Index

Note: Italic page numbers indicate figures and tables.

ABCDE approach, 54
academic publications, 218–219
accountability for reasonableness, triage decisions, 80
activity method, allocation of nursing staff, 118–120
acute care assessment tool (ACAT), 231
acute delirium, 58–59
acute kidney injury (AKI), 57–58
renal replacement therapy, 224–225
acute organ dysfunction, 66–67
acute respiratory distress syndrome (ARDS), 56–57
steps in provision of lung protective ventilation, 137
admission prioritisation
see triage
advanced directives, 87
adverse events (AEs)
factors contributing to, 64–65 incidence of, 143
intra-hospital related, 62
and ‘normalised deviance’, 149
prevention of transport-related, 65–66
and psychological safety, 155
tools to reduce risk of, 96–99
see also mortality and morbidity conferences (MMCs)
apalgesia, 90–91
anonymity issues
and access to reports, 201
confidentiality of registry data, 198–199
antibiotic lock solutions, 20
antimicrobial coated catheter, 20
antiseptic-impregnated dressings, 19
antiseptic non-touch technique (ANTT), 18–20
antithrombotic prophylaxis, 20
application interface, information systems, 105–107
appraisal of guidelines, 28–29
ARDS (acute respiratory distress syndrome), 56–57
assessment of barriers to change, 148
in CBT (competence-based training), 231–232
of level of evidence (LoE), 27–28
audit report cycle, 199–201
autonomy in decision-making, 86, 87
bacteria, CVC-related infections, 20–21
bacteriophages, 25
barriers to change
identifying, 148
mapping implementation barriers to methods, 149
overcoming, 148–149
overcoming unseen, 149–150
understanding, 146–148
benchmarking, 213
academic publications and education, 218–219
disadvantages and limitations, 214
driving changes using, 219–220
financial performance, 217–218
historical background, 213–214
management, 215
multidimensional nature of, 127–130
outcomes, 216–217
process of, 214
structure and personnel, 214–215
‘benefit’ metrics, ICU admission
egalitarian approach, 78
utilitarian approach, 78–79
big data, storage issues, 108
bioelectric effect, 25
BSI (blood stream infection), 20–25
catheter tip position, 19
complications associated with
insertion, 18–19
new materials and infection prevention, 19–20
procedural risk of insertion, 16–17
reasons for insertion of, 16
site selection, 19
types of, 15–16
ultrasound-guided insertion, 17–18
change implementation, SBT facilitating, 189
change in clinical practice, addressing barriers to, 142, 150–151
complications in critical care, 142–143
organisational culture, 144–146
potential solutions to barriers, 150
‘whole system’ approach, 143–144
change leadership, 149–150
checklists, 1–2
categorisation of, 2–3
development and implementation, 3–5
harm elimination, working toward, 5–6
for intra-hospital transport, 67
introduction of, attitudinal barriers, 144
one facet of quality improvement, 5
improving treatment quality, 31–38
volume-outcome relationship, 222–223
case steps in MMC procedure, 72–75
catheter-associated BSI (CA-BSI), 20, 21
catheter-related blood stream infection (CR-BSI), 20–25
Central Line Bundle, 40–41
central venous catheters (CVGs), 15
antiseptic non-touch technique (ANTT), 18
BSI (blood stream infection), 20–25
catheter tip position, 19
complications associated with
insertion, 18–19
new materials and infection prevention, 19–20
procedural risk of insertion, 16–17
reasons for insertion of, 16
site selection, 19
types of, 15–16
ultrasound-guided insertion, 17–18
change implementation, SBT facilitating, 189
change in clinical practice, addressing barriers to, 142, 150–151
complications in critical care, 142–143
organisational culture, 144–146
potential solutions to barriers, 150
‘whole system’ approach, 143–144
change leadership, 149–150
checklists, 1–2
categorisation of, 2–3
development and implementation, 3–5
harm elimination, working toward, 5–6
for intra-hospital transport, 67
introduction of, attitudinal barriers, 144
one facet of quality improvement, 5
improving treatment quality, 31–38
volume-outcome relationship, 222–223
case steps in MMC procedure, 72–75
catheter-associated BSI (CA-BSI), 20, 21
catheter-related blood stream infection (CR-BSI), 20–25
Central Line Bundle, 40–41
central venous catheters (CVGs), 15
antiseptic non-touch technique (ANTT), 18
BSI (blood stream infection), 20–25
catheter tip position, 19
complications associated with
insertion, 18–19
new materials and infection prevention, 19–20
procedural risk of insertion, 16–17
reasons for insertion of, 16
site selection, 19
types of, 15–16
ultrasound-guided insertion, 17–18
change implementation, SBT facilitating, 189
change in clinical practice, addressing barriers to, 142, 150–151
complications in critical care, 142–143
organisational culture, 144–146
potential solutions to barriers, 150
‘whole system’ approach, 143–144
change leadership, 149–150
checklists, 1–2
categorisation of, 2–3
development and implementation, 3–5
harm elimination, working toward, 5–6
for intra-hospital transport, 67
introduction of, attitudinal barriers, 144
one facet of quality improvement, 5
checklists (Cont.)
