

Cambridge University Press

978-0-521-69769-9 - Medical Decision Making: A Physician's Guide

Alan Schwartz and George Bergus

Index

[More information](#)

Index

Page numbers followed by *t* indicates tables, *f* indicates figures and *n* indicates footnotes.

- absolute risk reduction (ARR), 67
- activities of daily living (ADLs), 19
- adaptation, 38
- advanced directives, 153–154
- allocation. *see* cost-effectiveness analysis; public health decisions; social values
- ambiguity, 57,62
- American Society for Bioethics and Humanities, 176
- analogue scales, 31f
- Analytic Hierarchy Process (AHP), 26,26t
- Aristotle, 37
- “Asian disease problem,” 61
- aspiration Index, 9
- asymmetric dominance, 106n
- attitudes
 - towards loss, 61
 - towards risk and loss, 35,82n
 - towards uncertainty, 62
- attraction effect, 106n
- availability heuristic, 65

- Basu, Anirban, 150,151–153
- Bayes’ Theorem, 137,137f
- Beaver Dam Health Outcomes Study, 25
- Belmont Report of the National Commission for the Protection of Human Subjects, 182
- beneficence, 182–183
- benefits, of health, 161–164
- Bentham, Jeremy, 80,80n

- Bernoulli, Daniel, 79
- Bernoulli, Nicolas, 79
- bias
 - cost of, in learning environments, 145
 - in diagnostic testing, 144–145
 - and dominated opinions, 106n
 - and judgment heuristics, 66
 - outcome bias, 66
 - in probability revision, 144–145

- caregivers. *see* family
- category rating, 31f
- Cayley, William, 8
- Center on the Evaluation of Value and Risk in Health, 170,170t
- chance and choice, 81,81t
 - see also* expected utility
- charges vs. costs, 164–165
- Clinical Decision Making: From Theory to Practice* (Eddy), 171–172
- clinical research, 123f
 - ethics in, 182–183
 - phase I drug trials, 183–185
 - see also* evidence-based medicine (EBM)
- clinical scoring rules, 141–142,143f
- communication
 - approaches to, 70
 - and health dimensions, 23
 - of uncertainty to patients, 63
- components, health. *see* health dimensions
- conditional independence, 140

Cambridge University Press

978-0-521-69769-9 - Medical Decision Making: A Physician's Guide

Alan Schwartz and George Bergus

Index

[More information](#)**206** Index

- confidence, 98
 - and calibration, 95f
 - clinical questions for, 98
 - defined, 90
 - by experts, 97
 - and lack of conflict, 97
 - over- and underconfidence, 93
 - and second opinions, 114,116f
 - statistical, 92
 - subjective, 92
 - as term, 90n
- confidence intervals, 91
- confirmation bias, 145
- constraints
 - defined, 8
 - as goals, 4
 - vs. goals and objectives, 8
 - see also* goals; objectives
- contingent valuation, 162
- contrast, 37
- coping, uncertainty and, 72
- cost-benefit analysis, 161–162
- cost-effectiveness analysis, 162,166–173
 - cost-effectiveness ratio, 167,168f
 - discussions of, 171–173
 - incremental cost-effectiveness ratio, 169,170t
 - principles of, 166–167
 - rationing care, 177–179
- cost-effectiveness ratio (CER), 167, 168f
- costs vs. charges, 164–165
- cost-utility analysis, 163–164
- criteria, decision making, 7
- cumulative prospect theory, 82

- decision perspective, 160–161
- decision support systems (DSS), 142
- decision trees, 107,107f
- decisions
 - clinical questions for, 13
 - deliberative consideration of, 6
 - dimensions and. *see* health dimensions
 - ethics in, 175–177
 - and family. *see* family
 - good decisions, defined, 7
 - holistic vs. decompositional approach to, 17,41
 - information and, 5
 - information for. *see* information
 - justifications for, 5
 - life goals and, 7,13
 - outcomes and, 4,22
 - preparing for outcomes of, 78
 - uncertainty in. *see* uncertainty
 - visualizing. *see* visualization
- Decisions with Multiple Objectives* (Keeney and Raiffa), 7
- decompositional approach, 17
 - example of, 23
 - vs. holistic approach, 17,41
- diagnostic tests
 - Bayes' Theorem, 137,137f
 - clinical questions for, 146
 - combination of results, 139–140
 - and conditional independence, 140
 - development of, 130,130f
 - gold standards, 130–131
 - interpretation of, 136–139
 - multiple, 138–139
 - ordering strategies, 141
 - psychology of, 142,144f
 - ROC curve, 133,134f
 - scoring rules for, 141–142,143f
 - sensitivity and specificity, 133
 - thresholds for, 131,131f
- dimensions of health. *see* health dimensions
- discounting, 47,165–166
- discrete probability distribution, 121f
- distributive justice, 181–182
- DOSPERT (Domain-Specific Risk-Taking) scale, 59,60t
- durable power of attorney for health care, 153–154

