidence-based medicine applied to, 25–6
 future directions, 140–3
 for patients over 60 years of age, 138–9
 for patients under 60 years of age, 137–8
 DECRA study, 124–5
 deep brain stimulation (DBS) consent considerations for, 35
 televised live, 251, 252–3
 degenerative spine disease, prevalence of, 170
 deontology, 6, 241
 Derrida, Jacques, 8
 DESTINY II trial, 137, 138, 139
 DESTINY trial, 136
 diabetes insipidus, in brain death, 196
 digital phenotyping, 87–8
 dignity, 20–1, 22 consent and, 29–30
 disability, after TBI, 1–2, 126–9
 disability paradox, 126–8
 disclosure, in consent for brain machine-interface technology, 228
 disproportionate treatment, 45, 46
 distributive justice, 20–1, 24
 doctor-centred approach, to consent, 33–4
 Donaldson, Lord, 39–40
 donation after circulatory death (DCD), 193, 194–7, 200 ante mortem interventions in, 198–9
 donor organs. *See* organ donation
 EBM. *See* evidence-based medicine
 EBN. *See* evidence-based neurosurgery
 economics, healthcare. *See* healthcare economics
 education. *See* medical education
 efficacy, of brain machine-interface technology, 230
 embryonic stem cells (ESCs), 214–15 ethics of using, 215–16
 processing and manufacturing of, 216–17
 research with, 216
 enhancement, brain machine-interface technology for, 230–1
 epidemiology, research designs in, 101–2, 103
 equity of access, to brain machine-interface technology, 230
 Equivalence thesis, 49, 50
 ESCs. *See* embryonic stem cells
 ethical principles consequentialist theories, 7, 13
 continental philosophy and postmodernism, 8–9
 deontology, 6, 241

- feminist moral philosophy, 9
 in healthcare, 9–10
 international neurosurgical
 initiatives and, 241
 utilitarianism, 7, 13, 241
 in values-based medicine,
 20–1, 22
 virtue theory, 7–8
 ethical relativism, 22–3
 ethical theories, international
 neurosurgical
 initiatives and, 241–2
 ethical truth, 22–3
 ethics. *See also* bioethics;
 ethical principles
 areas of, 5
 clinical practice value of,
 10–11
 of consent, 29–30
 consultation, 16–18
 definition of, 5
 education on, 54–5, 56–7, 61
 evidence-based medicine
 and, 3–4, 5, 25–6
 historical overview of
 neurosurgical, 95, 99
 early virtue ethics, 96–7
 medical ethics, 95–6
 modern ethical
 contributions, 98–9
 societal issues and early
 bioethics, 97–8
 local, 239–40
 models and methods in, 12
 case illustration, 12, 13, 14,
 15, 16, 17–18
 casuistry, 15
 communitarian, 14,
 15, 242
 consultation methods,
 16–18
 ethics of virtue, 15, 16
 feminist ethics, 14
 narrative ethics, 13–14
 principlism, 12, 13
 religion and theology, 16
 utilitarianism, 7, 13, 241
 principles of modern day
 medical, 20–1, 22
 professional, 26–7
 rights compared with, 4–5
 ethics consultation, standards
 and best practices in,
 16–18
 ethics of virtue, 7–8, 15, 16
 early neurosurgical, 96–7
 European stroke trials, 136,
 138
 euthanasia
 in newborns, 157–60
 organ donation and, 200
 treatment withdrawal
 compared with, 47–51
 evidence
 evaluation of level/class of,
 106–7
 evaluation of quality of,
 105, 107
 evidence-based
 medicine (EBM)
 ethics and, 3–4, 5, 25–6
 limitations of, 24–6
 psychosurgery ethical issues
 and, 180
 values-based medicine
 and, 24–7
 evidence-based neurosurgery
 (EBN), 101, 109–10
 challenges of, 109
 clinical decision-making
 and, 104–6
 concept of, 101, 102
 critical appraisal in, 108–9
 evaluation of level/class of
 evidence in, 106–7
 evaluation of quality of
 evidence in, 105, 107
 grading of strength of
 recommendations in,