for prevention of transport events, 65–66
smart electronic checklist, 112–115
summary, 7
see also daily goal discussions
CLABSI (central line-associated bloodstream infections), eliminating, 5
clinical data management, 103–104
challenges of, 104–105
design considerations, 105–108
future developments, 108–110
clinical Microsystems, 145
dimensions of effective, 146
clinical practice guidelines (CPGs)
effect on patient outcome, 31–32
implementing new, 29–31
model for implementation of, 50
theories/models relating to change to improve PADM, 32
critical care, 86
clinical pulmonary infection score (CIPS), 59
collaboration between professionals, 155
‘common training framework’ (CTF), 229–230
communication
about limiting life-support, 86–87, 88–90
factors adversely affecting, 44
goals, evidence-based practice, 136–137
improvement of face-to-face, 49
of new process to stakeholders, 138
see also daily goal discussions
competence-based training (CBT), 228–229
assessments, 231–232
challenge of using in Europe, 229–230
criticisms and limitations, 232
importance of intensive care medicine, 232–233
as new method of medical education, 230–231
competency-based education (CBE), 228–229
Competency-Based Training in ICM (CoBaTrICE)
collaboration, 229
complications associated with CVC insertion, 18–19
in critical care, 58–59, 142–143
computerisation of prescriptions, 99–100
confidentiality issues and access to reports, 201
registries, 198–199
conflict, 160
definition of, 161
and EOL decision-making, 91
epidemiology of, 161
parties involved in, 161, 162
phases and styles, 164
severity and impact of, 163
and teamwork during handover, 156
conflict management
interventional studies, 163
practical aspects, 163–164
summary/conclusion, 164–165
theoretical perspectives, 163
Confusion Assessment Method for the ICU (CAM-ICU), 59
costs
see also finance
CPGs see clinical practice guidelines
CR-BSI, 20–25
Critical Care Family Needs Inventory (CCFNI), 174
cultural differences, triage practice, 81
culture of safety, 97–98
culture, organisational see organisational culture
daily care plan, 10
daily goal discussions, 9
beneficial effects and challenges, 10–11
implementing daily goals concept, 11–13
key element in critical care, 9–10
summary/conclusions, 13
daily goals checklist, 12–13
daily rounds
teamwork behaviour, 155
use of smart checklist tool, 113–115
data collection
patient data management systems (PDMS), 126–127
timing of satisfaction survey data, 177
see also national ICU registries
data management see clinical data management; patient data management system (PDMS)
data modelling, 107
data quality, registries, 199
decision-making autonomy in, 86, 87
flow chart for suspected CVC infection, 22
models of, 87–88
delirium, 58–59
dependency method, nursing staff allocation, 118
diagnosis of dying, intensivist role in, 171
diagnostic pathways, 53
acute organ dysfunction, 54–55
areas for improvement, 59–60
complications, 58–59
severe trauma, 55
specific diseases, 56–58
underlying disease, identifying, 55–56
direct observation of procedural skills (DOPS), 231
distributive justice in ICU triage, 78
egalitarian approach, 78
utilitarian approach, 78–80
documentation
EOL decision-making, 92
framework for PDMS system, 109
handover, standardisation of, 49
double effect’ principle, 90
‘drug labelling, standardisation of, 100
dying, intensivists’ role in diagnosing, 171
dynamic checklists, 2
education
academic research, 218–219
competence-based, 228–229
to overcome barriers to change, 148
see also training
efficiency measurements, 189
egalitarian approach, distributive justice, 78
electronic ICU management systems
case study, smart electronic checklist, 112–115
historical perspective, 111–112
summary/conclusion, 115
electronic medical record (EMR) systems, 103–104
implications for quality improvement, 115
electronic tools, handover interventions, 49
end-of-life (EOL) care decision-making, 85–86
establishing early goals of care, 86
ethical and moral issues, 85–86
intensivist’s role outside of ICU, 170–171
limiting life support, 88–92
environment of ICUs, safety concerns, 97
epidemiology
conflict in ICUs, 161
infections, 36–37
equipment for safe transport of ICU patients, 66
verification list for, 67
ergonomics of ICUs, human errors, 97
errors
medication, 99–100
in routine situations, 99
see also adverse events (AEs); incidents
ethics
end-of-life (EOL) care, 85–86
triage decisions, 77–80
European Working Time Directive (EWTD), 230
evidence-based practice, 134–135
framework for introducing, 135–136
