

Index

A

Accountability, 140, 141
 Adverse drug events (ADEs), 5, 7, 158, 159, 210, 217, 232, 249, 261–263
 Agency for Healthcare Research and Quality (AHRQ), 73, 111, 113, 115, 122, 127, 128, 150–152, 168, 201, 215
 Alert fatigue, 38, 70, 73, 74, 106, 117, 127, 237
 Antibiotic assistant, 265–266

B

Bayes' theorem, 28–30, 190
 Big Data analytics, 61, 64–65
 Bioethics, 131, 134, 135
 Brigham and Women's Hospital, 93, 246

C

Care Provider Order Entry System, 277–279
 Centers for Medicare and Medicaid Services (CMS), 2, 111, 115–117, 122–124, 127, 128, 258
 Clinical decision support system (CDSS), 1–14, 19, 20, 24–26, 30–40, 47–48, 62, 64, 65, 69–75, 77–79, 81, 83, 87–95, 99–108, 111–113, 115–119, 122, 123, 125–128, 132, 136–140, 142–143, 147–160, 202, 210–224, 228–241, 246–271, 276, 283, 286, 287, 304

Clinical outcomes, 60, 148–152, 160, 166, 193, 230
 Clinical reminders, 238
 Computerized physician order entry (CPOE) systems, 2, 4, 6, 240, 258, 276–279, 281–289, 294, 299, 300, 304–305
 Cost-effectiveness, 150, 216, 240

D

Data mining, 2, 45–65
 Decision aids, 164, 167–169, 171, 172
 Decision support, 2, 6, 8–10, 12, 19, 35, 38, 39, 46, 77, 102, 103, 105, 117, 125, 126, 128, 131–144, 151–153, 160, 163–175, 216–218, 224, 229, 232–233, 239, 241, 246, 247, 249, 250, 252, 255, 260, 264, 267, 270, 271, 276–305
 Decision support system, 3–11, 13, 19–40, 45–65, 71, 78, 107, 132–138, 140–142, 160, 163, 175, 181–204, 211, 247, 248, 260, 270, 283
 development, 4
 Decision trees, 51, 52, 139
 Diagnosis, 4, 6, 25, 28, 30–32, 34–36, 40, 47, 55, 56, 58, 60, 65, 87, 103, 131–133, 135–137, 139, 141, 142, 144, 151, 164, 167–169, 182–187, 189–194, 196, 197, 200–203, 211, 239, 246, 261–266, 269, 279, 281, 286, 299, 301
 Diagnostic decision support, 19, 20, 167, 189, 191, 260–261, 267

E

Electronic health record (EHR), 2–9, 11, 19, 20, 34, 35, 38–40, 64, 65, 70, 72, 73, 78, 80, 88–91, 93, 94, 103–105, 117, 119, 124, 133, 139, 151, 152, 157, 165, 210, 215–219, 221, 222, 224, 230, 237, 239–241, 246, 247, 256, 258, 264

Empowerment, 165–166

Error, 1, 4–6, 8–13, 49, 54, 57, 58, 63, 70, 73, 75, 78–80, 132, 134–136, 141, 144, 185, 187, 190, 196, 197, 201, 224, 230, 232, 246, 259, 283, 284, 286, 294

Ethics, 131, 133, 142–144

Evaluation, 5, 6, 20, 38, 47, 56–58, 61, 71, 76, 79–81, 91, 94, 101, 105, 107, 113, 114, 134, 137, 144, 147–160, 169, 175, 184, 185, 190, 193, 195–200, 202, 228, 231, 235, 238, 240, 241, 250, 255, 262, 271

methodology, 148

F

Federal health policy, 112–113, 121, 125

Formative evaluation, 149, 196

G

Genetic algorithms, 5, 38, 47, 61–62, 65

Genomics, 139–140, 210–224

H

Healthcare quality, 69, 153

Health Level 7 (HL7), 91–93, 106, 114–116, 121, 153, 218, 219

HELP system, 5, 88, 246–253, 257, 260–261, 265, 267, 270

Human-computer interaction (HCI), 70, 75, 99

Human reasoning, 185–188

I

Implementation, 4, 6–8, 10, 11, 40, 71, 73, 74, 80, 81, 88–95, 99–108, 113, 115, 117, 118, 122, 123, 143, 148–150, 152, 153, 159, 184, 193, 195, 201, 212, 216, 218–221, 224, 228, 230, 233–236, 239–241, 249, 252, 271, 276, 287, 305

Inpatient care, 276–305

Intermountain healthcare, 246–271

K

Knowledge base, 2–4, 7, 11, 13–14, 30–32, 34, 36, 40, 72, 77–78, 191, 193–196, 198, 200–204, 210, 215, 219–220, 224, 232, 237, 258, 266

Knowledge-based system, 3, 5, 11, 240

Knowledge formalization, 99, 101–103

Knowledge localization, 99, 103

Knowledge maintenance, 271

Knowledge representation, 93, 102, 195

Knowledge synthesis, 99–101, 107

L

Legal issues, 10, 13, 131–144, 201

Liability, 10, 115, 140–142

Logic, 6, 11, 12, 20–27, 30–32, 35, 37, 38, 40, 63, 64, 90, 102, 103, 116, 119, 126, 189, 219, 229, 249, 251, 252, 258–260, 263, 265, 266, 269, 270

M

Mathematics, 20, 24, 38, 83

Medical information systems, 246

N

National Quality Strategy (NQS), 112, 113, 124, 128

Neural network, 5, 37, 38, 47, 48, 51, 54–55, 58, 60, 62–64, 192

Nosocomial infection, 26, 249, 261, 263–264

O

Office the National Coordinator (ONC), 6, 7, 13, 90, 94, 111, 115, 116, 119, 121–123, 125–128

Ontology, 77, 78

P

Partners Healthcare, 5, 93, 228–241, 246

Patient-centric, 239–240

Patient preferences, 100, 166, 172

Pharmacogenomics, 139, 140, 211, 212, 220, 222, 224

Pharmacology, 214

Probability, 20–23, 26–31, 34, 36, 40, 50, 52, 53, 58, 169, 185, 210, 235, 264, 266, 267, 269

Prognostic scoring systems, 138

Q

Quantum computing, 61, 63, 65

R

Randomized controlled trial, 149–151, 155, 157–160, 203

Regulation, 13, 91, 113, 117, 119, 120, 123–127, 135, 140, 142–143, 200, 201

Responsibility, 13, 14, 133, 134, 140–142, 234, 239, 287, 304

S

Safety, 2, 5, 9, 40, 70, 75, 77–82, 100, 105, 106, 113, 115, 125, 126, 143, 202, 228, 230, 235, 241, 253, 278, 285, 286, 305

Service-oriented architecture (SOA), 9, 88–92, 94, 95

Service oriented computing, 90

Service-oriented design, 91

Set theory, 20–23, 40, 64, 189, 192

Shared decision making, 137, 138, 140, 164, 165, 167–169

Software architecture, 88

Statistical pattern recognition, 3, 48, 56, 266

Study design, 149, 154, 157, 158, 160, 197, 198

Summative evaluation, 149, 154

U

Usability, 4, 7, 69–83, 107, 108, 125, 127, 128, 171–175

V

Vanderbilt, 4, 5, 212, 216, 218, 220, 246, 276–305

Ventilator management, 24, 248, 258–260

W

Workflow integration, 71, 74