 107–8
 methodology of, 102–4
 research designs in
 neuroepidemiology,
 101–2, 103
 expectations, for brain
 machine-interface
 technology, 228,
 229–30
 experimental interventions,
 consent considerations
 and, 35
 false advertising, in
 international
 neurosurgical
 initiatives, 239
 family veto, of organ donation,
 197–8
 feminist ethics, 14
 feminist moral philosophy, 9
 financial incentives
 for organ donation, 198
 for performance of medical
 procedures, 81–2
 focused teaching, 236
 Foucault, Michel, 8
 ‘Four Topics’ method, 16,
 17
 fraud, 32–3
 Freeman, Walter, 97–8
 futility, 44–6
 survival after severe TBI and
 debate over, 128–9
 Gillick competence, 30
 global health initiative. *See*
 international
 neurosurgical
 initiatives
 global positioning satellite
 (GPS) data, 85–7
 current collection and use of,
 87–8, 89
 ethical issues in, 88
 case illustration of, 93
 data collection, 88–90
 data ownership, 90–1
 data storage, 91
 data use, 91–2
 Goff, Lord, 47
 Good Practice guidelines, 79
 government investment, in
 neurosurgical
 research, 78
 GPS data. *See* global
 positioning satellite
 data
 grading, of recommendations,
 107–8
 Grindley, Greg, 251
 Groningen protocol, 157–60
 guild ethics, 95
 Haddenbrock, Siegfried, 97–8
 HAMLET trial, 136
 harm, psychosurgery
 causing, 180
 Health Information
 Technology for
 Economic and Clinical
 Health Act
 (HITECH), 85–6
 Health Insurance Portability
 and Accountability Act
 (HIPAA), 85–6
 healthcare, ethical frameworks
 and principles in,
 9–10

- healthcare economics, 73, 83
 background information
 on, 73–4
 case illustrations of,
 81–2
 costs in, 73–4
 current evidence in, 74–6
 ethical issues in, 76–82
 future directions in, 82–3
 resource distribution in, 73,
 74–5, 81
- healthcare professionals,
 liability of, in cases of
 treatment withholding
 and withdrawal, 43–4
- hESCs. *See* human embryonic
 stem cells
- HIPAA. *See* Health Insurance
 Portability and
 Accountability Act
- Hippocrates, 95
- Hippocratic *Oath*, 95
- HITECH. *See* Health
 Information
 Technology for
 Economic and Clinical
 Health Act
- honesty, 20–1, 22
- hope, relational function of
 consent in, 36–7
- human embryonic stem cells
 (hESCs), 214–15
 ethics of using, 215–16
 processing and
 manufacturing of,
 216–17
 research with, 216
- human rights, ethics compared
 with, 4–5
- humanity, brain machine-
 interface technology
 and, 226
- Hume, David, 3
- hyper-interaction, 231
- hypothermia, for severe
 TBI, 123
- ICP monitoring, for severe
 TBI, 123
- identity
 brain machine-interface
 technology and, 225–7
 in consent, 31
- identity change, neurosurgery
 risks for, 34
- illiteracy, BCI, 229–30
- IMPACT. *See* International-
 Mission-for-Prognosis-
 and-Clinical-Trial
- implicit curriculum, 57
- incapacitated patients
 decision-makers for, 41–2
 decision-making standard
 for, 42
- healthcare professional
 liability in death
 of, 43–4
- when to withhold or
 withdrawal treatment
 for, 42–3
- individual values, 23–4
- induced pluripotent stem
 cells (iPSCs), 214–15
- ethics of using, 215–16
- processing and
 manufacturing of,
 216–17
- informed consent, 33–4
 for brain machine-interface
 technology, 227–30
 for decompressive
 hemicraniectomy for
 malignant middle
 cerebral artery
 infarction, 140
- neurosurgical innovation
 and, 210–11
- in paediatric neurosurgery,
 163–4
- for passive data collection,
 88–90
- for spinal neurosurgery,
 168–9
- for stem cell research,
 215–16
- initiatives, international