implementation challenges, 140
of new intervention, 137–139
measurement of performance and outcomes, 139–140
planning a new intervention, 136–137
summary/conclusion, 140–141
evolution of intensive care, 167
initiatives operating outside ICUs, 170–172
other involvement outside the ICU, 172
rapid response systems, 167–170
external indicators, 206
family satisfaction see satisfaction, patient and family
feedback
of analysed indicators, 208
and behavioural change, 149
registry reports, 201
finance
costs of telemedicine, 240–242
funding of registries, 197–198
performance of ICU, benchmarking, 217–218
follow-up after intensive care, 171–172, 180–181
health-related quality of life (HRQoL), 182–185
PROs in Swedish National Quality Registries, 182
FS-ICU, family satisfaction instrument, 174, 175–176
funding see finance
general hospital wards, patient monitoring, 169–170
general outcome prediction model (GOPM), 127
‘goals of care’
documentation of, 91
early discussions with family, 86
shifting from cure to palliation, 86–88
goals, evidence-based practice, 136–137
GOPM (general outcome prediction model), 127
grade of recommendation (GoR), guidelines, 27–28
graphical user interface (GUI) for PDMS, 105–107
guidelines and bundles, 27, 33
effect on patient outcome, 31–32
level of evidence and grade recommendation, 27–29
model for implementation of, 50
practical approaches for implementing CPGs, 29–31
HAI see healthcare-associated infection
hand hygiene, 38–39
handover of ICU patients, 43
causes of suboptimal, 44
components of the procedure, 46
consequences of suboptimal, 90–91
critical teamwork episode, 156
definition and purpose, 44–46
evaluation, 51
implementation of improvement interventions, 48–50
improving safety and effectiveness, 48
methods of, 47
phases of handover process, 47
settings and persons, 46
see also transport of ICU patients
hand, harm, working towards eliminating, 5–6
HDUs (high dependency units), 170
health-related quality of life in the ICU, 172
rapid response systems, 167–170
external indicators, 206
family satisfaction see satisfaction, patient and family
feedback
of analysed indicators, 208
and behavioural change, 149
registry reports, 201
finance
costs of telemedicine, 240–242
funding of registries, 197–198
performance of ICU, benchmarking, 217–218
follow-up after intensive care, 171–172, 180–181
health-related quality of life (HRQoL), 182–185
PROs in Swedish National Quality Registries, 182
FS-ICU, family satisfaction instrument, 174, 175–176
funding see finance
general hospital wards, patient monitoring, 169–170
general outcome prediction model (GOPM), 127
‘goals of care’
documentation of, 91
early discussions with family, 86
shifting from cure to palliation, 86–88

job satisfaction of nurses, link to patient satisfaction, 178
corrected mortality and morbidity percentages, 44
justice see distributive justice in ICU triage
Keystone-ICU project, Michigan hospitals, USA, 21–23
kidney injury, 57–58
renal replacement therapy, volume–outcome relationship, 224–225
leadership driving change, 149–150, 150 and teamwork, 153, 155
learning from experience MMScs, 75
see also to sit SBT
legal issues, triage, 81
level of evidence (LoE), guidelines, 27–28
levels of care (LOCs) dependency method of allocating nursing resources, 118
inappropriate delivery of, 121 terminology issues, 120–121
life expectancy and ICU admission decision, 78–79
life support therapy (LST) analgesia and sedation, 90–91
communications about limiting, 88–90
conflict and stress, 91
documentation, 91, 92
ethical and moral issues, 85–86
initiating discussions on WH/ WD, 86–87
withholding and withdrawing, 90–91
liposomes, 24
management, benchmarking, 215
‘matching Michigan’, programme, 23–24
mechanical ventilation steps in provision of, 137
volume–outcome relationship, 223–224
withdrawing ventilator support, 90
medical notes/records, 109
emergence of electronic, 111–112
EOL, decision-making, 91
medical staff, 121–122
medication errors, strategies to decrease, 99–100
microsystems, 145
MMScs see mortality and morbidity conferences
mnenomics, 11, 48
monitoring of patients on general wards, 169–170
moral issues see ethics
mortality and morbidity conferences (MMScs), 70
learning from experiences, 75
procedure, 72–75
standardisation of, 70–71
summary, 75
mortality predictions computation of, 127
quantification models, 125–127
triage, 78–79
mortality reductions, telemedicine, 238
multifaceted programmes, error prevention, 100
multisource feedback (MSF), 231–232
nanotechnologies, 24–25
national ICU registries, 195