- Eddy, David, 171–172
- Educating Intuition* (Hogarth), 145
- emotions, risk and, 62
- “Enough: The Failure of the Living Will” (Fagerlin and Schneider), 154
- epidemiology, risk and, 56,56n
- equity, 179
- error
 - cost of, in learning environments, 145
 - false negatives, 132,133
 - false positives, 132,133
 - in interpretation, 144–145
 - in probability revision, 144–145
- ethics, 175–177
 - and medical research, 182–183
 - and phase I drug trials, 183–185
- EuroQOL EQ-5D, 24

- evaluation, health states, 36
 - analog scales *vs.* category rating, 31f
 - clinical questions for, 41
 - comparison of methods, 36
 - of health states, 31f
 - holistic *vs.* decompositional approach to, 41
 - prediction problem, 39
 - standard gamble method, 35
 - time tradeoff method, 33
 - utility for, 35n
- evidence-based medicine (EBM), 126f
- expectation principle, 77t
- expected utility, 87
 - alternatives to, 84t
 - clinical questions for, 87
 - decision trees, 108
 - and the expectation principle, 77t
 - expected utility theory, 81,81t
 - and expected value of perfect information, 121f
 - gist representation and, 87,87t
 - of health benefits, 163–164
 - lexicographic strategy to, 84
 - vs.* maximax strategy, 85
 - vs.* minimax strategy, 85
 - patient responses towards, 81,83f
 - and the preparation principle, 78
 - vs.* regret minimization, 86
 - from testing. *see* diagnostic tests
 - theory of, 81,81t
- expected value of imperfect information (EVII), 122f
- expected value of information (EVI), 120f
- expected value of perfect information (EVPI), 121f
- experiential approach, 70
- Expert Choice 11, 26
- expert judgment, 97
- Fagan's nomogram, 137,137f
- Fagerlin, Angela, 154
- false negatives, 132,133
- false positives, 132,133
- family, 149–158
 - benefits of patients to, 151,152
 - benefits to patients with, 150–151
 - clinical questions for, 158
 - costs to, 152
 - surrogate decision-makers, 153–157
 - utility, 149–153
- Foundation for Informed Decision Making, 30
- functional status, 19
- future planning prediction problem, 39
- fuzzy trace theory (FTT), 87,87t
- goals
 - alternatives and, 11t
 - clarification of, 10
 - and medical decisions, 7,11t
 - vs.* objectives and constraints, 8
 - swing-weighting, 12t
 - typology of (Aspiration Index), 9
 - see also* constraints; objectives
- gold standards, 130–131
- Groopman, Jerome, 66
- health
 - defining, 18
 - describing states of, 30
 - evaluation of health states. *see* evaluation, health states
 - functional status, 19
 - life expectancy, 18
 - mental well-being, 19
 - overall state of, 41
 - quality of life, 20
 - questionnaires, 25
 - social well-being, 19
- health benefits
 - health units of, 162
 - monetary units of, 161–162
 - utility units of, 163–164
- health care proxy, 153–154
- health dimensions, 28
 - Analytic Hierarchy Process (AHP), 26,26t
 - clinical questions for, 28
 - defining health, 20
 - holistic *vs.* decompositional approach to, 41
 - measurement tools for, 26
 - rating the importance of, 23
 - Simple Multi-Attribute Rating Technique Exploiting Ranks (SMARTER), 27,27n
 - use of, 23
- health profiles, 44f
- Health Utilities Index (HUI), 24
- healthy-year equivalents (HYE), 48
- Hershberger's Inventory of Cognitive Biases in Medicine, 65f
- heuristic judgments, 65f
- hierarchical tree method, 104,104f
- higher-order uncertainty, 57
- Hogarth, Robin M., 145