 neurosurgical. *See*
 international
 neurosurgical
 initiatives
- innovation
 brain tumour management
 and, 118–19
- consent considerations
 and, 35
- ethical aspects of, 205–6,
 212
- conflicts of interest, 208–9
- future directions, 211–12
- informed consent and
 vulnerable patients,
 210–11
- introduction of surgical
 devices, 209–10
- learning curve, 210
- oversight, 206–8
- in spinal neurosurgery, 169
- instrumental value, 20, 23–4
- intelligence, age-related
 changes in
 surgeon, 64–5
- international neurosurgical
 initiatives, 234
- background, 234–5
- case illustrations, 242, 243
- ethical analysis, 240
- ethical principles, 241
- ethical theories, 241–2
- future directions, 243
- intervention issues
 local ethics, 239–40
- misrepresentation and
 false advertising, 239
- provision of care with less-
 than-ideal resources or
 circumstances, 239
- post-intervention issues
 end point
 determination, 240
- inappropriate application
 of teaching, 240
- pre-intervention issues
 coordination of
 efforts, 237
- cultural sensitivity, 238
- international research,
 238–9
- reflection on motives, 235
- selection of initiative
 location, 236–7
- selection of initiative
 model, 236
- surgery vs. primary care
 needs, 235–6
- team selection, 237
- International Society for Stem
 Cell Research
 (ISSCR), 216
- International Subarachnoid
 Aneurysm Trial
 (ISAT), 147
- II, 150
- International-Mission-for-
 Prognosis-and-Clinical-
 -Trial (IMPACT),
 129, 130
- Internet data, 87–8, 89. *See also*
 social media data

- intracranial hypertension, 1
 intrinsic value, 20, 23–4
 of life, in treatment
 withholding and
 withdrawal
 decisions, 46–7
 introduction, of surgical
 devices, 209–10
 iPSCs. *See* induced
 pluripotent stem cells
 disability, survival with severe,
 after TBI, 126–9
 ISAT. *See* International
 Subarachnoid
 Aneurysm Trial
 ischaemic stroke. *See*
 malignant middle
 cerebral artery
 infarction
 ISSCR. *See* International
 Society for Stem Cell
 Research
 Japan, televised live surgery in,
 246–50
 Japanese Society for
 Cardiovascular Surgery
 (JSCVS), guidelines for
 live presentations of
 thoracic and
 cardiovascular surgery,
 248–50
 Jehovah's Witnesses, 162–3
 JSCVS. *See* Japanese Society for
 Cardiovascular Surgery
 justice, 12, 13, 21, 22
 brain machine-interface
 technology and, 230
 distributive, 20–1, 24
 Kant, Immanuel, 6, 241
 Kantian deontology, 6, 241
 kidneys, sale of, 198
 Kuopio trial, 146–7
 laboratory training, 59
 law of diminishing marginal
 returns, 75
 learning curve, in
 neurosurgical
 innovation, 210
 legal considerations
 in diagnosis of death,
 197, 200
 in treatment decisions for
 incapacitated patients
 decision-makers for, 41–2
 decision-making standard
 for, 42
 healthcare professional
 liability in death
 of, 43–4
 when to withhold or
 withdrawal treatment
 for, 42–3
 levels of evidence, 106–7
 Levinas, Emmanuel, 8
 liability
 brain machine-interface
 technology and, 226–7
 in cases of treatment
 withholding and
 withdrawal, 43–4
 life, intrinsic value of, in
 treatment withholding
 and withdrawal
 decisions, 46–7
 LIS. *See* locked in syndrome
 lobotomy, 97–8
 locked in syndrome (LIS),
 228–9
 Maimonides, 95
 malignant middle cerebral
 artery infarction,
 decompressive
 hemicraniectomy for,
 25–6, 134, 135, 136, 143
 background
 information, 134
 case illustrations, 139–40
 current evidence, 136–7
 ethical issues, 137–40
 evidence-based medicine
 applied to, 25–6
 future directions, 140–3
 for patients over 60 years of