design of, 198–199
future outlook, 201–202
management and funding, 197–198
perspectives and goals, 195–197
reports and feedback, 199–201
negotiation, conflict resolution, 164
‘normalised deviance’, 149
nosocomial infection see healthcare-associated infection (HAI)
Nursing Activities Score (NAS), 119–120
nursing staff calculating number of nurses required, 117–118
theoretical approach, 118–121
inappropriate delivery of levels care, 121
inappropriate use of, 121
job satisfaction link to patient satisfaction, 178
in the telemedicine-ICU, 240
nursing work, inappropriate use of, 121
ODS (organ dysfunction score), 54–55
O/E ratio see standardised mortality ratio (SMR)
organisational change, barriers to, 142
organisational context/factors causes of suboptimal handover, 44
change theories/models, 32
see also staffing issues
organisational culture and change management, 144–146
and introduction of new practice, 139
and safety climate, 97–98
team climate as component of, 154
organisational normalised deviance, 149
organisational resilience, building trust for, 147–149
see also health-related quality of life; outcome measures, patient reported outcomes
after critical care, measures of, 180–181
benchmarking, 216–217
effect of guidelines and bundles, 312
improvement of, processes to change, 137–138
measurement of, 139–140
telemedicine, 238–239
see also volume–outcome relationship
outreach teams, 48
outreach visits, 149
overtriage, 80
PASD see practice in analgesia, sedation, and delirium
patient data management system (PDMS) challenges of, 104–105
application interface, 105–107
big data, 108
data model, 107
data security, 108
virtual implementation, 107–108
future developments, 108–110
patient perspective, ICU registries, 196
patient reported outcome measures (PROM)
in the Swedish National Quality Registries, 182
see also health-related quality of life (HRQoL)
patient safety, 95–96
bundles and multifaceted programmes, 100
education and training, 98–99
human and system factors, 96–97
measurement issues, 96
medication errors, 99–100
routine situations and continuity of care, 99
safety climate, 97–98
summary/conclusions, 100–101
teamwork relevance, 153, 157
see also mortality and morbidity conferences (MMScs)
patient satisfaction see satisfaction, patient and family
PDCA see Plan–Do–Check–Act (PDCA) cycle
PDSA (Plan–Do–Study–Act) cycle, 146–147
perceptual studies, telemedicine, 239–240
Index

performance see benchmarking: outcomes
peripherally inserted central catheters (PICCs), 15–16
personnel see staffing issues
physical environment of ICU, link to satisfaction scores, 178
Plan–Do–Check–Act (PDCA) cycle, 30–31
approach to daily goals form, 11 indicators in, 207
Plan–Do–Study–Act (PDSA) cycle, 146–147
pneumonia, ventilator-associated, 58
polymer-associated drug nanocarriers, 2/4
potential benefit, formula for calculating, 78
practice in analgesia, sedation, and delirium (PASD)
clinical practice guidelines, 30
theories/models relating to clinical practice guidelines, 30
improving, 32
'practice makes perfect', 222
predicted hospital mortality computations, 127
customisation of SAPS II score, 130–131
prescription of drugs, error reduction strategies, 99–100
prevalence of infection, 32, 225
process indicators, 205
professional perspective, ICU registries, 195–196
Project Emerge, harm elimination, 6
professional perspective, ICU registries, 195–196
Project Emerge, harm elimination, 6
psychological safety, staff working, 155
publications, academic, 218–219
quality-adjusted life years (QALY), 78
quality assurance of ICU training, 229–230
quality goals of ICU, epilogue, 247–248
quality improvement frameworks, 137–138
quality indicators, 204–205
achieving improvement, 208
currently used in intensive care medicine, 209–210
data definition and registration, 207
development of an indicator, 206–207
feedback of analysed indicators, 208
implementation of a quality indicator set, 210
interpretation of indicator data, 207–208
limitations in use of, 211
in PDCA cycles, 207
types of indicators, 205–206
quality of life (QoL) and EOL ethical and moral issues, 85–86
health-related, 182–185
prediction of post-ICU, 79–80
rapid response systems (RRSs), 167–170
recommendations, MMCs, 74–75
reflection and teamwork, 156–157, 157
regionalised healthcare systems, 221
registries: see national ICU registries
renal replacement therapy, volume–outcome relationship, 224–225
reports, access to registries, 201
audit report cycles, national registries, 199
feedback of analysed indicators, 208
research, 218–219
reverse triage, 80–81