Cambridge University Press

978-0-521-69769-9 - Medical Decision Making: A Physician's Guide

Alan Schwartz and George Bergus

Index

[More information](#)**208** Index

- holistic approach
 - vs. decompositional approach, 17,41
 - to health states, 29
- hope, uncertainty and, 72
- How Doctors Think* (Groopman), 66
- Impact 3 Survey Generator program, 36
- incidence vs. prevalence, 56n
- incremental cost-effectiveness ratio (ICER), 169,170t
- individual patient perspective, 160
- influence diagrams, 110f
- information, 113,115f
 - clinical questions for, 127f
 - from clinical research, 123f
 - from evidence-based medicine, 126f
 - expected value of (EVI), 120f
 - expected value of imperfect (EVII), 122f
 - expected value of perfect (EVPI), 121f
 - information analysis, value of, 120f
 - maximum value of (MVI), 123f
 - for patients, 125f
 - from second opinions, 114,116f
 - sensitivity analysis, 116f
- informed consent, 182,184–185
- Kasser, Tim, 9
- legal considerations
 - and communicating uncertainty, 63
 - and decision support systems (DSS), 142
 - of research practices and informed consent, 182
 - and testing, 139n
- lexicographic strategy, 84
- life expectancy, 18
 - clinical questions for, 51
 - vs. quality of life, 51
 - quality-adjusted, 48
- life goals. *see* goals
- likelihood of being helped or harmed (LHH), 68
- living wills, 153–154
- losses vs. gains
 - and expected utility, 82
 - patient attitude towards, 61,82n
- Markov models, 50f
- maximax strategy, 85
- maximum value of information (MVI), 123f
- measurement, of health dimensions, 26
- medical care goals
 - for family. *see* family
 - good decisions, defined, 7
 - overview, 4
 - and social values. *see* social values
 - for society. *see* public health decisions
 - see also* goals
- medical costs, 164–166
 - costs vs. charges, 164–165
 - discounting and, 165–166
 - future indirect, 166
 - vs. nonmedical costs, 165
- Medical Outcome Study SF-36, SF-12, and SF-8, 24
- medical research. *see* clinical research
- Meltzer, David, 150,150n
- mental well-being, 19
- minimax strategy, 85
- monetary value of health, 161–162
- Monte Carlo methods, 118n
- Mueller-Lyer illusion, 63n
- multiattribute utility theory, 23
- multiple outcomes, 77t
- National Institute for Health and Clinical Excellence (NICE), 124f
- nonmaleficence, 178
- number needed to treat (NNT), 68
- numeracy, 63,63n
- Nuremberg Code of 1948, 182
- objectives
 - defined, 7
 - vs. goals and constraints, 8
 - see also* constraints; goals
- observed spending behavior, 161–162
- odds, 63n
- organ donation dilemma, 179–181
- Ottawa Personal Decision Guide, 107
- outcome bias, 66
- outcomes
 - attributes of, 105
 - of decisions, 4,78
 - dimension importance and, 23
 - multiple and the expectation principle, 77t
 - ranges of, 22
 - short term and long term, 46
- overall health. *see* health
- overconfidence, 93
- overextremity, 94
- overprediction, 94

Cambridge University Press

978-0-521-69769-9 - Medical Decision Making: A Physician's Guide

Alan Schwartz and George Bergus

Index

[More information](#)

- Panel on Cost Effectiveness in Health and Medicine, 167
- Pascal, Blaise, 79
- patients
- advance decision-making by, 153–154
 - clarification of goals, 10
 - communication about health dimensions, 23
 - as competent decision makers, 153
 - emotional reactions of, 62
 - and expected utility, 81, 83f
 - and family. *see* family
 - health, in context of, 20
 - individual patient perspective and, 160
 - medical knowledge of, 125f
 - numeracy level of, 63, 63n
 - prediction problem, 39
 - religious beliefs of, 33
 - risk attitudes of, 62
 - and social values. *see* social values
 - swing-weighting goals, 12t
 - and uncertainty, attitudes towards, 62
- payer perspective, 160–161
- perfect health, 30
- rating against death,
 - and time tradeoff method, 33
- perspective, 160–161
- individual, 160
 - payer, 160–161
 - societal, 161
- pharmaceutical advertising, 125f
- phase I drug trials, 183–185
- physicians
- and calibration, 94, 95f
 - ethics and. *see* social values
 - and nonmaleficence, 178
 - public health responsibilities. *see* public health decisions
 - risk attitudes of, 59
 - role in surrogate decision-making, 157, 157n
 - and second opinions, 114, 116f
 - and uncertainty, 58
- Poetics* (Aristotle), 37
- prediction problem, 39
- for acute states, 37
 - for chronic states, 38
 - discounting and, 47
 - surrogate predictions, 39
- preferences, uncertainty in, 58
- preparation principle, 78
- prevalence vs. incidence, 56n
- Principles of Biomedical Ethics* (Beauchamp and Childress), 182
- pro and con lists, 105, 106t
- probabilistic sensitivity analysis, 117, 118n
- probability vs. frequency. *see* uncertainty
- “problem of points,” 79
- procedural justice, 179–181
- pseudodiagnosticity, 145
- public health decisions, 159–174
- arguments about, 171–173
 - clinical questions for, 173–174
 - cost-effectiveness, 166, 168f
 - decision perspective and, 160–161
 - health benefits, health units of, 162
 - health benefits, monetary units of, 161–162
 - health benefits, utility units of, 163–164
 - and medical cost, measurement of, 164–166
 - rationing care, 177–179
 - and social values. *see* social values
- quality adjusted life years (QALYs), 48, 150–151, 163–164
- see also* cost-effectiveness analysis
- quality of life, 20
- adjusted life expectancy and, 48
 - clinical questions for, 51
 - discounting and, 47
 - and expected utility, 80
 - Markov models, 50f
 - vs. quantity of, 51
 - questionnaires, 25
 - and short term and long term outcomes, 46
- Quality of Well-Being scale (QWB), 24
- quantity of life. *see* life expectancy; quality of life
- rank order centroid (ROC) weights, 27n
- rating
- for evaluation of health states, 31f
 - importance of health dimensions, 23
- rationing care, 177–179
- receiver operating characteristic (ROC), 133, 134f
- reference standards, 130–131
- regret minimization, 86
- rehabilitation, quality of life and, 44f
- relative risk reduction (RRR), 67
- representativeness heuristic, 65f
- rescue, rule of, 178–179
- research. *see* clinical research