 age, 138–9
 for patients under 60 years of
 age, 137–8
 management, healthcare, 80–1
 mandated choice, for organ
 donation, 198
 mandated request, for organ
 donation, 197–8
 mandatory reporting, of
 impaired surgeons, 69
 mandatory retirement ages, 68
 market, health care provision
 as, 76–81
 material risks, patient
 awareness of, 33–4
 mature minor doctrine, 30
 McMath, Jahi, 47, 197
 MCS. *See* minimally conscious
 state
 medical data. *See* data
 medical decapitation, 196
 medical education, 54, 62
 current evidence in
 ethics training, 56–7
 patient safety in
 neurosurgery, 55–6
 professionalism, 56
 ethical issues in
 case illustrations of,
 60–1
 consent, 59
 laboratory training and
 simulator use, 59
 surgery by residents,
 57–8, 60–1
 technology-associated,
 59–60
 future directions in
 integrated lecture/case-
 based curriculum in
 ethics, 61
 simulators in
 training, 61–2
 historical background
 of, 54–5
 medical ethics. *See* ethics
Medical Ethics (Percival), 96
 medical futility, 44–6
 medical neglect, 160–2
 medical professionalism, 26
 memory decline, surgeon,
 64–5
 mental illness, neurosurgery
 for, 175, 189
 consent considerations in,
 34, 182–3
 early bioethics and, 97–8
 ethical issues in, 179–87
 ethical regulation of,
 187–9
 new advances in, 175–6
 recent history of, 176–9
 metaethics, 5
 middle cerebral artery
 infarction. *See*
 malignant middle
 cerebral artery
 infarction
 Mill, John Stuart, 7, 241
 minimally conscious state
 (MCS), 228–9

- misrepresentation, in
 international
 neurosurgical
 initiatives, 239
 modified Rankin Scale
 (mRS), 137
 Moniz, Egas, 97–8
 moral distress, 75–6
 moral exercise, practice of
 medicine as, 3–4, 5
 moral fictions, in brain death
 and DCD definitions,
 196–7
 moral philosophy, 5
 feminist, 9
 moral virtue, 7–8
 Morrissey proposal, 200
 motives, of international
 neurosurgical
 initiatives, 235
 mRS. *See* modified Rankin
 Scale
 Mustill, Lord, 32, 48
- narrative ethics, 13–14
 negative rights, 4
 neglect, medical, 160–2
 neural privacy, brain machine-
 interface technology
 and, 226
 neurobionics, 224
 neurocognitive decline,
 surgeon, 64–5
 neuroepidemiology, research
 designs in, 101–2, 103
 neurological disease, stem cell
 interventions for,
 219–21, 222
 neuroprosthetic devices, 224,
 225, 229, 230
 neurosurgery. *See also*
 evidence-based
 neurosurgery; surgical
 training; *specific*
 surgeries
 access to, 234, 235–6
 changes in practice of, 65–6
 consent for
 innovation, vulnerability
 and therapeutic
 misconception
 considerations in, 35
 mental illness
 considerations in, 34,
 182–3
 as necessary, ethical
 component to
 surgery, 37
 personality and identity
 change considerations
 in, 34
 therapeutic ambivalence
 considerations in, 36
 disparities within, 77
 economic considerations in,
 76–82
 economic costs of, 73
 ethical frameworks and
 principles in, 9–10
 ethics training in, 56–7
 government investment
 in, 78
 historical overview of ethics
 in, 95, 99
 early virtue ethics,
 96–7
 medical ethics, 95–6
 modern ethical
 contributions, 98–9
 societal issues and early
 bioethics, 97–8
 innovation in
 brain tumour
 management and,
 118–19
 conflicts of interest in,
 208–9
 consent considerations
 and, 35
 ethical aspects of,
 205–6, 212
 future directions of,
 211–12
 informed consent and
 vulnerable patients in,
 210–11
 introduction of surgical
 devices, 209–10
 learning curve in, 210
 oversight of, 206–8
 in spinal
 neurosurgery, 169
 patient safety in, 55–6