risk assessment/reduction, 96–99
routining tool, electronic, 113–114
routine procedures, patient safety issues, 99
rules, MMC, 72
safety climate, 97–98
safety issues see patient safety satisfaction, patient and family deciding which measure to use and when, 176–177
factors influencing, 177–178
factors linked to, 175
importance of, 174
measuring, 175–176
and needs, 174–175
summary, 178
SBT see simulation-based training scenarios see simulation-based training
security of data, 108
sedation, 90–91
'selective referral', 222
'self-rule' (autonomy) in final decision making, 86
SENIC (Study on the Efficacy of Nosocomial Infection Control) project, 38
sentinel events, 72
severe sepsis, 57
volume–output relationship, 225
severe trauma, 55
severity scoring, 124
computation of predicted hospital mortality, 127
future challenges, 131
future prospects, 130–131
multidimensional nature of benchmarking, 127–130
quality evaluation, 125
quantification of illness severity, 125–127
short term CVCs, 16
silver nanocarriers, 24
simplified acute physiological score (SAPS)
benchmarks using SAPS 3 model, 127–130
customisation of SAPS II score, 130–131
SAPS II ranking of ICU performance, 216
simulation-based training (SBT), 187
advantages of using in situ, 187–188
challenges of using in situ, 191–192
critical care teams, 98–99
in healthcare, 187–188
as a quality improvement tool, 188–189
see also competence-based training (CBT)
smart electronic checklist, case study, 112–115
social context, implementation of clinical guidelines, 32
societal expectations, triage practice, 81
staffing issues benchmarking, 215
and HAL, 35
learning from MMCs, 75
needs and utilisation, 117
medical staff, 121–122
nursing staff, 117–121
and patient safety, 97
standardisation checklists as tool for, 2
in diagnosis/screening, 60
drug infusions and labelling, 100
of handover documentation, 48, 49
of MMCs, 70–71
standardised mortality ratio (SMR), 127
benchmarks, 127–130
and clinical outcomes, 216–217
and financial performance, 217–218
static checklists, 2
sterile field, creating for CVC insertion, 18
stress
burn-out, 97, 157–158
EOL healthcare workers, 91
surveillance, infection control, 37–38
surveillance systems, start-up costs, 241
Swedish National Quality Registers, 182
system factors and patient safety, 97
'systems approach', change agency, 143–144

teach-back method, shared understanding, 48
team climate, 154
teambuilding/teamwork, 152
central teamwork concepts, 153–156
handover improvements, 49
improvement approaches, 156–157
multidisciplinary team training, 189–190
relevance for quality and safety of patient care, 153, 157
role of reflection, 157
teamwork gains from clinician's perspective, 157–158
within organisational environment, 145–146
telemedicine, 235
application to ICUs, 235
cost considerations, 240–242
evidence of utility and acceptability, 238–240
implementing a new programme, 242, 243
models of care and management, 236–238
reasons for interest in, 235–236
summary and conclusions, 242–244
Therapeutic Intervention Scoring System (TISS), 119
Time Oriented Score System (TOSS), 119
training
communication skills, 90
outreach visits, 149
patient safety, 98–99
to prevent adverse transport events, 65
support for and extent of, 146
see also competence-based training (CBT); simulation-based training (SBT)
Translating Evidence into Practice (TRiP) model, 3–5
transport of ICU patients, 62
3 steps to take in practice, 66–68
adverse events, factors contributing to, 64–65
core element of critical care practice, 62–63
methods of preventing adverse events, 65–66
risky procedure, 63–64
see also handover of ICU patients
trauma, 55
treatment withholding/withdrawal of life support therapy
see life support therapy triage, 77
accountability for reasonableness, 80
ethics, 77–80
first phase of handover process, 47
reverse triage, 80–81
summary/conclusion, 81–82
TRiP (Translating Evidence into Practice) model, 3–5
tunnelled catheters, 16
ultrasound-guided CVC insertion, 17–18
underlying disease, diagnosing, 55–56
undertriaigae, 80
utilitarian approach, triage, 78-80
ventilation, mechanical
volume–outcome relationship, 223–224
withdrawing ventilator support, 90
ventilator associated pneumonia (VAP), 58
clinical pulmonary infection score (CIPS), 59
reduction with use of Ventilator Bundle, 40
Ventilator Bundle, 40
video reflection, teamwork tool, 156–157
withholding/withdrawing (WH/WD) of life support therapy,
initiation of discussions, 86–87
working time directive, EU, 230
workload and HAI risks, 35
and safety concerns, 97