Cambridge University Press

978-0-521-69769-9 - Medical Decision Making: A Physician's Guide

Alan Schwartz and George Bergus

Index

[More information](#)**210** Index

- resource allocation. *see* cost-effectiveness analysis; public health decisions; rationing care
- Reyna, Valerie, 87,87t
- risk
 - and emotion, 62
 - patient attitude towards, 35,82n
 - reduction of, 70
 - and uncertainty, 57,62
- Risk Assessment Tool, 89n
- risk-seeking vs. risk-averse choices, 62, 82,83f
- rule of rescue, 178–179
- St. Petersburg Paradox, 79
- Schneider, Carl E., 154
- scoring rules, 141–142,143f
- screening. *see* diagnostic tests
- second opinions, 114,116f
- sensitivity, 133
- sensitivity analysis, 116f
 - defined, 116f
 - probabilistic, 117,118n
 - threshold, 116f
- Simple Multi-Attribute Rating Technique Exploiting Ranks (SMARTER), 27,27n
- social values
 - clinical questions for, 185
 - and distributive justice, 181–182
 - ethical decisions and, 175–177
 - ethics and medical research, 182–183
 - phase I drug trials, 183–185
 - and procedural justice, 179–181
 - rationing care, 177–179
 - see also* public health decisions
- social well-being, 19
- societal decisions. *see* family; public health decisions
- societal perspective, 161
- Society for Medical Decision Making, 176
- specificity, 133
- spending behavior, 161–162
- standard gamble, 35
- standard gamble method, 35
- statistical confidence, 92
- strategy, defined, 101
 - see also* visualization
- subjective confidence, 92
- subjective expected utility (SEU), 82
- support theory, 66
- surrogate decision-making, 154–157
- surrogate predictions, 39
- Surrogates' Agreement with Patients' Resuscitation Preferences (SUPPORT) trial, 156,157n
- Surveillance Epidemiology and End Results (SEER) database, 152–153
- swing-weighting goals, 12t
 - with SMARTER, 27,27n
- taxpayer samples, 164
- testing. *see* diagnostic tests
- threshold sensitivity analysis, 116f
- thresholds, for testing, 131,131f
- time tradeoff method, 33
- trade-offs, in decision making, 12t
- triage, 179
- uncertainty
 - attitudes towards, 60t
 - clinical questions for, 73
 - communicating to patients, 63
 - and confidence intervals, 91
 - coping with, 72
 - defined, 56
 - and the expectation principle, 76
 - and hope, 72
 - managing, 71
 - and numeracy, 63,63n
 - probability associated with, 110,110f
 - probability issues, 64f
 - probability vs. frequency, 66,67t
 - risk reduction, 70
 - types of, 58
- underconfidence, 93
- United Network for Organ Sharing (UNOS), 180–181
- ¹³C-urea breath test (UBT), 130,130f
- utilitarian approach, to rationing care, 177
- utility. *see* expected utility; family
- valence effects, 66
- values
 - expected, 78
 - monetary, of health, 161–162
 - social. *see* social values
 - uncertainty in, 58
- verbal approach, 69
- visual approach, 69,70f

visualization, 101–112	web sites
attributes for, 104,104f	for expected utility worksheets, 81
bias in, potential, 106n	for nomogram, 138n
clinical questions for, 112	for Risk Assessment Tool, 89n
decision trees, 107,107f	well-being
influence diagrams, 110f	mental, 19
outcome attributes for, 105	social, 19
pro and con lists, 105,106t	World Medical Association Declaration of
strategy construction for, 101,102t	Helsinki, 182