 by residents, 57–8, 60–1
 surgeon age impact on, 64,
 66–7, 69–70, 71
 televised live, 245–6, 253
 history of, 246–50
 neurosurgical role of,
 250–1
 participant related issues
 in, 245, 248
 patient centred issues in,
 245, 246
 public neurosurgery, 251,
 252–3
 surgeon centred issues in,
 245, 247
 value of ethics to, 10–11
 new public management
 (NPM), 74, 75–6, 78
 newborns, euthanasia in,
 157–60
 non-culpable omission,
 43–4
 non-embryonic stem cells,
 214–15
 non-maleficence, 12, 13,
 20–1, 22
 normality, brain machine-
 interface technology
 and, 226
 normative ethics, 5
 NPM. *See* new public
 management
- omissions, in withholding and
 withdrawal of
 treatment, 48–9
 operating room, neurosurgery
 utilization of, 77–8
 opt-in consent, for organ
 donation, 197–8
 opt-out consent, for organ
 donation, 197–8
 organ donation, 193, 194–5,
 201–2
 ante mortem interventions
 for, 198–9
 background, 193–4
 conflicts of interest in,
 199–200
 consent for, 197–8
 ethical issues, 195–7
 euthanasia and, 200
 financial incentives for, 198
 future directions, 200
 in paediatric patients, 163
 Osler, William, 96
 outcomes assessment, for
 psychosurgery, 180
 oversight, for neurosurgical
 innovation, 206–8
 ownership, of patient
 data, 90–1

- paediatric neurosurgery, 154,
 166–7
 background information,
 154–5
 case illustrations, 164–6
 current evidence, 155
 randomized trials, 156
 ethical issues, 157
 brain death and organ
 transplantation, 163
 Groningen protocol for
 euthanasia in newborns,
 157–60
 informed consent, 163–4
 Jehovah's Witnesses,
 162–3
 medical neglect, 160–2
 palliative care, 157
 prenatal diagnosis, 157
 future directions, 164–6
 palliative care, in paediatric
 neurosurgery, 157
 Parkinson's disease, brain
 repair in, 220–1, 222
 passive data
 current collection and use of,
 87–8, 89
 ethical issues in, 88
 case illustrations of, 92, 93
 data collection, 88–90
 data ownership, 90–1
 data storage, 91
 data use, 91–2
 future directions in, 93
 generation of, 86–7
 patient-centred approach, to
 consent, 33–4
 patient data, 85
 background, 85–7
 current evidence, 87–8, 89
 ethical issues, 88
 case illustrations of, 92, 93
 data collection, 88–90
 data ownership, 90–1
 data storage, 91
 data use, 91–2
 future directions, 93
 patient safety
 for brain machine-interface
 technology, 229
 surgeon aging and, 64, 66–7,
 69–70
 in surgical training, 55–6
 in televised live surgery,
 246
 patient-centred care
 distribution of resources
 and, 24
 physician-patient
 relationship and, 24, 26
 patients
 expectations of, for brain
 machine-interface
 technology, 228, 229–30
 incapacitated
 decision-makers for, 41–2
 decision-making standard
 for, 42
 healthcare professional
 liability in death
 of, 43–4
 when to withhold or
 withdrawal treatment
 for, 42–3
 rights of, 4–5
 values of, 22–4, 26
 Penfield, Wilder, 98
 Percival, Thomas, 96
 peri-mortem organ
 donation, 193
 permissive function, of
 consent, 29, 32–3
 personal digital devices. *See*
 smartphone data
 personalised medicine, ethics
 and, 3–4
 personality change,
 neurosurgery risks
 for, 34
 personhood
 brain machine-interface
 technology and, 226
 consent and, 29–30
 philanthropic travel, 236
 philosophical ethics, 5
 physician aging. *See* surgeon
 aging
 physician-centred approach, to
 consent, 33–4
 physician-patient relationship
 economic issues and, 78–9
 passive data use and, 92
 patient-centred care and,
 24, 26
 relational function of
 consent in, 36–7
 physiological futility, 44, 45
 placebo effect, of brain
 machine-interface
 technology, 230
 positive rights, 4
 postmodernism, 8–9
 practical ethics, 5
 preclinical studies, of stem cell
 interventions, 217
 prenatal diagnosis, 157
 presumed consent, for organ
 donation, 197–8
 principlism, 12, 13
 privacy
 brain machine-interface
 technology and, 227
 in televised live surgery, 246
 procedural futility, 45–6
 professional ethics
 economic issues and, 79
 in values-based
 medicine, 26–7
 professionalism, 26
 in medical education, 54, 62
 in surgical training, 56, 61
 prognosis, after severe TBI,
 129, 130–2
 proportionate treatment, 45, 46
 psychiatric surgery. *See*
 psychosurgery
 psychosurgery, 175, 189
 consent considerations for,
 34, 182–3
 early bioethics and, 97–8
 ethical issues in, 179
 conflicts of interests,
 183–4
 consent, 182–3
 controversial uses, 186–7
 evidence and research, 180
 outcomes assessment and
 balance of benefit and
 harm, 180
 social and cultural
 contexts, 185–6
 special population
 considerations, 184–5
 ethical regulation of, 187–9
 new advances in, 175–6
 recent history of, 176–9
 public interest, consent and, 32
 public televised live
 neurosurgery, 251,
 252–3
 qualitative futility, 44, 45
 quality of evidence, 105, 107
 quality of life, in treatment
 withholding and
 withdrawal
 decisions, 46–7
 quantitative futility, 44, 45

- Rachels, James, 48–9
 RACS. *See* Royal Australia College of Surgeons
 randomized controlled trials, 24–5
 limitations of, 148–9
 in paediatric neurosurgery, 156
 Rawl, John, 241
 recommendations, grading of strength of, 107–8
 RECs. *See* research ethic review committees
 refusal of treatment, 39–40
 relational autonomy, 30, 36–7
 relational function, of consent, 29, 36–7
 relative value system, 77
 relativism, ethical, 22–3
 religion, 6, 16, 241
 required consent, for organ donation, 197–8
 RESCUEicp trial, 125–6
 research
 government investment in neurosurgical, 78
 international, 238–9
 passive data in, 88–92
 psychosurgery ethical issues and, 180
 stem cell, 215–16
 research designs, in neuroepidemiology, 101–2, 103
 research ethic review committees (RECs), 238–9
 research ethics, of brain tumour management, 117
 resident training. *See* surgical training
 residents, surgery by, 57–8, 60–1
 resources, distribution of, 24
 healthcare economics and, 73, 74–5, 81
 respect, consent protection of, 29–30
 responsibility, for brain machine-interface technology, 226–7
 retirement, surgeon, 68–9
 retrospective consent, 141
 revalidation, surgeon, 70
 rights, ethics compared with, 4–5
 risk function, of consent, 29, 33–4
 risk of unacceptable badness, 44
 Royal Australia College of Surgeons (RACS), continuing professional development regulations, 68
 al-Ruhawi, Ishaq Ibn 'Ali, 95
 sanctity of life, 46–7
 Sauerbruch, Ferdinand, 66
 Schiavo, Terri, 41–2
 security, brain machine-interface technology and, 227
 sensory impairment, surgeon, 64–5
 service developments, in aSAH management, 152
 simulation, surgical training with, 59, 61–2
 smartphone data, 85–7
 current collection and use of, 87–8, 89
 ethical issues in, 88
 case illustrations of, 92, 93
 collection, 88–90
 ownership, 90–1
 storage, 91
 use, 91–2
 social context, of psychosurgery, 185–6
 social media data, 85–7
 current collection and use of, 87–8, 89
 ethical issues in, 88
 case illustrations of, 92, 93
 collection, 88–90
 ownership, 90–1
 storage, 91
 use, 91–2
 society
 early bioethics and, 97–8
 moral principles from, 6
 values of, 22–3
 somatic stem cells, 214–15
 ethics of using, 215–16
 processing and manufacturing of, 216–17
 Sorensen, Bruce, 98–9
 specificity, of consent, 31
 spinal neurosurgery, 168
 background, 168
 case illustrations, 171–2
 ethical issues
 conflict of interest, 169–70
 informed consent, 168–9
 lack of standardization of care, 170–1
 new technology, 169
 prevalence of degenerative spine disease, 170
 future directions
 for field of spine surgery, 172–3
 for neurosurgeons, 173
 passive data use in, 88, 89, 93
 standardization of care, in spinal neurosurgery, 170–1
 Statement of Ethics in Neurosurgery, World Federation of Neurosurgical Societies, 79, 99
 stem cells, 214, 221–3
 ethical issues in clinical use of, 216
 animal models and preclinical studies, 217
 clinical trials, 217–18
 research with human embryonic tissue, 216
 stem cell processing and manufacturing, 216–17
 unproven interventions, 218–19
 ethics of, 215–16
 research with, 215–16
 short-term neurosurgical applications of, 219–20
 brain repair in Parkinson's disease, 220–1, 222
 types of, 214–15
 Stentrod, 225
 steroids, in traumatic brain injury, 1–2
 stigma
 brain machine-interface technology and, 226
 passive data use causing, 91
 storage, of patient data, 91
 stroke. *See* malignant middle cerebral artery infarction

- subarachnoid haemorrhage.
 See aneurysmal subarachnoid haemorrhage
- substantial benefit, 44
- substitute decision-making, 31
- substituted judgment
 standard, 42–3
- suicide. *See also* euthanasia
 refusal of treatment as
 not, 40
- surgeon aging, 64, 71
 background
 aging process and
 decline, 64–5
 clinical practice
 changes, 65–6
 surgical workforce, 65
 current evidence, 66
 effects of aging on medical
 practice, 66–7
 ethical issues, 67
 retirement, 68–9
 safe and unsafe aging
 surgeons, 69–70
 future directions, 70–1
 neurosurgery specific
 implications for
 surgeons, 71
- surgical decision-making, in
 televised live surgery,
 247, 248
- surgical devices, introduction
 of, 209–10
- surgical environment, in
 televised live surgery,
 247, 248
- surgical procedure, in televised
 live surgery, 247, 248
- surgical tourism, 236
- surgical training, 54, 62
 in aSAH management,
 150–1
 background of, 54–5
 current evidence on
 ethics training, 56–7
 patient safety in
 neurosurgery, 55–6
 professionalism, 56
 ethical issues in
 case illustrations of, 60–1
 consent, 59
 laboratory training and
 simulator use, 59
 surgery by residents,
 57–8, 60–1
- technology-associated,
 59–60
- future directions in
 integrated lecture/case-
 based curriculum in
 ethics, 61
 simulators in
 training, 61–2
 inappropriate application
 of, 240
- Sweet, William, 98
- TBI. *See* traumatic brain injury
- team selection, for
 international
 neurosurgical
 initiatives, 237
- technology
 brain tumour management
 and, 118–19
 consent considerations
 and, 35
 data generated by, 85–6
 ethical aspects of innovation
 in, 205–6, 212
 conflicts of interest, 208–9
 future directions, 211–12
 informed consent and
 vulnerable patients,
 210–11
 introduction of surgical
 devices, 209–10
 learning curve, 210
 oversight, 206–8
- healthcare economics
 and, 75
- passive data from
 current collection and use
 of, 87–8, 89
 ethical issues in, 88–92, 93
 generation of, 86–7
- spinal neurosurgery and, 169
- surgical training issues and,
 59–60
- treatment withholding and
 withdrawal
 considerations and, 39
 value considerations and, 20
- televised live surgery (TLS),
 245–6, 253
 history of, in Japan, 246–50
 neurosurgical role of, 250–1
 participant related issues in,
 245, 248
 patient centred issues in,
 245, 246
- public neurosurgery, 251,
 252–3
- surgeon centred issues in,
 245, 247
- ‘tertium non datur’, 22–3
- theology, 6, 16
- therapeutic ambivalence,
 consent and, 36
- therapeutic decisions
 challenges in, 1–2
 evidence-based, 3–4, 5, 25–6
- therapeutic misconception
 of brain machine-interface
 technology, 228
 consent and, 35
- therapeutic relationship,
 relational function of
 consent in, 36–7
- TLS. *See* televised live surgery
- touch, permission for, 32
- transplant tourism, 198
- transplantation, of donor
 organs. *See* organ
 donation
- traumatic brain injury (TBI),
 121, 132
 background information,
 121–3
 current evidence
 decompressive
 craniectomy, 123–4
 hypothermia, 123
 ICP monitoring, 123
 decompressive craniectomy
 for, 1–2, 123–4
 ethical issues, 124
 case illustrations of, 127–8
 DECRA study, 124–5
 disability paradox, 126–8
 futility debate, 128–9
 RESCUEicp trial, 125–6
 survival with severe
 disability, 126–9
 future directions, 129
 prediction of long-term
 outcomes, 129, 130–2
 steroid role in, 1–2
 treatment refusal, 39–40
 treatment withholding and
 withdrawal, 51–2
 advance directives and,
 39–40
 brain death and, 194
 clinical case illustration of,
 40–1, 46, 49–51
 conflict mitigation in, 51, 52

264	Index
treatment withholding (cont.) for incapacitated patients, 42–3 decision-makers for, 41–2 decision-making standard for, 42 healthcare professional liability in death of, 43–4 when to withhold or withdrawal treatment for, 42–3 practical considerations in, 44 difference between withholding and withdrawal, 47–9, 50 medical futility, 44–6 neurosurgical case illustration of, 49–51 quality of life and intrinsic value of life, 46–7 technology impact on, 39 trust, relational function of consent in, 36–7 truth, ethical, 22–3 truthfulness, 20–1, 22 UDHR. <i>See</i> Universal Declaration of Human Rights Umansky, Felix, 99 undue influence, 23 consent and, 31 United Nations, <i>Convention of the Rights of People with Disabilities</i>, 42	Universal Declaration of Human Rights (UDHR), 4 universal truth, 22–3 universal values, 23–4 unprofessional behaviours, in surgical training, 58 unproven interventions, stem cell, 218–19 use, data, 87–8, 89, 91–2 user safety, for brain machine-interface technology, 229 utilitarianism, 7, 13, 241 values absolute and universal, 23–4 conflicts of, 23–4 of consent, 29–30 cultural and societal, 22–3 individual, 23–4 intrinsic and instrumental, 20, 23–4 patient, 22–4, 26 technology and, 20 values-based medicine (VsBM), 20 concept of, 20–4 conflicts between values in, 23–4 definition of, 20 distribution of resources in, 24 ethical truth and relativism in, 22–3 evidence-based medicine and, 24–7 medical ethics principles and, 20–1, 22 patient care and interest as center of care in, 27 professional ethics in, 26–7 virtual reality (VR), surgical training with, 61–2 virtue ethics, 7–8, 15, 16 early neurosurgical, 96–7 voluntariness, of consent, 31 VR. <i>See</i> virtual reality VsBM. <i>See</i> values-based medicine vulnerability consent and, 35 neurosurgical innovation and, 210–11 Wada, Juro, 194 Watts, James, 97–8 White, Robert, 98 white knight syndrome, 235 whole brain death, 196–7 withholding and withdrawal of treatment. <i>See</i> treatment withholding and withdrawal Wittgenstein, Ludwig, 3 workforce, surgical, 65 World Federation of Neurosurgical Societies, Statement of Ethics in Neurosurgery, 79, 99